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Foreword

At the beginning of this new millennium, many OECD countries find themselves embarked on a demographic transition that is without precedent in history. Our populations are ageing rapidly and, in many cases, they are also beginning to shrink. While these processes have gone further in Japan than elsewhere, they are by no means unique to Japan – many OECD countries will move down the same path as the century unfolds, with important consequences for both economic performance and settlement patterns.

It is difficult to exaggerate the socio-economic importance of this shift. For most of human history, a long-term trend of population growth was a given, even if that trend was sometimes disrupted by sharp mortality crises, such as famines, wars or epidemics. Moreover, human communities of all sizes tended to have pyramid-shaped age structures, with the younger cohorts being the largest and older cohorts the smallest. As life expectancy increased, the pyramid grew taller but its shape remained. Then, as fertility fell sharply in the latter part of the last century in many countries, the bottom of the pyramid began to contract and the bulge in the distribution "moved up" until, in many places, we have begun to see something closer to an inverted pyramid emerging – an age structure unlike any we have ever seen before, in which the largest cohorts are the oldest.

Yet the implications of this change for social progress and prosperity are not set in stone: they depend greatly on the policy choices we make. That is why the OECD's Regional Development Policy Committee has begun to devote increasing attention to the consequences of demographic change for cities and regions. This OECD Territorial Review follows a recent study of ageing in cities that looks at policy responses at the local level.

Japan is working to design an integrated, long-term approach to population ageing and demographic decline, aligning spatial and sectoral policies to strengthen productivity growth and ensure a sustainable long-term settlement pattern. It seeks to seize the opportunities offered by demographic change, as well as to address the problems it creates. The new National Spatial strategy adopted in 2015 is central to this effort.

While it is too early to judge the long-term impact of this strategy, we do find grounds for optimism: the economic analysis confirms that Japanese cities function well, generating comparatively strong agglomeration benefits, though better horizontal co-operation among the municipalities in metropolitan areas could enhance these benefits substantially. Japan's rural areas, despite their difficulties, actually outperform most of their OECD peers and are in many cases pioneering revitalisation strategies based on local assets and potentials. At all levels from the national to the local, public- and private-sector actors are devising innovative and often place-based solutions. Many of these are likely to be of great interest and relevance to the many OECD countries facing similar challenges.

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Acronyms and abbreviations

ABCD	Asset-based community development
CAP	Common Agricultural Policy (European Union)
DID	Densely inhabited districts
DRT	Demand-responsive transport
FAR	Floor-area ratio
FDI	Foreign direct investment
FITs	Feed-in tariffs
FUA	Functional urban areas
FUR	Functional urban regions
FY	Financial year
GEDI	Global Entrepreneurship Index
GERD	Gross expenditure on R&D
GVC	Global value chains
HMA	Hilly and mountainous areas
HSR	High-speed rail
ICT	Information and communication technologies
IN	intermediate
JPC	Japan Policy Council
KISA	Knowledge-intensive service activity
LAT	Local Allocation Tax
LIDs	Land Improvement Districts (Japan)
LPC	Local public corporations
LTC	Long-term care
LTT	Local Transfer Tax
MAFF	Ministry of Agriculture, Forestry and Fisheries (Japan)
METI	Ministry of Economy, Trade and Industry (Japan)
MEXT	Ministry of Education, Culture, Sports, Science and Technology (Japan)
MHLW	Ministry of Health, Labour and Welfare (Japan)
MIC	Ministry of Internal Affairs and Communications
MLIT	Ministry of Land, Infrastructure, Transport and Tourism (Japan)
NSS	National Spatial Strategy (Japan)
NSSZs	National Strategic Special Zones

OOS	One-stop shops
PFI	Public Finance Initiative
PM	Particulate matter
PPP	Public-private partnerships
PR	Predominantly rural
PRR	Predominantly rural remote
PSE	Producer Support Estimate
PU	Predominantly urban
R&D	Research and development
RE	Renewable energy
RIDA	Remote Islands Development Act (Japan)
SME	Small and medium enterprise
SNG	Subnational governments
TFP	Total factor productivity
TFR	Total fertility ratio
TMA	Tokyo Metropolitan Area
TMG	Tokyo Metropolitan Government
VC	Venture capital
WHO	World Health Organization

Executive summary

Key findings

- **Japan is experiencing an unprecedented demographic transition**. The population is both declining and ageing very rapidly. On current projections, the population is expected to decline by around 23% between 2010 and 2050, with the elderly (65+) share of the population rising from around 26% today – the highest in the OECD area – to almost 40% at mid-century.
- **Most OECD populations are ageing fast and some are shrinking**. At least six OECD countries are projected to have populations more than 10% below their peak by mid-century; ten will have elderly population shares in excess of 30%. Japan's current efforts to address demographic change are therefore of great relevance to many other OECD countries.
- **Japan's prosperity depends more than ever on productivity**. The working-age population is shrinking by about 1% per year and this will accelerate to 1.7% in the decades to come. To maintain aggregate growth of GDP of around 2% per annum over the period to 2050, Japan would need, other things being equal, to achieve an average annual rate of growth of more than 3% in GDP per worker. In reality, labour supply as well as productivity will have to improve. Given very strict immigration policies, this means that mobilising women and older workers will be more important than ever.
- **Demographic shifts have important spatial consequences**. The government projects that more than 60% of the inhabited grid squares in Japan will lose over half their population by 2050, with almost a fifth becoming uninhabited. Only 2% are projected to experience population growth.
- **The concentration of both population and economic activity in Japan is high and rising**. The metropolitan areas of Tokyo, Osaka and Nagoya occupy 5.2% of the country's territory but are home to around 46% of its people and generate around half of GDP. Concentration, moreover, has been increasing steadily, with many rural areas and small towns suffering rapid depopulation.
- **Spatial disparities are unusually low and do not appear to be increasing**. Despite increasing concentration of activity and population, Japan in 2010 recorded the second-lowest inter-regional Gini co-efficient for GDP per capita in the OECD and the lowest disparities in the OECD between predominantly urban and rural regions, reflecting, among other things, a long-standing commitment to well-defined levels of infrastructure and service provision across the country.
- **Japanese cities suffer from fragmented governance**. Micro-data analysis suggests that the productivity of Japan's major cities benefits greatly from their ability to generate agglomeration economies. However, the analysis also suggests that governance fragmentation undermines performance, particularly in metropolitan areas with

populations in the 0.5-2.7 million range. Greater co-ordination among municipalities in these metropolitan areas could pay handsome dividends.

- **Rural Japan is comparatively prosperous by OECD standards**. Despite the challenges they face, predominantly rural regions in Japan have average levels of per capita GDP about 14% above the OECD-wide average for such regions. In recent years they have also enjoyed higher growth in GDP per capita and far better labour market outcomes than their OECD peers.

Key messages and policy recommendations

- **Demographic change offers opportunities as well as challenges**. The economic consequences of population decline and ageing depend largely on the response of both sectoral and spatial policies. Shrinking domestic markets, fiscal strains and service-delivery challenges clearly loom large, but there are also opportunities for more space-intensive activities, more flexibility in land use, less congestion, lower housing costs and less environmental pressure.
- **Spatial planning and spatial policies will be critical in shaping this policy response**. Given the dramatic impact of demographic change on the settlement pattern, spatial policy in Japan is now of tremendous importance. It is being set within a long-term, government-wide approach to demographic change that aims to turn Japan's demographic and economic challenges into opportunities for growth and enhanced well-being.
- **The authorities' "compact and networked" vision for Japan's future seems broadly right**. The new National Spatial Strategy (NSS) aims to sustain a settlement pattern that facilitates the realisation of agglomeration economies while avoiding the abandonment of large parts of the national territory. The NSS envisages a series of measures, including plans for multifunctional "small stations" to support service provision in rural areas and strengthened links among proximate cities to support agglomeration economies.
- **Diversity is the other key priority underlying the NSS**. As the population declines, the competition among regions and cities for people and resources will intensify. Regions and cities will need to identify their specific assets and potentials to attract people and investment. This diversity of endowments and strategies, in turn, will give rise to the possibility of identifying complementarities among places and building strategies to exploit them.
- **Policies concerned with innovation, entrepreneurship and labour-market institutions will have to adapt**. Improvements in productivity will depend in large part on more effective policies to promote innovation entrepreneurship. Achieving higher labour force participation, especially among women, as well as encouraging longer careers, will require finding ways to promote healthy ageing and to make it easier to combine careers with parenthood. Better child-care provision and a shift away from the "long-hours" culture will be of particular importance.
- **Enhancing the global competitiveness of the three cities is critical to Japan's prosperity**. A new super-high-speed maglev rail line is to knit Tokyo, Osaka and Nagoya into a single urban mega-region. For the maglev to realise its economic potential, this investment in hard infrastructure must be accompanied by appropriate "soft" policies, particularly policies to promote entrepreneurship, innovation and venture investment.

- **Cities outside the metropolitan areas must learn to work together**. The evidence suggests that the performance of cities outside the "big three" would benefit from reinforced efforts to link nearby cities together, to sustain agglomeration benefits and urban services, as envisaged in the NSS. This will require tools for governance co-ordination, as well as infrastructure connections.
- **Rural revitalisation efforts must be based on local assets**. While rural areas face more severe depopulation challenges than other places, many rural communities are pursuing asset-based community development strategies in response to structural change. Rather than simply relying on external support, they are taking advantage of new opportunities to use technology and rural-urban linkages to innovate, attract investment, enter new markets and sustain local prosperity and well-being. Many of these strategies offer lessons for others.

Assessment and recommendations

Japan's future prosperity depends on its ability to tackle two enormous and inter-related challenges, which will largely shape its future spatial and economic development. The first is an unprecedented process of demographic change: the country's population is ageing and shrinking rapidly. The second challenge concerns productivity. With the labour force shrinking as a share of the population, output per worker will have to rise even faster if per capita incomes are to increase. A "super-ageing" Japan cannot sustain rising living standards without strong, sustained productivity growth. This will require efforts to stimulate innovation and entrepreneurship and to strengthen the international integration of the Japanese economy. The productivity of services, in particular, will be a critical concern, because demographic change will create challenges for service delivery, in particular – both increased demand for age-related services and increased unit costs for service delivery in places where population is falling.

These challenges are far from unique: many OECD countries face rapid population ageing and some face population decline, as well. While Japan's demographic transition is further advanced and the challenges are in some respects more acute, it has in recent years put together a package of measures to tackle population decline and ageing that is exceptional in its scope and ambition. Their aim is to turn Japan's forbidding economic and demographic challenges into opportunities for growth, innovation and enhanced well-being. The outcomes of this effort will therefore be of first-order interest to policy makers in many countries, within and beyond the OECD.

Demography is reshaping Japan's economic geography

Japan's population peaked in 2010 at just over 128 million. It has since begun a sustained decline that is expected to accelerate over time, reducing the population to fewer than 100 million by 2050. At the same time, the elderly (65+) share of the population is projected to rise from about 26% today (the highest in the OECD) to around 40% at mid-century. This dramatic shift is the product of two factors: fertility and longevity – immigration plays a very small role in Japan's population dynamics. The total fertility ratio (TFR) has been below replacement level (2.1) since 1974 and below 1.5 since 1993. Even if it quickly returned to replacement levels, the population would decline for more than 50 years before stabilising. At the same time, Japan has achieved an extraordinary increase in longevity, with life expectancy at birth reaching almost 83.5 years in 2013, the highest in the OECD.

The impact of nation-wide demographic dynamics varies greatly from place to place. Several important trends stand out. First, the process of population concentration continues. The three large conurbations centred on Tokyo, Osaka and Nagoya are now home to about 46% the country's population, though they account for just 5.2% of the national territory. The concentration of population and economic activity has accelerated in recent decades,

raising questions about the viability of many smaller cities, towns and rural communities. Predominantly rural regions have also been ageing faster than cities, with more remote rural places having higher elderly dependency ratios than those close to cities. When it comes to fertility, however, the pattern is reversed: the largest cities tend to have lower fertility – Tokyo's TFR was just 1.15 in 2014, the lowest in the country and well below the national average of 1.42. Other large cities also have exceptionally low fertility rates, a fact that reinforces concern about the steady migration of young people to the big cities.

Productivity growth has not been sufficient to offset labour force decline

Japan's income per capita, which matched average of the top half of the OECD countries in the early 1990s, fell to 83% of that average in 2009. A number of factors have contributed to this outcome, but an increasingly important factor in recent years has been the "pure" demographic effect – the decline in the working-age share of the population. At present, the working-age population is falling by about 1% per year, and the rate of decline will eventually approach 1.7% per annum. The share of 15-64 year-olds in the total population, which peaked at almost 70% in the early 1990s, is now about 61% and is projected to fall to around 51% at mid-century. A rapidly shrinking labour force and a rapidly rising dependency ratio imply that even productivity growth of 2% or more will deliver very low aggregate or per capita growth. The accelerating decline of the labour force means that, in productivity terms, Japan will have to run faster and faster simply to maintain its position in relation to other economies. Unfortunately, Japan's productivity performance has been relatively poor since the early 1990s. Over the last decade, it has improved relative to other OECD economies, but this has been insufficient to offset the impact of demographic change.

Spatial concentration of economic activity is increasing but spatial disparities are not

The concentration of economic activity in Japan has continued to increase, in line with population trends. On OECD estimates, the three big functional urban areas – Tokyo, Osaka and Nagoya –generated 49.9% of GDP in 2010. Yet despite this concentration of activity, Japan is characterised by unusually low levels of inter-regional disparities: in 2010, it had the second-lowest inter-regional Gini coefficient for GDP per capita among OECD countries, and inter-regional disparities were actually somewhat lower than in 1995. Disparities between predominantly urban and rural regions were the lowest in the OECD. These patterns are also reflected in labour market indicators, particularly unemployment rates, which vary less across regions in Japan than in almost any other OECD country.

Japan thus combines high concentrations of population and economic activity with low territorial disparities, a combination also found in the Nordic countries. Like them, Japan has traditionally been a highly centralised country with a strong commitment to territorial cohesion. It would also appear that the labour market in Japan works in such a way as to limit wage disparities across space: the growth of employment in Tokyo, in particular, appears to have been critical in ensuring that decades of slow growth have not led to pockets of very high unemployment in the regions or sharp increases in inter-regional inequalities. Over 2000-11, the Tokyo metropolitan area accounted for about 85% of jobs created in Japan. This should be borne in mind when considering proposals to check the inflow of labour to Greater Tokyo. It suggests, in particular, that policies to stimulate business entry and job creation in the regions would be the most important way to counter the centripetal forces now at work in the economy.

Potential over-concentration of people and economic activity in the main urban centres remains a major concern for the authorities. There is widespread concern that rural areas and smaller towns and cities will be left under-populated, aged and impoverished. Firms in regions that experience high levels of depopulation and ageing will confront smaller and less resilient labour markets, as well as problems in finding efficient suppliers and generating links with other businesses. Low-population locations will struggle to attain sufficient critical mass to provide basic public and private goods efficiently, since the fixed costs will have to be borne by a smaller number of clients and consumers. The government's current revitalisation strategy is aimed at preventing such an outcome.

Demographic change is a huge challenge but it also offers opportunities

The economic consequences of demographic change are myriad and complex, but they are not all negative. Clearly, they include shrinking domestic markets and some loss of scale economies in certain activities, as well as the fiscal pressures generated by increased age-related spending and rising dependency ratios. However, population decline in the OECD's most densely populated large country could also create opportunities for more space-intensive activities, more flexibility in land use, less congestion, lower housing costs and, in some respects, less environmental pressure.

The economic impact of demographic change is not a given. Many of the apparent negative economic consequences result not so much from the ageing process itself as from the sometimes perverse interactions between ageing and existing distortions, most notably labour markets and pension systems that encourage early withdrawal from the labour force. Well-articulated and complementary reforms to support, among other things, healthier ageing, longer careers and more efficient healthcare provision, are more likely to offset the impact of ageing than piecemeal approaches that treat particular problems in isolation. The government is currently working to put such a transversal approach in place, co-ordinating across policy sectors and levels of government with the help of such instruments as the National Spatial Strategy and the revitalisation strategy prepared by the new Government Headquarters under the prime minister.

Structural reforms need to address labour supply, fertility, entrepreneurship and innovation

While this review focuses on the spatial/territorial dimension of the two-fold challenge of demographic change and productivity facing Japan, economy-wide, as well as spatial, policies will have a vital role to play. In particular, reforms are needed to boost both labour supply, especially among women and older workers, and fertility. The evidence suggests that very low fertility is linked to labour market institutions and practices that make it difficult to combine careers with child-rearing. Japan already has exceptionally high rates of labour force participation for both men and women by OECD standards, but it also has an unusually large gap between male and female activity rates. If this gap were closed – i.e., if the female participation rate were to converge with the male rate – over the period to 2030, then the decline in the labour force would be reduced by two-thirds, even with no change in male participation rates.

Policies aimed at addressing conditions for all workers, particularly by reducing excessive working hours, expanding childcare provision and improving the work-life balance, could advance both economic growth and gender equity goals. In addition, they could help increase participation among older workers, as well. A number of OECD countries

have already shown how such policies can support both fertility and female labour force participation. The authorities are planning a significant expansion in child-care and after-school places, but measures are also needed to make the tax and benefit systems neutral with regard to work decisions by secondary earners in households: at present, there are significant incentives for second earners to limit their earnings. It would also be advisable to move ahead with more flexible arrangements for fathers, such as proposals for paternity leave and related benefits. More broadly, for men and women alike, there is a need to reduce excessive working hours and improve work-life balance.

Japan could also do much more to stimulate innovation and entrepreneurship, particularly outside the largest cities. Recent performance in both these areas has been lacking. Japan invests heavily in knowledge creation, but the return on that investment in terms of total factor productivity growth has been modest for many years now. The country also scores poorly on measures of entrepreneurship: entry and exit rates are low, and surveys data point to major weaknesses with respect to attitudes and skills, rather than infrastructure or institutions, which tend to be very good. These weaknesses are linked, insofar as many innovations, particularly disruptive ones, do not come from large, established companies – disruptive ideas need entrepreneurs to bring them to the market.

The Japanese authorities are well aware of these challenges and have unveiled a large number of proposals to address them, including new support for start-ups and programmes to support innovation and the growth of small firms. However, there is still much to do, including measures to address skill shortages and enhance entrepreneurship education, to strengthen links between firms and universities and, perhaps most important, to change attitudes to entrepreneurship, which is not widely regarded as a desirable career path. Entrepreneurship could be encouraged among older workers, in particular, by strengthening the protection of managers of bankrupt firms, something the government is now working on: hitherto, failed entrepreneurs have often risked losing almost all their personal assets, including homes and life-insurance policies. This is a particular deterrent to older workers, who cannot afford such risks late in their careers.

Policy makers must balance two key concerns in addressing the spatial consequences of depopulation

The government cannot determine in advance where Japanese people will live in future. As population ageing and decline proceed, people and firms will "vote with their feet" and overly prescriptive attempts to prevent them from doing so would come at a prohibitively high economic cost. However, spatial planning at various scales, from national to local, will play a critical in shaping the choices that households and firms confront and in avoiding undesirable social, economic or environmental outcomes. Policies regarding public services and infrastructure provision will also influence these choices. Infrastructure investment, in particular, will involve very difficult choices about where to maintain, renew or upgrade key infrastructures and where to downsize or decommission them.

The productivity imperative would seem to point to a need for greater concentration of people and activity as the population declines, in an effort to realise the potential productivity benefits of agglomeration, achieve economies of scale in infrastructure and service provision and sustain the global competitiveness of Japan's major cities, particularly the Tokyo-Nagoya-Osaka urban mega-region. Although Japanese cities are not without their problems, a micro-data analysis of functional urban areas in Japan in 2013 finds that they are still characterised by relatively strong agglomeration benefits. This suggests that

further growth and integration of major urban centres could yield productivity gains. Japan has not exhausted its agglomeration potential.

The productivity-focused logic of concentration, however, must be balanced against the need for a sustainable settlement pattern. The authorities are concerned about the environmental deterioration that can occur in abandoned locations, as well as about the equity implications of leaving a substantial portion of the population living in places where depopulation trends may destroy the economic and social fabric of local communities. There is also a fear that over-concentration could leave the country even more vulnerable to both economic shocks and natural catastrophes, particularly in view of Tokyo's vulnerability to earthquakes. In any case, states are territorial entities with obligations to all their citizens, and no government could view the depopulation or impoverishment of large swathes of its territory with indifference. The government thus remains committed to sustaining a broader settlement pattern. Variety in the size and character of places is in any case no less beneficial than variety in the availability of goods and services. Firms and households choose cities of different size, or rural areas, as a function of their needs and resources, and there is no obvious reason for depopulation to change this.

Metropolitan competitiveness and regional revitalisation are thus two central themes in Japanese territorial development policies. Pursuing both goals with a population in decline and public finances under strain will be difficult, but the authorities are right to be concerned with both priorities. The global competitiveness of the country's major cities is the foundation of Japan's prosperity, but the government cannot and should not neglect the potential of non-metropolitan areas.

Striking this balance will require both long-term vision and a multi-faceted approach

In August 2015, the Japanese government adopted a new ten-year National Spatial Strategy. The Strategy is set within a view of spatial development to 2050, which underscores the determination to implant a comprehensive and long-term approach and, in particular, to heighten the sense of urgency surrounding these issues in Japan's regions and cities. Though the great majority of Japan's subnational governments are already grappling with the consequences of demographic change, many – perhaps most – are reluctant to tackle it head-on. Plans and programmes are too often based on unrealistic forecasts, reflecting the hopes of individual communities that they will somehow continue to grow, even as the country's population drops. One of the emphases of the National Spatial Strategy is therefore concerned with ensuring that regions and cities prepare for the future in a realistic way.

The Strategy also reflects a desire to overcome institutional inertia and the tendency of bureaucratic structures to operate within narrowly defined sectoral policy "silos" when addressing such cross-cutting challenges as demographic change and structural reforms. This is also reflected in the formation of the new Government Headquarters for Overcoming Population Decline and Revitalising Local Economies under the Prime Minister. There are important potential complementarities among different strands of public policy that can only be realised with a whole-of-government approach, and that is what the government has been working to realise. Indeed, the process of elaborating and approving the Strategy, which involved a large number of stakeholders, has already worked as a co-ordination instrument, contributing to the formation of a consensus around shared goals and raising

public awareness of the issues. It has also helped mobilise regional and local efforts within a coherent overall framework.

The government sees Japan's future as compact, networked and diverse

The central concepts defining the national-level vision set out in the National Spatial Strategy are "compact" and "networked". The aim is to sustain a settlement pattern that facilitates the realisation of agglomeration economies while avoiding the abandonment of very large parts of the national territory.

- In order to ensure effective service delivery and realise agglomeration economies, the settlement of Japan should become more compact. This principle applies at different scales, from national to local. The authorities acknowledge that some areas will become effectively depopulated, but they seek to sustain a broad settlement pattern across the national territory rather than still greater concentration. At smaller scales, the shrinking of urban and rural settlements needs to be managed so as to maintain spatial coherence and the efficiency of service delivery.
- A Japan in which cities and towns are shrinking will need to be networked. Improved connectivity will be critical to maximising the potential economic benefits of agglomeration, especially when it comes to stronger links between neighbouring cities. Better connectivity among towns and cities, as well as within them, can help offset to some extent the loss of agglomeration potential that will occur as the population declines. Better networking of people and firms should facilitate innovation and the exchange of ideas, as well as goods and services.

Diversity and collaboration are the other key themes of the strategy. As the population declines, the competition among regions and cities for people and resources will intensify, driven largely by similarities among them – similar endowments, needs and aspirations. However, it is their diversity that may offer the best hope for the future. Most regions and cities will need to identify their specific natural, cultural, economic and social assets and potentials in order to attract people and investment successfully. This very diversity of endowments and strategies creates the possibility for collaboration, because it gives rise to the possibility of identifying potential complementarities among places and building strategies to exploit them. Fostering diversity thus offers a way to promote both regional innovation and collaboration across different communities.

A "compact and networked" approach is broadly correct but must be adapted to local circumstances

The government's "compact and networked" approach is broadly the right one. However, it will need to be implemented in very different ways in very different places. For example, while it clearly points to the need for careful planning of Japan's "downsized" infrastructure, it need not imply a need for strong densification policies across all cities. Lower urban densities can bring environmental, social and economic benefits, as well as costs; the costs and benefits of different strategies for shrinking communities will need to be assessed and managed in specific contexts. Significantly, lower population densities tend to be associated with higher fertility, in Japan and elsewhere, because housing costs are one factor that often prompts families to have fewer children. Some reduction in density would also allow for the provision of more urban green space, something large Japanese cities often lack: indeed Nagoya, Fukuoka and Tokyo have estimated green space

per capita below the minimum level of nine square metres recommended by the World Health Organization (WHO).

Since the economic and environmental benefits of well-planned urban density depend in part on scale, there will be a strong case for trying to ensure that large cities retain fairly dense cores as their populations decline. In smaller towns and cities, though, lower densities could be welfare-enhancing at low cost in terms of productivity or the environment. Moreover, allowing different settlement patterns and lifestyles in different places will be critical to sustaining communities across the country. Yet even here, de-densification will need to be managed. Many of the core principles of compact urban development will need to be observed, even if densities are falling. These include mixed-use, transit-oriented development, careful planning of green space and the avoidance of leapfrog development. The critical point is not that all places should be very dense but that downsizing be managed in ways that preserve the coherence of places, facilitate efficient service delivery and avoid "perforated cities" – patchworks of settled and abandoned areas. There will need to be plenty of local experimentation and adaptation.

The "networked" dimension of the vision should also be approached carefully and in a multi-faceted way. It will, of course, be critical to ensure that central and local actors give due attention to the "soft" dimensions of networking communities, including governance co-operation across administrative boundaries, inter-firm connection in networks and collaboration in service provision (especially public transport) rather than focusing wholly on transport and communications infrastructures. Also important will be identifying ways to utilise and maintain existing infrastructures as efficiently as possible, particularly in view of the fiscal pressures Japan will be facing; big data can play an important role in optimising both infrastructure use and service provision. When it comes to *new* physical infrastructures intended to connect cities, towns and other settlements, the challenge will be to identify the most efficient connections (e.g. eliminating bottlenecks or gaps in existing networks). Given the fiscal constraint, effectively mobilising private finance and expertise will also be important, as will making the most of such resources as big data when evaluating proposals. Senior levels of government, particularly the national level, will also play a role in ensuring collaboration at subnational level and the avoidance of duplicative efforts or unproductive inter-jurisdictional competition.

Cities outside the big three metropolitan areas need to work together

A great deal of attention has recently been focused on the revitalisation of small rural communities, but the challenges may be most daunting in its second- and third-tier cities. Urban and rural places are largely complements, not substitutes, in terms of the consumption opportunities and amenities they offer, as well as their production profiles. Moreover, because some people prefer rural living and because relatively small-scale successes can make a big difference locally in a rural setting, it is likely that many rural communities can and will find paths to a prosperous and sustainable future, even if they are smaller than before. Cities, by contrast, compete with one another, and larger cities typically enjoy important advantages when competing with respect to many urban functions. This suggests that provincial cities, as well as the suburban hinterlands of the major metropolitan areas, may face particular challenges.

The micro-data analysis of urban performance conducted by the OECD suggests that the benefits of agglomeration are already relatively weak in many of these cities and that this weakness may well be linked to fragmented governance arrangements, which

impede co-operation across administrative boundaries. The current policy framework offers several initiatives that could help address these problems. The National Spatial Strategy emphasises the need to strengthen the connections between nearby cities that are losing population in an effort to sustain urban centres capable of offering a full range of urban amenities and services and to strengthen agglomeration dynamics. Recent OECD work on urban growth confirms that cities can indeed benefit from the agglomeration dynamics resulting from such connections and that this can offset some of the competitive disadvantages they may suffer as a result of their small size. Moreover, the analyses also show that successful urban agglomerations tend to generate "lift" effects, raising growth in their hinterlands. That means that the growth of cities outside the Tokyo-Osaka-Nagoya mega-region could help improve performance across much of the country.

This will depend only partly on improved connective infrastructure: at least as important will be better horizontal co-ordination across municipalities and prefectures. Work on urban governance across the OECD highlights the importance of co-ordinating land-use, transport and economic development policies, in particular, at the scale of the functional urban area. That means co-operating successfully across administrative borders. This is not just a matter of collaboration among public bodies: business-to-business connections and links between regional firms, on the one hand, and nearby universities and research institutions, on the other, are critical to knowledge creation, entrepreneurship and innovation. Steps to co-ordinate or even merge local public corporations across municipal lines may also help to sustain service delivery. Efforts to promote horizontal collaboration should thus be reinforced and co-ordinated with national and prefectural infrastructure policies.

The national government can do much to foster such co-operation

Historically prefectural and municipal boundaries in Japan have often been quite "thick", making the kind of horizontal co-operation Japan's cities and localities now need more difficult. Changing this has been an increasingly important priority for policy makers. The system of regional spatial planning is organised around regions that each encompass a number of prefectures, and there are special procedures for planning even across these larger regions, to address connectivity and environmental issues that cross over jurisdictional lines. The Government Headquarters, MLIT and the Ministry of Internal Affairs and Communications have been working to create "central agglomerations of co-operation" – in essence, co-operation contracts among local governments that facilitate policy co-ordination among them and, in many cases, the concentration of key urban facilities or functions in core cities that can then support service provision to the surrounding population. These efforts are welcome and should be reinforced. Earmarked grants may also have an important role in supporting this kind of cross-jurisdictional co-operation, creating incentives for co-operation among prefectures and municipalities that might otherwise tend to see each other as rivals. In many OECD countries, they are used when the services or investments to be financed have positive spillovers that transcend local or regional boundaries.

In Japan, as elsewhere, the dominant trend has been for central transfers to take the form of general-purpose grants, which is consistent with the aims of decentralisation. This should not change, since one of the critical challenges of the revitalisation effort is to stimulate bottom-up initiative and accountability: regions, cities and smaller local communities should not be looking to the centre to determine their futures. Specific grants,

by contrast, should be used sparingly to advance key revitalisation initiatives that might otherwise go un- or under-funded. They should be defined and implemented in a whole-of-government perspective to avoid a situation where different sectoral earmarked grant programmes multiply, confronting regional and local governments with contradictory, confusing or even perverse incentives. Conditional grant schemes often proliferate where such a government-wide perspective is lacking. The result is an erosion of local autonomy, confusion about central priorities and the creation of a plethora of spending programmes, which are hard to monitor and evaluate. The key is striking the right combination of top-down leadership and bottom-up initiative.

The global competitiveness of the major metro areas, especially Tokyo, is a critical priority

The government's concern for rural and regional revitalisation does not imply a lack of concern with the development of Japan's major cities, especially Tokyo, which remains very much the motor of Japan's growth: during 2001-10, the Tokyo metropolitan area contributed almost 45% of Japan's economic growth and accounted for around one-third of total GDP. Sustaining Tokyo's position as a globally competitive metropolis will require improvements to both internal and external connectivity. Key priorities include better connections from the city's two airports to the centre, as well as increased airport capacity, a new maritime port outside the Rainbow Bridge, and new ring roads to reduce congestion in central Tokyo. These are all important concerns – the gateway role of global cities requires that external connectivity be strong – but policy makers cannot afford to focus solely on connective infrastructure and the urban fabric.

A review of Tokyo's strengths and weaknesses in the context of other successful global cities points to a number of other priorities not only for Tokyo but for the urban mega-region extending from Tokyo to Osaka:

- National-level legal, regulatory and fiscal regimes must be conducive to the attraction and retention of global players in fields like logistics, finance and knowledge-creation. The new National Strategic Special Zone for Tokyo, which aims to create "the world's most business-friendly environment", is thus a welcome step. However, it will be critical to ensure that it is more effective than some past initiatives, such as the "Special Zone for Asian Headquarters" launched in 2011. The initial regulatory measures adopted are promising, but it will be important to keep revising deregulation menus in response to the needs of the business community.
- Liveability matters, so steps to ensure adequate *internal* connectivity, as well as environmental quality, urban cultural and recreational amenities, etc., are also critical. There is much that Tokyo can do to make itself more family-friendly, in particular – e.g. by promoting mixed-use development, using floor-area ratio (FAR) bonuses and other such incentives to promote the provision of childcare facilities in central areas, and locating more childcare facilities at or near transport hubs like railway stations. FAR bonuses and other incentives could be used more widely to promote green construction methods and the provision of urban green space. Steps to reduce mobility barriers in urban areas would benefit both the elderly and families with children.
- The international character of the city matters: it must be attractive to high-skilled expatriates from outside. Transforming Tokyo into foreigner-friendly city not only visitors but also foreign residents is an essential element of such an effort. Tokyo has already begun helping skilled foreign workers to find firms in search of their skills and

helping organise support for newly arrived workers and their families at community level. Other major cities could follow suit, for example, by expanding the multi-lingual provision of information for new arrivals about the education and healthcare systems and other local services.

Much can be done to maximise the benefits of the super-high-speed maglev rail line…

Over the coming decades, Tokyo, Nagoya and Osaka will be linked by a new, "linear Shinkansen", running magnetic levitation trains at speeds of more than 500km/hour. This is meant to foster the formation of an urban mega-region of more than 60 million people along the Pacific side of Honshū. It is hoped that competitive synergies will emerge as the international functions of the Tokyo area are linked more closely to the manufacturing excellence of the area around Nagoya and the cultural, historical and commercial functions of the Osaka metropolitan area. However, the speed and extent of this integration should not be taken for granted. A review of international experience with such projects highlights the importance of ensuring that complementary policies are put in place to support this investment.

For policy makers in the Tokyo-Nagoya-Osaka mega-region, this will primarily concern enhancing the environment for innovation, entrepreneurship and venture investment. The new line is unlikely to reduce the cost of shipping goods or to carry enough passengers to create a large, integrated labour market. Its main attraction for firms is likely to lie in providing access to and for highly-skilled employees with a high opportunity cost for their time, such as consultants, researchers and managers. This is less about large-scale labour market integration (though there is likely to be some long-distance commuting by high-skilled workers) than about new opportunities for business-to-business connections – above all, about innovation and investment flows. The benefits of the maglev line will depend greatly on getting complementary policies right, especially those concerned with venture investment and innovation.

…and the 2020 Tokyo Olympics

Something similar may be said of the Olympics: it is difficult to assess their lasting economic benefit ahead of time, but there are clear steps that can be taken to ensure that Japan gets the most out of them. The experiences of other Olympic hosts, as well as Japan's own experiences in 1964 (Tokyo) and 1998 (Nagano), point to some basic lessons. These include: relying as much as possible on existing infrastructure and facilities, upgrading where possible rather than opting for new builds; planning well ahead for the future use of the Olympic venues; and mobilising private finance effectively. In addition, some Olympic investments may have longer-term regeneration potential, particularly when it comes to transport and accessibility in and around Tokyo. There may also be important opportunities to realise other environmental and cultural benefits, by, e.g. designing a Green Games Programme and using the Olympic investments to promote (and showcase) best-practice standards in sustainable construction.

Japan will be the first super-ageing society to host the Games. While it will be desirable to try to limit the volume of new infrastructure to be built for the Games, the Olympics will still require substantial new construction. Ensuring that new infrastructures and facilities are barrier-free and accessible to all will be an important and tangible legacy of the Games. Japan's technological prowess already gives it an edge when it comes to aiding people with mobility and visual problems and other special needs.

Rural is not synonymous with decline

Rural Japan faces daunting challenges in a context of ageing, population decline and continuing urbanisation. Nevertheless, it would be a mistake to overlook its considerable strengths. While rural regions in Japan have tended to grow slowly – like all regions in Japan – they nevertheless exhibit certain strengths when seen in an OECD-wide context. GDP per capita in Japan's predominantly rural regions was about 13.6% above the OECD average for such regions in 2012, and labour productivity in such regions was about 10% above the OECD average for rural regions in 2011. Japan's predominantly rural prefectures have, moreover, enjoyed higher growth in GDP per capita than the OECD-wide average since 2000, and their labour market outcomes have been far better than average in recent years: all of Japan's predominantly rural regions recorded lower unemployment rates and higher activation rates than the OECD-wide averages. Rural regions in Japan also offer many advantages in terms of quality of life.

Rural policy has changed considerably in recent years

For many years, rural development policy was almost synonymous with agricultural policy. This has lately begun to change, however, with the emergence of initiatives like the so-called "sixth industry" programme. "Sixth-order industrialisation" involves the creation of integrated value chains encompassing production, processing, distribution and sales activities by linking producers in agriculture, forestry and fisheries with partners who have expertise in the secondary and tertiary sectors. The name reflects the fact that rural producers of (primary) agricultural commodities are engaged in processing (secondary) activities and distribution/marketing (tertiary) operations. There are also measures to promote urban-rural exchanges like green tourism, children's experience of rural life and welfare farms, to foster collaboration with the medical, welfare and food industries, to promote the consumption of local foods and to support the development of biomass and renewable energy, as well as greater use of information and communications technologies (ITC) in farming and distribution. These are crucial priorities, since improved agricultural productivity – another key priority – could lead to depopulation in many places if it does not coincide with job creation in the non-farm rural economy.

Implementation of sixth-industry approaches is supported by the central government but still depends largely on local vision and initiative. In some cases, this involves increasing value added in traditional sectors, e.g. by developing high-quality or organic agricultural products with distinctive characteristics. In others, it involves linking some local activities to their tourism potential. This is a more promising approach than large-scale resort-oriented tourism. Apart from those places with truly spectacular tourist potential, like coastal resorts in warm climates, many successful tourist sectors are linked to other activities in the region – like wine tours in France or other forms of agri-tourism around the world. This suggests that experimentation with tourism and festivals as part of a regional branding and marketing strategy should be encouraged but that big investments in tourist facilities should be approached with caution and, as a rule, left to the private sector. Finally, some sixth-industry initiatives are decidedly untraditional, being linked to technical innovation or the attraction of knowledge-intensive services. In many OECD countries, rural areas with attractive landscapes and amenities – and especially for those that combine these attributes with good external connectivity – have emerged as attractive locations for start-ups in knowledge-intensive service activities.

The keys to rural revitalisation are local initiative, local assets and a focus on local prosperity

In looking at the revitalisation initiatives undertaken to date, a number of success factors seem to stand out, many of which are consistent with asset-based community development (ABCD) approaches:

- Successful initiatives tend to be locally driven and outwardly focused. External support is not the decisive factor. Local communities actively seek external markets and ideas and welcome outside actors, rather than soliciting subsidies. This points to the role of non-technical innovation in revitalisation efforts, including new marketing methods and new service delivery strategies.
- They are based on local, often highly place-specific assets. Given Japan's demographic and fiscal situation, this is encouraging: local communities need to abandon any expectation of revitalisation on the basis of external action and focus on their own endowments and potential. For local policy makers, this implies a shift of focus from local deficiencies to local assets, both tangible and intangible, and local capacities.
- Social capital matters. A community's capacity for self-organisation is one of the most critical intangible assets, especially when it comes to co-production of services, an increasingly important form of collaboration between municipalities and citizens (e.g. community buses).
- It would appear that the most successful strategies so far are those that focus on prosperity rather than population. Many communities do not expect to return to their previous sizes; they may even shrink further. But they are working to establish a basis for future prosperity that will allow them to attract and retain young people, ensuring that, whatever their size, they will have a healthier and more sustainable population structure.

While the government has a clear policy aimed at avoiding a situation in which large parts of Japan become uninhabited, the prosperity, well-being and access to opportunity of its citizens are the primary concerns. How many people live in rural Japan matters far less than the prosperity and prospects of those who *do* live there. Of course, most settlements require a certain level of population to assure viability, but attracting people to a place is not an end in itself but a means to an end – the end of enabling them to offer good livelihoods and a good quality of life. This must be kept in mind, because many places may well have prosperous sustainable futures but with fewer people – as, for example, when structural change leads to a reduction in the labour intensity of the dominant local industry or when it leads to a shift in specialisation from more to less labour-intensive activities. The experiences of rural communities in places like Canada and Australia demonstrate that communities really can sometimes shrink their way back to prosperity, though the process is never easy and is often painful.

Policies for shrinking places

Even if local revitalisation policies prove extremely successful, the fact remains that Japan's population is set to shrink substantially for decades to come. Many, perhaps most, cities, towns and other settlements will shrink in size. A focus on revitalisation should not lead to a neglect of the policies that will be needed for shrinking places; on the contrary, smart shrinking, capable of sustaining prosperity even as communities grow smaller, will require effective regional planning. The downsizing of infrastructure networks, in

particular, can be both complex and expensive, and it is closely linked in many places to the management of vacant sites in urban areas. To these must be added the service delivery challenges that arise with population decline.

A review of international experience with these issues shows that in some areas, such as designing public transport systems for areas with low population densities, Japan is very much in the forefront and continues to innovate, particularly in fields like demand-responsive transport. In other areas, the experiences of declining European and US cities suggest some important lessons for national and especially local policy makers:

- A "triage" approach to infrastructure management is needed in declining places, particularly with respect to roads and bridges. Transport is an area where savings may be easy, because there is often a great deal of intentional redundancy in networks. Asset-management is critical here. Better and more granular data can help cities and towns take stock of their assets, make better decisions about investment and maintenance, and operate systems more efficiently.
- Policy makers may ask whether redundant infrastructure capacities have alternative uses. This points to the benefits of rationalising such infrastructures and services at a regional scale, rather than municipality by municipality. Some materials may also offer an opportunity to offset decommissioning costs via recycling.
- European and US cities have pioneered a wide range of options for managing vacant sites so as to avoid the creation of visual and environmental dis-amenities and safety hazards. These include urban green infrastructure programmes, unconventional arrangements for allowing entrepreneurs and others to use such sites temporarily and community redevelopment programmes. Effective spatial planning can help to ensure that such initiatives serve to maintain the overall coherence and attractiveness of the urban space. Rural communities in some areas of Japan have already adopted strategies such as these in order to deal with farmland abandonment.

Japan is pioneering a response to policy challenges that others will soon confront

Japan's economic and demographic problems are dramatic, and the challenges they raise for spatial policies and territorial development are daunting. However, they are not insuperable, nor are they unique – other countries are following on the path of ageing and population decline. Where Japan leads, others will follow. It is therefore critical that Japan identifies and implements policies that meet these challenges. With the new Spatial Strategy, the creation of the Headquarters and a wide-ranging new revitalisation programme, the government has made an ambitious start, but the realisation of this vision of a Japan that is older and smaller, but also prosperous will take many years, and there will no doubt be surprises and policy adjustments along the way. It is important to note in this context that Japan's post-war "economic miracle" unfolded in conditions of chronic labour shortage, a situation that led to specific employment and skills-development practices, as well as technological innovations, which differed from those found in more labour-abundant economies. These served Japan well for several decades. While today's challenges are different and new approaches are needed, this history provides a reminder of the country's ability to devise innovative solutions to complex problems and to generate very fast productivity increases in the face of labour-supply constraints. This is a positive legacy which Japan must now recover.

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Chapter 1

Japan's demographic transition and the productivity challenge

This chapter provides an overview of regional trends and challenges facing Japan. It begins with a look at the demographic and macroeconomic context, reflecting in particular on the implications of population ageing and decline for economic policy, especially efforts to enhance productivity. It then turns to an analysis of regional growth performance, inter-regional disparities and other socio-economic outcomes. This is followed by consideration of the economic policy response to demographic change at different territorial scales, from the national to the local, and an examination of the spatial consequences of Japan's restructuring challenge. The primary focus of the discussion is on the interactions among demographic change, productivity performance and the evolution of the country's settlement pattern.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Overview

Japan's future prosperity depends on its success in addressing two enormous and inter-related challenges, which have tremendous implications for the evolution of its economic geography. The first is a process of demographic change that is without precedent in human history in terms of its speed and scale: Japan's population is both ageing and shrinking at an extraordinary rate. The second challenge concerns productivity. After more than two decades of lacklustre economic performance, Japan is in the midst of an ambitious attempt to revive growth, involving changes to monetary, fiscal and structural policies. The link between these two challenges is clear. Demographic change is making productivity performance all the more important in view of the rapidly rising old-age dependency ratio. At present, the working-age population is falling by about 1% per year, and the rate of shrinkage will eventually approach 1.7% per year, so that even productivity growth of 2% or more will deliver very low aggregate or per capita growth. There will simply be no way to sustain high living standards and quality public services in a "super-ageing" Japan unless the country is able to achieve much higher rates of productivity growth than it has experienced in recent decades. Given the public service-delivery challenges that demographic change entails, the productivity of services, in particular, is a central concern.

Japan is not alone in facing both population ageing and population decline. OECD population projections suggest that at least 6 OECD countries will have populations more than 10% below their peak by mid-century and 12 will have elderly dependency ratios[1] in excess of 50%. These processes are further advanced in Japan and they are unfolding faster there than elsewhere, so Japan's response to demographic change is of great relevance to many other OECD members.

The spatial implications of these two challenges are the focus of this review. The dynamics of fertility, ageing and population decline differ greatly between rural and urban areas, as well across cities of different sizes. Most areas face population decline and some are threatened with depopulation, and the pace of ageing is often fastest in those experiencing the sharpest population decline. The productivity challenges are similarly diverse. In some places, the key will be unlocking economies of agglomeration in order to re-establish the dynamism of Japan's major cities as engines of growth and innovation. However, agglomeration is far from the only basis for growth, and many of Japan's smaller towns and rural areas will need strategies to ensure their own prosperity and viability in the decades to come. Service delivery challenges, in particular, will vary according to ageing and density trends.

This chapter examines the broad outlines of Japan's demographic and productivity performance beginning in each case with the national context and then focusing on the spatial aspects of the problem – changing settlement patterns and regional economic performance. It then considers the broad outlines of the policy response to these twin challenges. The chapters that follow then explore the specific policy issues that arise in light of this analysis. Chapter 2 looks at national-level spatial planning and territorial governance, particularly the government's emerging strategy to address these problems

within the framework of the so-called "Grand Design for National Spatial Development 2050" and the new National Spatial Strategy. Chapter 3 focuses on the major metropolitan areas and Chapter 4 on the revitalisation of smaller towns and cities and of rural areas.

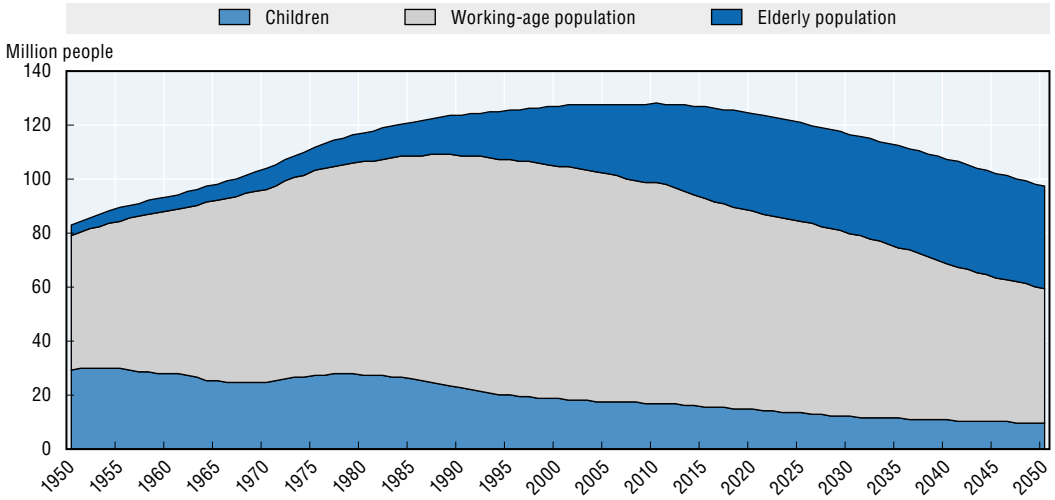
The demographic context

Japan's population is both shrinking and ageing very rapidly

Japan's total population rose rapidly during much of the 20th century, roughly tripling between 1900 and 2000, when it reached 126.9 million. By the end of the century, however, population growth had slowed dramatically, and the population peaked in 2010 at just over 128 million before beginning what is projected to be a sustained and increasingly steep decline (Figure 1.1). At the same time, the population that remains is ageing very rapidly, with the share of the population aged 65+ rising from under 5% in 1950, when the OECD average was about 7.7%, to around 26% in 2014, the highest such figure in the world.[2] The share of over 80s in the population has risen even faster, from just 0.44% in 1950 to 7.3% in 2013, well above the 4.1% figure for the OECD area in 2011. By 2013, Japan's median age had reached 45.9 years, against a world average of 29 (Cabinet Secretariat, 2015) and an OECD median estimated at 38.7 for that year.

As will be seen, both these processes – population ageing and population decline – are unfolding across the whole of Japan, but both the rates of change and the impacts vary greatly from place to place, resulting in significant changes to both labour markets and the settlement pattern. On current projections, the government anticipates that Japan's population will fall by about 23-24% between 2010 and 2050, with the elderly (age 65+) share of the population standing at roughly 40% at the end of the period. The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) projects that more than 60% of the inhabited grid squares in the country will lose more than half their population by 2050; 19% are expected to become uninhabited. By contrast, only 2% are projected to experience population growth (Ministry of Land, Infrastructure, Transport and Tourism, 2014). If fertility does not increase, the projections point to a sharper decline, to perhaps 86 million in 2060 and 43 million early in the next century.[3]

Figure 1.1. **Japanese population and age structure, 1950-2050**



Source: OECD (2015a), "Historical Population Data and Projections (1950-2050)", *https://stats.oecd.org/Index.aspx?DataSetCode=POP_PROJ* (accessed 16 October 2015).

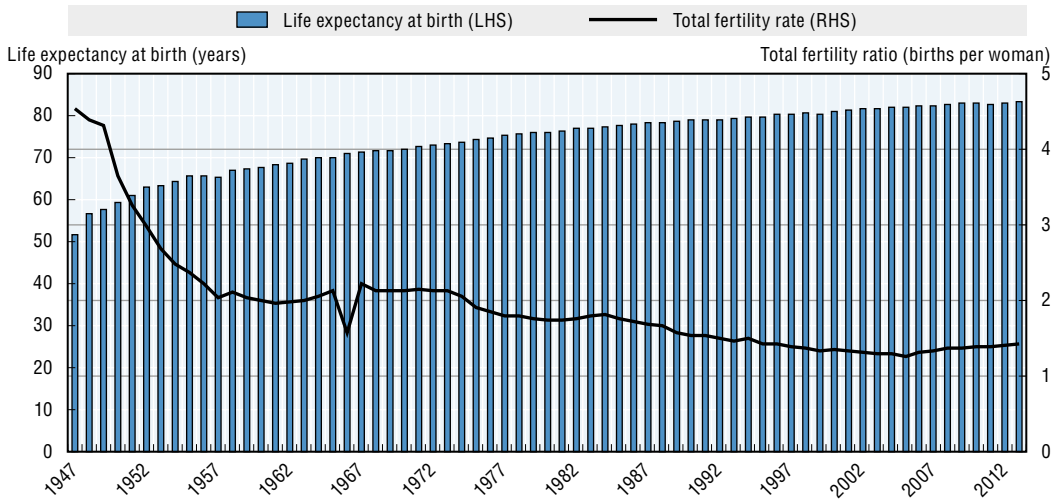
StatLink *http://dx.doi.org/10.1787/888933324391*

Population decline and population ageing in Japan reflect the interaction of two factors: fertility and longevity (Figure 1.2).

- The main factor underlying Japan's rapid demographic decline is low fertility. The total fertility ratio (TFR) in Japan fell sharply in the early 1950s, from a peak of almost 4.5 during the post-war baby boom. From the mid-1950s until about 1974, it fluctuated near or just above replacement rates (2.00-2.16), but after that it began a sustained decline, dropping to 1.26 in 2005 before recovering somewhat to 1.42 in 2014. Kono (2011) observes that, even if fertility returned to replacement levels immediately, the population decline would continue for a further 50-60 years before stabilising at around 110 million.
- The collapse in fertility has coincided with an extraordinary increase in longevity. Life expectancy at birth rose from just under 51.68 years in 1947 to 83.48 years in 2013 and is now the highest in the OECD for both men and women. Such a rapid increase in life expectancy enabled Japan to sustain overall population growth long after the birth rate had fallen off. Though an extraordinary achievement in terms of human welfare, such longevity, when set alongside low fertility, implies a rapidly rising old-age dependency ratio.

Figure 1.2. **Longevity and fertility in Japan**

Life expectancy at birth and the total fertility ratio



Source: OECD (2015b), "Population", *http://stats.oecd.org/Index.aspx?DatasetCode=POP_FIVE_HIST*, (accessed 16 October 2015); information provided directly by the Ministry of Health, Labour and Welfare (MHLW).

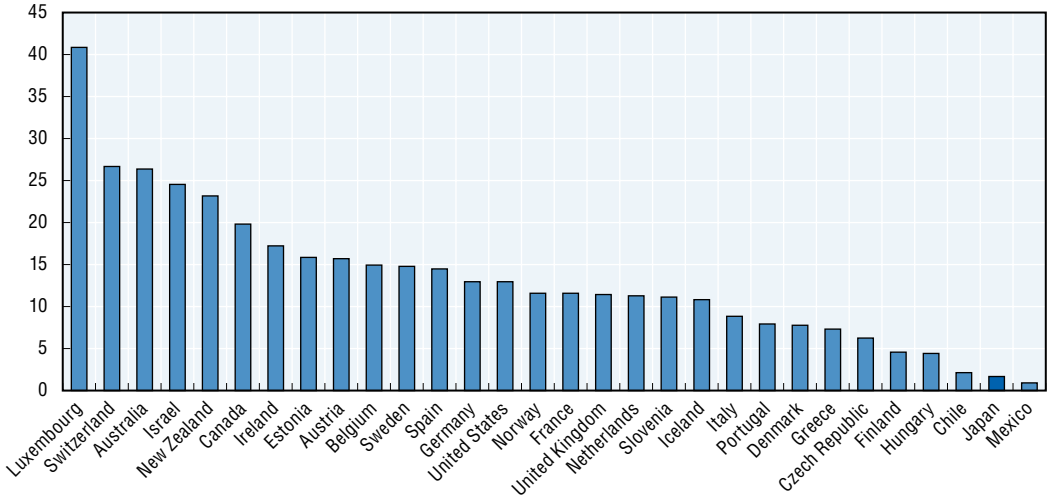
StatLink *http://dx.doi.org/10.1787/888933324406*

In principle, migration constitutes the third major driver of population dynamics in a country. In Japan, however, its impact has been negligible. Both emigration from and immigration to Japan have been very low since 1945.[4] Japan's foreign-born population was just under 1.7% of the total in 2010, far below the levels found in most OECD countries (Figure 1.3). Although it experienced labour shortages during the high-growth decades of the late 20th century, Japan chose not to rely on foreign labour. Instead, it pursued automated production, buttressed by specific forms of subcontracting and by employment systems that emphasised multi-skilling and teamwork rather than narrow specialisation (Fujimoto, 2013a, 2013b).

Rapid population ageing is common across the OECD (OECD, 2015c) – the elderly dependency ratio has risen in all OECD countries over recent decades – but it is more advanced in Japan than elsewhere (Figure 1.4), owing to ultra-low fertility over an extended period, exceptional longevity and much more restrictive approaches to immigration.

Where Japan is now leading, many others will follow (Figure 1.5). Many countries are also experiencing depressed fertility levels and overall population decline. The drop in fertility in Japan has been far more pronounced than in many western countries, but it is not unique in East Asia: the People's Republic of China, Korea and Chinese Taipei and have all experienced sharp declines from very high to very low fertility, over even shorter periods (Kono, 2011).[5] Delayed marriage, falling infant mortality, and anti-natalist policies in some countries have all played a role, as has rising female labour force participation in the absence of the institutions, policies and social conventions needed to support women combining careers and child-rearing. Policy has been slow to respond in part because pro-natalist policies have traditionally been all but unknown in East Asia, which was long seen as "a region of limited land, scarce natural resources and overpopulation" (Kono, 2011:42).

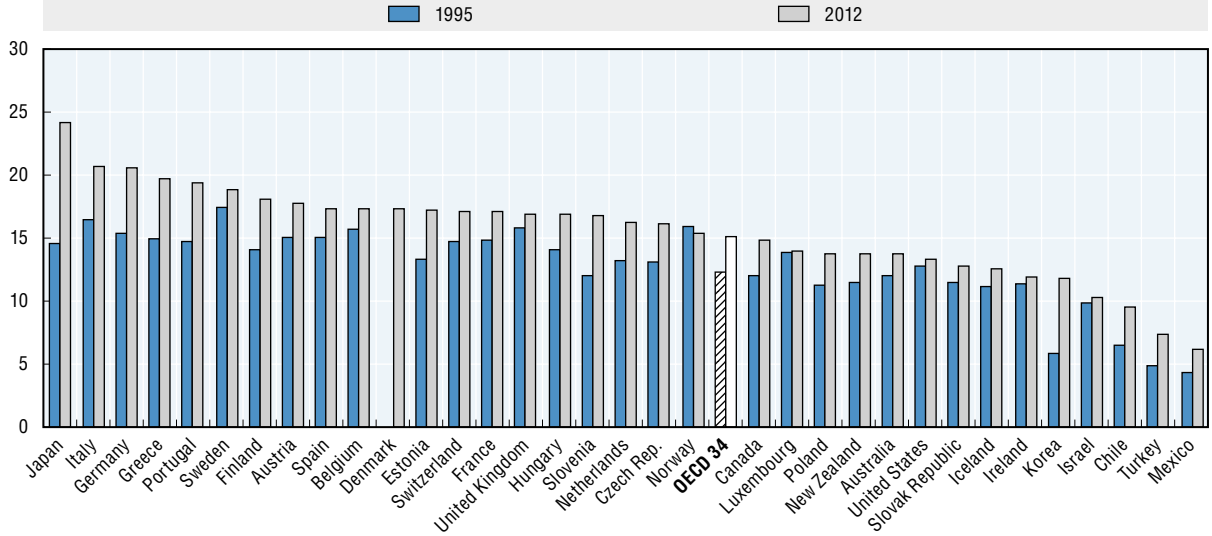
Figure 1.3. **Share of foreign-born residents in total population, 2010**



Source: OECD (2015b), "Population", *http://stats.oecd.org/Index.aspx?DatasetCode=POP_FIVE_HIST*, (accessed 16 October 2015).

StatLink *http://dx.doi.org/10.1787/888933324411*

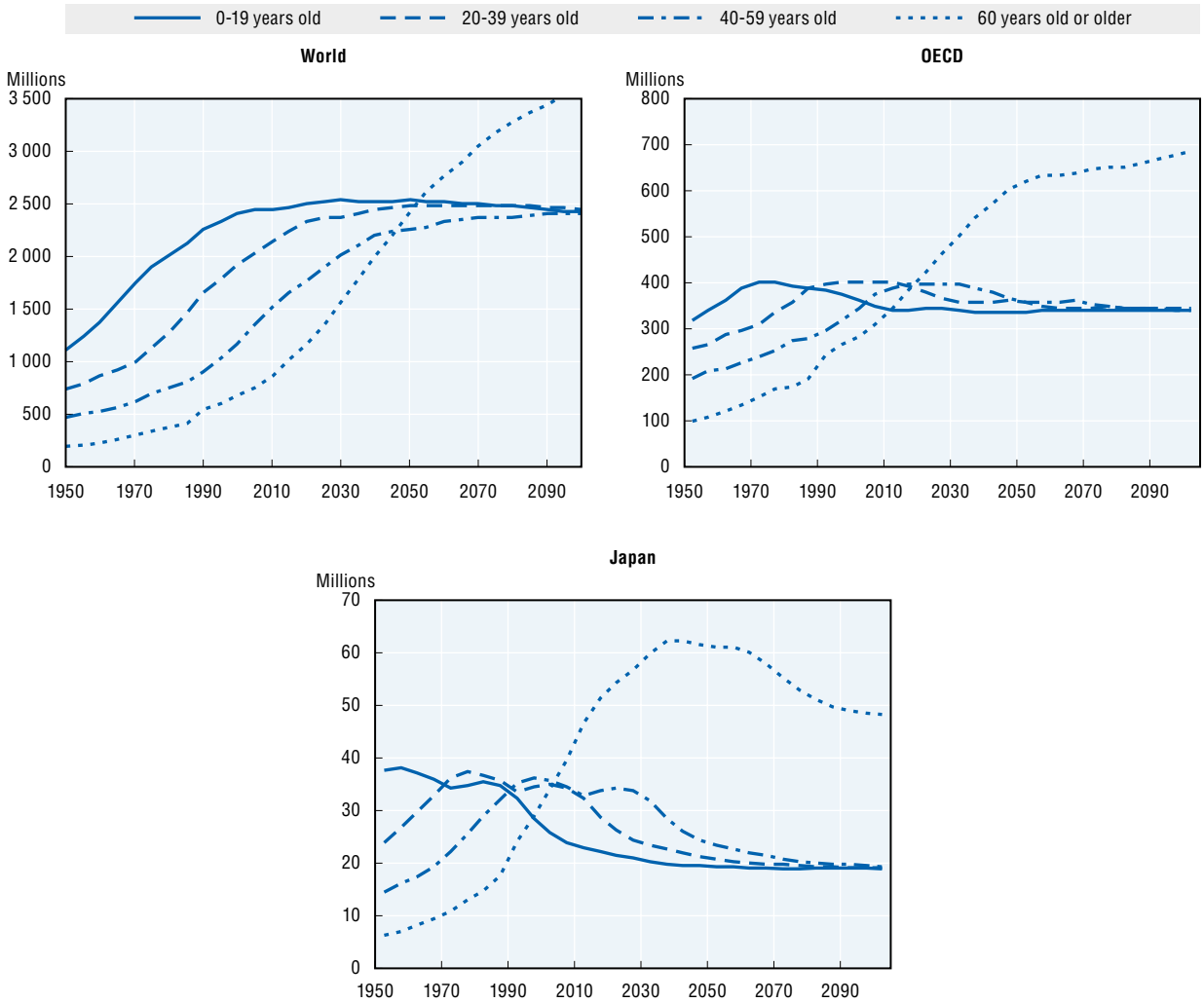
Figure 1.4. **Elderly population and total population in OECD countries, 1995 and 2012, %**



Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

StatLink *http://dx.doi.org/10.1787/888933324429*

Figure 1.5. **Population estimates and projections by age group, 1950-2100**



Source: OECD (2015c), *Ageing in Cities*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264231160-en*; OECD calculations based on United Nations Department of Economic and Social Affairs, Population Division (2010), *World Population Prospects: The 2010 Revision*, United Nations, New York, *http://esa.un.org/unpd/wpp/unpp/panel_indicators.htm* (accessed 30 September 2014).

StatLink *http://dx.doi.org/10.1787/888933324431*

Japan's population is on the whole highly concentrated…

With 127.3 million inhabitants in 2013, Japan is the second most populous country in the OECD; in terms of surface area, it ranks ninth. This makes it the third most densely populated OECD member, with 341 inhabitants per square kilometre, more than double the OECD average. Most Japanese live in places that are far denser than the average, though. Almost 58% of Japanese live in prefectures with population densities in excess of 500 persons per square kilometre; nearly 45% are in prefectures where densities exceed 1 000 persons per square kilometre – comparable to the densities found in urban areas like Seattle, Rotterdam or Bristol. Five of the 20 densest functional urban areas (FUAs) in the OECD are in Japan. Altogether, just over half the population live in FUAs that (even with rural hinterlands included) occupy about 6% of the national territory.

Not surprisingly, therefore, Japan, ranks high on indicators of concentration of population; it was eighth on the OECD's population concentration index in 2010

(OECD, 2014).[6] In fact, this probably understates the case, because the index is computed at the level of TL3 regions, without reference to *where* those regions are in a country. In OECD countries with higher levels of concentration, like Australia and Canada, the largest centres of population tend to be distant from one another and spread across the national territory. In Japan, by contrast, the largest concentrations are clustered in the centre of the main island of Honshū. Among the larger OECD countries, probably only Korea and the United Kingdom might be comparable. The large conurbations centred on Tokyo, Osaka and Nagoya are home to almost half of Japan's population, though they occupy only 5.2% of the national territory and occupy a stretch along the Pacific side of the island that is only about 500 km long.

...and the concentration process continues

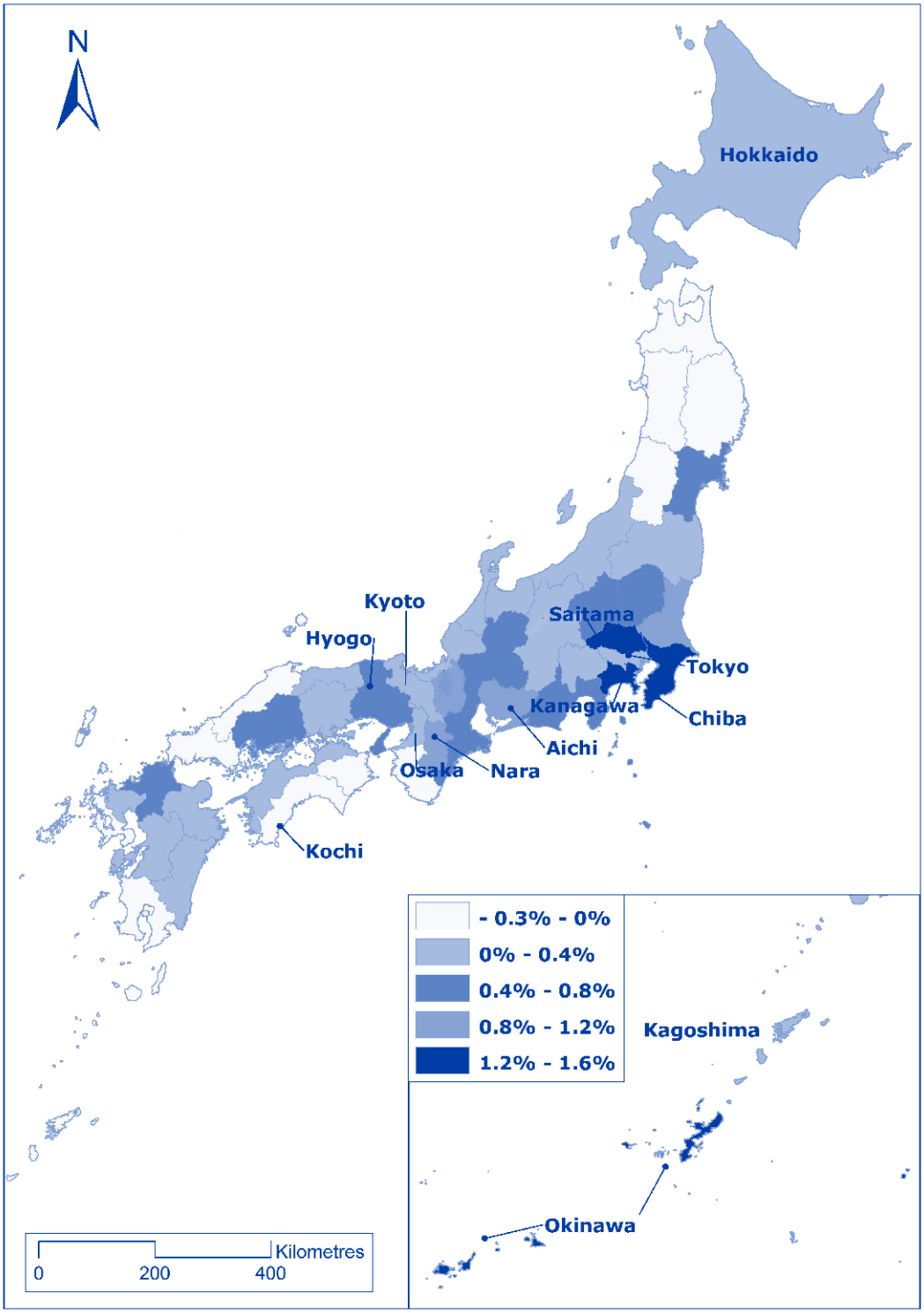
The data for 1970-2010 show how Japan's population has continued to concentrate on the Pacific side of the island of Honshū (Figure 1.6). The population growth has been fastest around Tokyo and, to a lesser extent, around Osaka, Nagoya and Kyoto. A number of prefectures are less populous than they were in 1970. This has resulted in growing overall concentration of population. Since the largest cities tend to have lower birth rates, this has been a result of migration rather than natural increase: the prefectural-level data on internal migration and population densities for the period from 1990 to 2012 show that people were moving from less dense to more dense places over the period and that this trend was significantly more pronounced after 2000 than before (Figure 1.7).[7] A far larger proportion of Japanese regions are now experiencing net outflows than is the case in other large OECD countries, and only a handful (slightly more than 20%) have been experiencing net inflows. The gross flows are not dramatic, though. In any given year, only about 1.8-2.0% of Japanese move between prefectures, which is close to the OECD average for movement among TL3 regions. However, in context of demographic decline, such shifts are keenly felt in sending regions, particularly given that it is younger people who are most likely to move.

...yet the rural population is unusually remote

High concentration of population entails both costs and benefits, but it is complicated in Japan's case by the fact that, largely owing to its topography, Japan's rural population is unusually remote from the major centres of population. The four main islands of the archipelago (Hokkaidō, Honshū, Shikoku and Kyūshū) include a good deal of mountainous terrain that host a large number of very small settlements (hamlets and villages) with limited accessibility, and a significant minority of Japanese live on the 419 smaller inhabited islands. As a result, Japan, though highly urbanised, has more citizens living in remote rural regions (7% of the population), as defined by the OECD's regional typology (Box 1.1), than in rural areas close to cities (5%). This is a characteristic Japan shares with only five other countries.[8] As the population shrinks, therefore, the challenges facing rural Japan, particularly in terms of service delivery and connections to the rest of the economy, may prove to be far harder to address than they would be in a country where rural dwellers were concentrated closer to the major cities.

The demographic transition Japan is now experiencing has tended to reinforce this polarisation of the settlement pattern between high-concentration urban areas and remote rural places. Japan's intermediate and rural regions experienced declining population during 1995-2013, as did most of its major urban areas (see Chapters 3 and 4 for details). Moreover, although both proximate and remote rural regions lost population overall, the

Figure 1.6. **Population change by prefecture, average annual growth, 1970-2010**

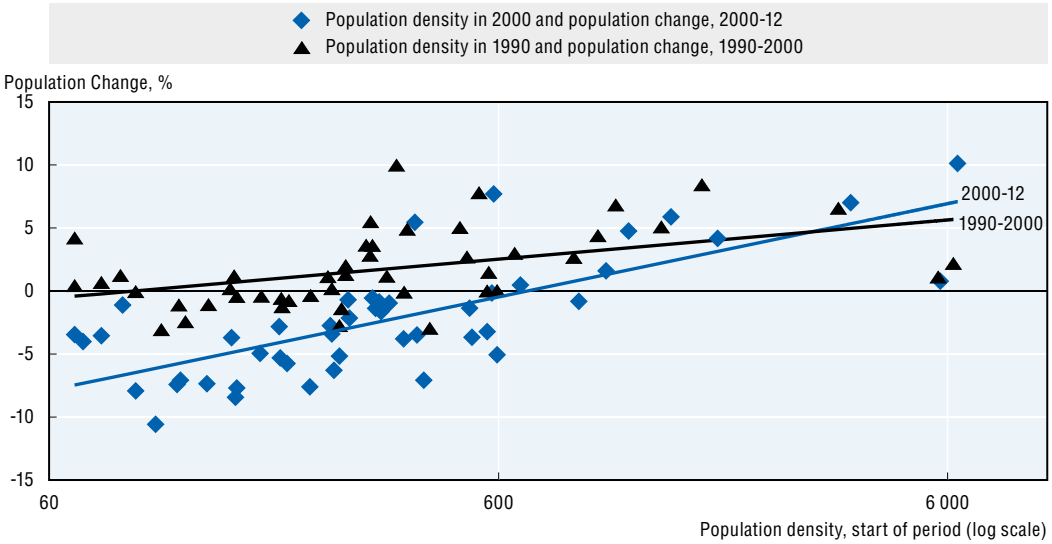


Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

Figure 1.7. **Initial population density and population change, 1990-2012**

Japanese TL3 regions (prefectures)



Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en*, (accessed 16 October 2015).

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Box 1.1. **The OECD regional typology**

The OECD classifies TL3 regions as predominantly urban, predominantly rural and intermediate. This typology, based on the percentage of regional population living in rural or urban communities, is not as fine-grained as many national definitions but it allows meaningful comparisons among regions of the same type and level. Since national definitions vary, comparisons based on national figures can mislead. The regional typology is based on three criteria.

The first identifies rural communities according to population density. A community is defined as rural if its population density is below 150 inhabitants per square kilometre (500 inhabitants for Japan to account for the fact that its national population exceeds 300 inhabitants per square kilometre).

The second criterion classifies regions according to the percentage of population living in rural communities. A TL3 region is classified as **predominantly rural**, if more than 50% of its population lives in rural communities and **predominantly urban**, if less than 15% of the population lives in rural communities. If the share of population in rural communities is between 15% and 50%, it is categorised as **intermediate**.

The third criterion is based on the size of the urban centres. Accordingly, a region that would be classified as rural on the basis of the general rule is classified as intermediate if it has an urban centre of more than 200 000 inhabitants (500 000 for Japan) representing no less than 25% of the regional population. A region that would be classified as intermediate on the basis of the general rule is classified as predominantly urban if it has a urban centre of more than 500 000 inhabitants (1 000 000 for Japan) representing no less than 25% of the regional population.

Predominantly rural regions are sometimes further subdivided into remote rural regions and rural regions close to a city on the basis of the driving time needed for at least half of the population in a region to reach a populated centre of 50 000 or more inhabitants.

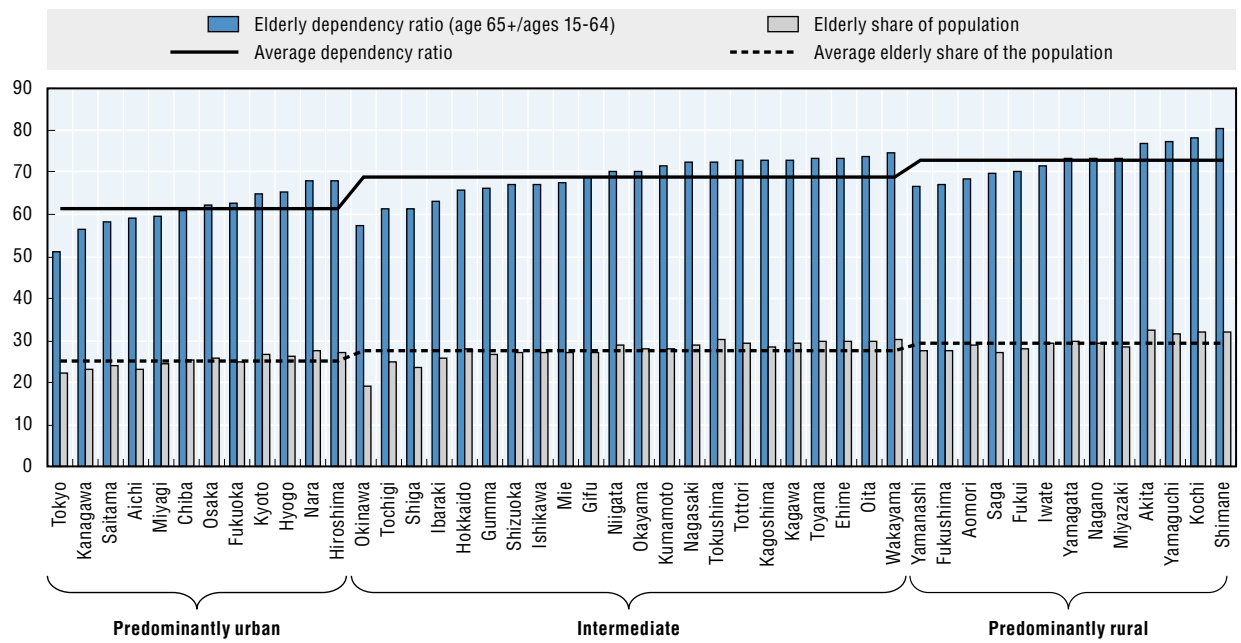
Source: OECD (2013a), *Regions at a Glance 2013*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/reg_glance-2013-en*.

contraction was more severe in rural remote regions, which recorded an average annual change in population of -0.45%, than in rural regions close to cities (-0.34%). While a small number of rural communities have devised strategies for attracting new inhabitants and have begun to grow again (see Chapter 4), the nation-wide picture is overwhelmingly one of rural-to-urban migration.

Rural areas are also ageing faster

Ageing has also proceeded further in rural areas. Examining Japanese prefectures in light of the OECD regional typology, which classifies regions into predominantly urban (PU), intermediate (IN), predominantly rural and close to a city (PRC) or predominantly rural remote (PRR), clarifies a number of things about the pattern of ageing. First, as one might expect, the elderly dependency ratio of the population rises with rurality: in 2012, it was lowest in PU regions, higher in intermediate and proximate rural regions (in that order) and highest in rural remote regions (Figure 1.8). The same pattern holds true with respect to the ratio of elderly to working-age population, except that the differences were far greater, owing to the fact that urban places tend to have lower fertility and rural places higher. This may be expressed more simply when inverted: the working-age share of the population tends to be highest in predominantly urban regions and lowest in remote rural regions. This is in fact the typical pattern for OECD countries, but the gap is extremely wide in Japan: only three other OECD members have greater differentials in the dependency ratio between predominantly rural and urban regions (Figure 1.9). Moreover, the rural-urban gap in dependency ratios appears to be growing more pronounced. The rise in the elderly dependency ratio between 1990 and 2012 was lowest in PU regions, somewhat greater in intermediate regions and highest in rural regions.

Figure 1.8. **Ageing indicators for Japanese prefectures**



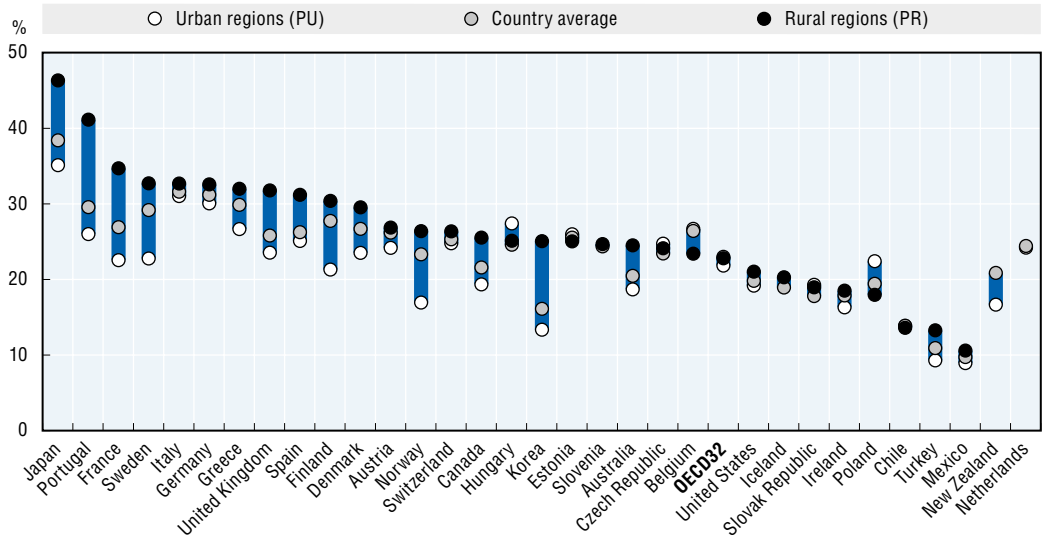
Note: The elderly dependency ratio is defined as the ratio of elderly to working-age people. PU=predominantly urban; IN=intermediate; PRC=predominantly rural, close to a city; PRR=predominantly rural remote. The coloured lines above each series show the average values for each category.

Source: OECD (2015e), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en*, (accessed 10 September 2015).

StatLink *http://dx.doi.org/10.1787/888933324450*

Figure 1.9. **Elderly dependency rates, 2012**

Country averages and averages for urban and rural regions within countries



Note: The elderly dependency ratio is defined as the ratio of elderly to working-age people. Latest available year 2011 for Australia and the United States.

Source: OECD (2013b), *How's Life? 2013: Measuring Well-being*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264201392-en*.

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Because the regional typology can only classify prefectures by predominant settlement pattern, it is worth looking also at Japan's functional urban areas (FUAs), as defined in OECD (2012a). The picture here is the same: in 2010, the elderly share of the population was 6.5 percentage points lower in the 76 FUAs with populations of 50 000 or more than in places outside of these urban areas, although elderly dependency ratios were rising strongly in both FUA and non-FUA areas, up almost six percentage points over the course of a decade.

Box 1.2. **Urban data sources for this review**

For statistical purposes, OECD countries define cities in different ways; even the definition of urbanisation and the urbanisation rate is not uniform across countries. In most OECD economies, the available official statistics are based on cities as administrative units. However, this can create problems with respect to comparisons across – or even within – countries, since the relationship between a city defined by its administrative boundaries and a city defined in terms of urban construction, settlement patterns and labour market flows can vary quite radically. In some cases, the two more or less coincide; in others, a large conurbation – effectively, the city defined as a socio-economic entity rather than an administrative one – can encompass hundreds of separately constituted municipalities (OECD, 2015f). For this reason, some countries define statistical metropolitan areas, based on settlement patterns and economic (usually commuting) flows. In an effort to foster greater comparability within and across countries, the OECD, in collaboration with EC and Eurostat, has developed a new approach to classifying urban areas with the aim to better monitor urban development within and across countries. The method adopted is used to define the functional urban areas (FUAs) referred to in this review; it is described in detail in Chapter 3 (Box 3.1). The OECD's Metropolitan Database covers the (275 convergence here) FUAs in the OECD area with populations in excess of 500 000. These FUA data form the basis of much of the analysis in chapters 2 and 3 of this review. However, the OECD-defined FUAs do not correspond to existing statistical units in any

Box 1.2. **Urban data sources for this review** *(cont.)*

OECD country, so the time period and range of variables in the database are limited. It is therefore necessary to supplement the FUA data with other sources.

This review therefore considers developments in urban Japan in three ways:

1. In presenting overall trends and challenges, it relies chiefly on prefectural-level data, because they cover the whole country and because of the greater coverage they offer in terms of both time and range of indicators. At times, it considers developments in rural and urban areas on the basis of the typology presented in Box 1.2 above, particularly when making cross-country comparisons.
2. In looking at the three main metropolitan areas, centred on Tokyo, Osaka and Kyoto, the review looks at times at the Metropolitan Areas defined by Statistics Japan. These do not correspond to the OECD-defined FUAs, which are based on functional labour markets. Because they are constructed on the basis of prefectures, they permit the use of the rich body of prefectural-level data to analyse these metropolitan areas.
3. Where reference is made to the term FUAs, the OECD Metropolitan Database is employed. From a methodological point of view, this is the best available definition of cities in Japan but, as noted above, the data coverage is limited. In Chapter 2, the micro-data analysis presented involves the use of the FUA boundaries in conjunction with individual-level data.

Although each of these definitions differs from the others, the findings presented here tend to reinforce one another, giving confidence that the overall picture of urban trends does not depend on the selection of one definition or another.

The consequences of demographic change

Japan's demographic transition will create new economic, social and service-delivery challenges

The economic consequences of demographic change are myriad and complex (Table 1.1). The anticipated effects include shrinking domestic markets and the loss of economies of scale in some activities, as well as the fiscal impact of increased age-related spending and rising dependency ratios. On the positive side, some anticipate that population decline in the OECD's most densely populated large country could create opportunities for more space-intensive activities, more flexibility in land use, less congestion, lower housing costs and, in some respects, less environmental pressure. Many outcomes are uncertain, since what Japan is experiencing now is without precedent in recorded history: such a contraction of population in the absence of a major epidemic or prolonged war has never occurred anywhere, let alone in conjunction with the rapid population ageing that is now under way.

One thing that does seem to be clear, however, is that the economic consequences of ageing are not a given: they are in large measure determined by policy choices. In a wide-ranging cross-country study, Oliveira Martins et al. (2005) concludes that many of the apparent negative economic consequences of ageing result not so much from the ageing process itself as from the sometimes perverse interactions between ageing and existing distortions, most notably labour markets and pension systems that encourage early withdrawal from the labour force. The economic impact of ageing thus depends in large measure on how longevity gains are managed. Well-articulated and complementary reforms to support, among other things, healthier ageing, longer careers, more efficient

healthcare provision, etc., are more likely to offset the impact of ageing and manage longevity than piecemeal approaches that treat particular problems in isolation.

Table 1.1. **Possible consequences of demographic change**

	Potential benefits and opportunities	Potential costs and challenges
Population ageing	High life expectancy. Demand for goods and services and new market opportunities ("silver economy").	Rising burden of pensions and age-related services. Shrinking labour force relative to population. Less entrepreneurship and innovation. Less demand for "non-silver" goods and services.
Population decline	Less congestion. Opportunities for space-intensive activities. Decreasing environmental pressure. Flexibility in land use. Lower housing costs.	Loss of tax base. Shrinking labour force. Smaller domestic market. Challenges to efficient service delivery.

Source: Author's elaboration.

Some economic impacts, however, are clear and are already being felt. The most obvious and immediate are a shrinking labour force and rising elderly dependency ratios. While total population grew until 2010, the working-age population has been shrinking in absolute terms for two decades and as a share of the population for somewhat longer. Moreover, the share of older cohorts in the working-age population has been rising steadily, a harbinger of further increases in the old-age dependency ratio to come. By 2013, there were fewer than 2.5 people of working-age for every one above the age of 65, down from more than 11 in the 1950s. By 2050, this ratio is projected to fall below 1.33. Fortunately, Japan has unusually high employment rates – 71.7% of the working-age population was employed in 2013, as against an OECD average of 65.3%. Even so, in 2013 there were only 1.77 working-age people in employment for every person above the age of 65. This compares to a 2011 OECD average of just under three.[9] This, moreover, considers only the old-age dependency rates – not the (shrinking but still significant) share of children in the population. While these figures also omit the contribution made by older Japanese who remain active – and there are many of these – it remains the case that Japanese workers must shoulder an increasing burden if the country is to sustain the growth of per capita living standards with a rapidly growing inactive population.

Falling population densities will also create challenges for efficient service delivery, especially – but not only – in rural areas. It is already the case that, in many rural areas across the OECD, especially the more remote ones, certain services are either unavailable or are available only at considerably higher cost and/or lower quality than in urban locations (OECD, 2010a). In part, this simply reflects the obvious potential of larger places to support both a wider variety of services and a greater number of entities that provide any particular service. Distance from major urban centres makes all forms of connectivity more expensive; it also imposes a similar burden within rural areas because of extensive geography and low population densities. This is particularly the case in remote rural areas of Japan, above all in the mountains and on small islands. Urban densities can also facilitate connectivity, whereas the dispersion of people in rural regions tends to make it harder to achieve. While some technologies (ICT) have reduced the distance-related challenges facing rural regions, most of the ways rural people exchange goods, services and ideas are still subject to distance penalties.

Even setting aside transport costs, small – and falling – populations in many places will make it harder to achieve economies of scale in the production of many goods and services, including public services. Shrinking cities and towns will also face important challenges,

particularly where declining demand makes it difficult to maintain urban infrastructures or to operate them efficiently. Under-use of water and wastewater infrastructure, for example, can make for environmental and health hazards; grid-bound infrastructure cannot easily be thinned out in response to population loss in many cases, because the integrity of the grid as whole must be maintained and a certain level of usage must be maintained for the system as a whole to function (Hoornbeek and Schwarz, 2009).

Demographic change may also affect entrepreneurship and innovation

One important issue concerns whether and to what extent the ageing of the population and the workforce will make the Japanese economy less dynamic when it comes to innovation and entrepreneurship – the latter, in particular, being an area in Japan's recent performance that has been lacklustre (OECD, 2015g). The issue is much debated in countries with rapidly ageing populations. On the demand side, population ageing presents enormous opportunities for innovators and entrepreneurs in such fields as medicine, construction, transport and finance, to name but a few. The question is how demographic change will affect the supply of entrepreneurship and innovation. The evidence from many countries suggests that older individuals are less likely to become entrepreneurs, aside from self-employment, and that they are less likely to found businesses based on process or product innovation (Wadhwa, Freeman and Rissing, 2008; Wadhwa et al., 2009; Botham and Graves, 2009; Colovic and Lamotte, 2012; Stangler and Spulba, 2013; Kautonen, 2013). On the positive side, several studies point to higher success rates for older entrepreneurs, whose greater experience, higher initial wealth and more extensive networks in many cases help them to succeed. Third-age entrepreneurs leading high-growth firms are not less innovative than younger high-growth entrepreneurs, though older people are less likely to found such high-growth ventures (Accenture, 2012; Wadhwa Freeman and Rissing, 2008; Kautonen, 2013; Botham and Graves, 2009). Haga (2014) highlights the potential of third-age entrepreneurship in rural settings, specifically with reference to Japan.

These findings are not wholly surprising. The opportunity cost of time increases with age, and one would expect this to make older individuals less attracted to activities that yield rewards further in the future and with higher levels of associated risk, as opposed to activities that generate immediate and riskless returns, such as salaried employment (Lévesque and Minniti, 2006). In a recent study for the OECD, Kautonen (2013) highlights the distinction between "push" and "pull" factors motivating entrepreneurs. They may be pushed out of the traditional labour market by such factors as age-discriminatory practices in recruitment, promotion and training or poor labour market prospects following a redundancy. On the other hand, they may be drawn into entrepreneurship because it offers greater potential rewards (whether pecuniary or otherwise), a more flexible alternative to conventional employment and/or a better work-life balance. With a shrinking and ageing labour force, the push factors are likely to grow weaker over time. Kautonen concludes that the propensity of individuals to seek to own and grow a business rises with age up to about 40 and then declines – rather sharply after about 50. By contrast, an individual's propensity to opt for self-employment, or even to be pushed into it, rises with age.

Kautonen's most critical findings for Japan touch on two points. First, there are enormous variations across countries in third-age entrepreneurship, which is particularly widespread in such countries as Iceland, the United States. Secondly, these differences are at least in part the product of public policies. In other words, central and local governments can do much in order to affect the relationship between ageing and entrepreneurship.

Chapter 4, in particular, will look at the ways in which the Japanese authorities can promote entrepreneurship and innovation at all ages, especially outside the largest cities.

The implications for public finances are worrying

Demographic change has enormous implications for public spending. Indeed, it is one of the major factors underlying Japan's public finance problems. Pensions, health-care and long-term care, which are mainly focused on the elderly, now account for about 90% of public social spending, which, in turn, is the fastest-growing expenditure item in the state budget. Since 1990, social security-related expenditures have almost tripled, while all other major categories of spending[10] except debt service have shrunk. Social security spending in 2015 accounted for 32.7% of total expenditure and 55% of general expenditures,[11] up from 17.5% and 32.8%, respectively, in 1990. These figures chiefly concern current spending and they must, of course, be considered alongside the impact of population ageing on tax receipts, which the finance ministry already recognises as a substantial cost to the budget.

Demographic change will also entail substantial expenditure on infrastructure, for several reasons. First, as will be seen, the authorities anticipate significant investment in new infrastructures and in the upgrading of existing infrastructures to help adjust the country's settlement pattern to a far smaller population. Secondly, many facets of public infrastructure are to be adapted to the needs of much older population. And, thirdly, even networks for which demand may fall will entail some costs. Downsizing network infrastructures can be very costly, but failure to shrink them efficiently can also create problems and can be very costly in the long run. For example, the under-use of water networks can lead to corrosion of pipes and possible contamination (Hoornbeek and Schwarz, 2009). Many areas will confront the costs associated with such under-used infrastructures, as well as housing and building vacancies. More generally, they will confront rising costs for service delivery in places where population declines erode economies of scale (i.e., the fixed costs of service delivery, which are often substantial, will be shared across fewer clients). Finally, there is likely to be expenditure in some areas to address the environmental costs of depopulation: in rural places where local communities are responsible for things like the management of forests and watercourses, the abandonment of some settlements could otherwise entail significant environmental damage (Odagiri, 2012, 2015).

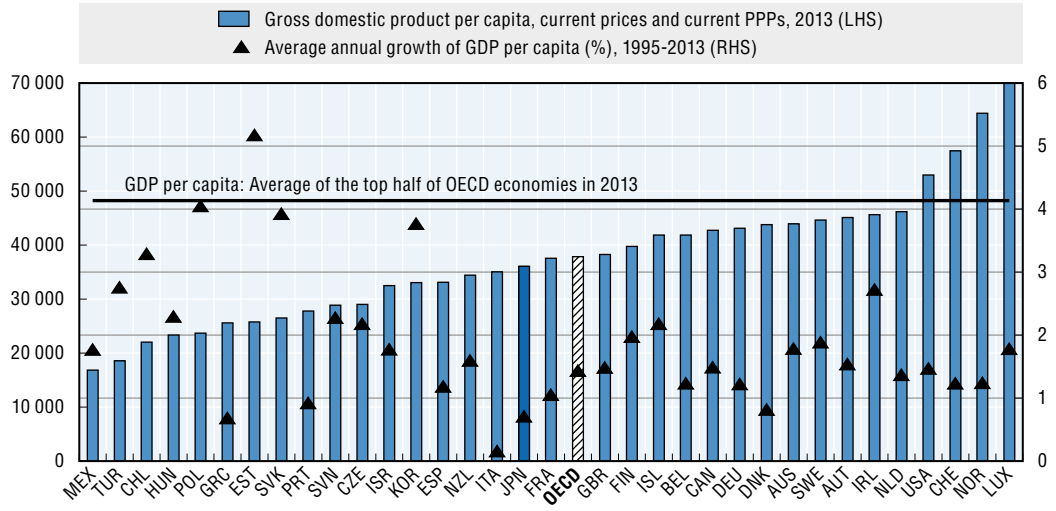
The economic context

Growth and productivity performance has long been disappointing

Economic growth has been sluggish for roughly a quarter-century. By 2014, per capita income had fallen from roughly equal to the average of the top half of OECD countries in the early 1990s to a level 14% below that average (Figure 1.10). The collapse of the asset price bubble in the early 1990s was followed by an extended period of corporate restructuring and a banking crisis. While the worst of this process unfolded during the mid-to-late 1990s, Japan's performance has remained weak since the turn of the century. Over the period 1995-2013, real growth of GDP per capita averaged just over 0.8%, the third-lowest growth rate in the OECD, and in 2014, the economy slipped into recession for the fourth time since 2008 (OECD, 2015h). Though the economy rebounded again, growth remained subdued, with the OECD in mid-2015 projecting real GDP growth of just about 0.7% for the year.

Figure 1.10. **Gross domestic product per capita**

USD, current prices and current PPPs



Source: OECD (2015i), *OECD Compendium of Productivity Indicators 2015*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/pdtvy-2015-en*.

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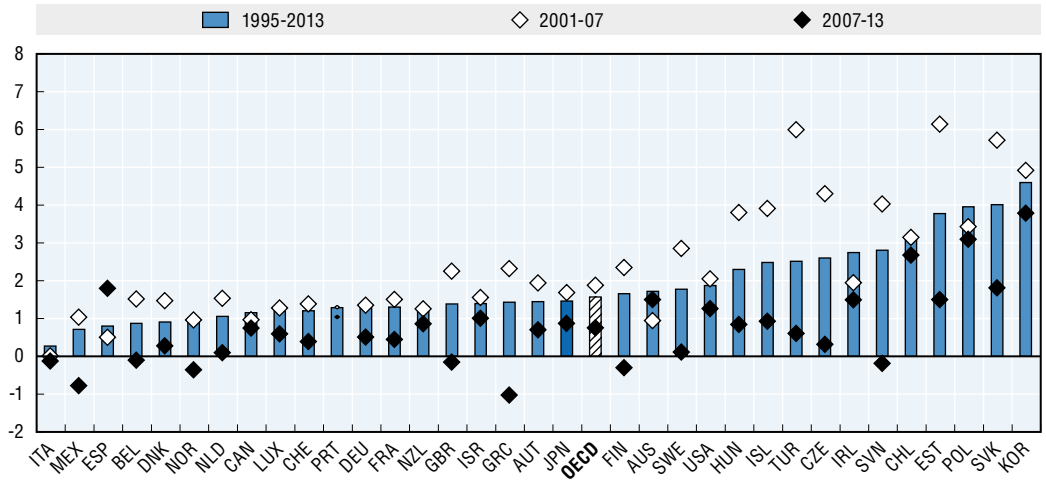
The good news here is that Japan's productivity performance, though not outstanding, has been somewhat better than its growth performance. During 1995-2013, Japan ranked third from the bottom among OECD economies in the growth of GDP per capita. However, it ranked 16th in terms of the growth of labour productivity over the period (Figure 1.11) – hardly spectacular but still relatively close to the OECD average. In the most recent period (2007-13), productivity growth was even a little above the OECD average. However, it was far lower in 2007-13 than in previous periods, so the change in Japan's relative position was a result of greater deterioration elsewhere following the crisis rather than an acceleration of productivity growth in Japan.

Figure 1.11. **Growth of labour productivity, 1995-2013**

GDP per hour worked, total economy, percentage change at annual rate



Source: OECD (2015i), *OECD Compendium of Productivity Indicators 2015*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/pdtvy-2015-en*.

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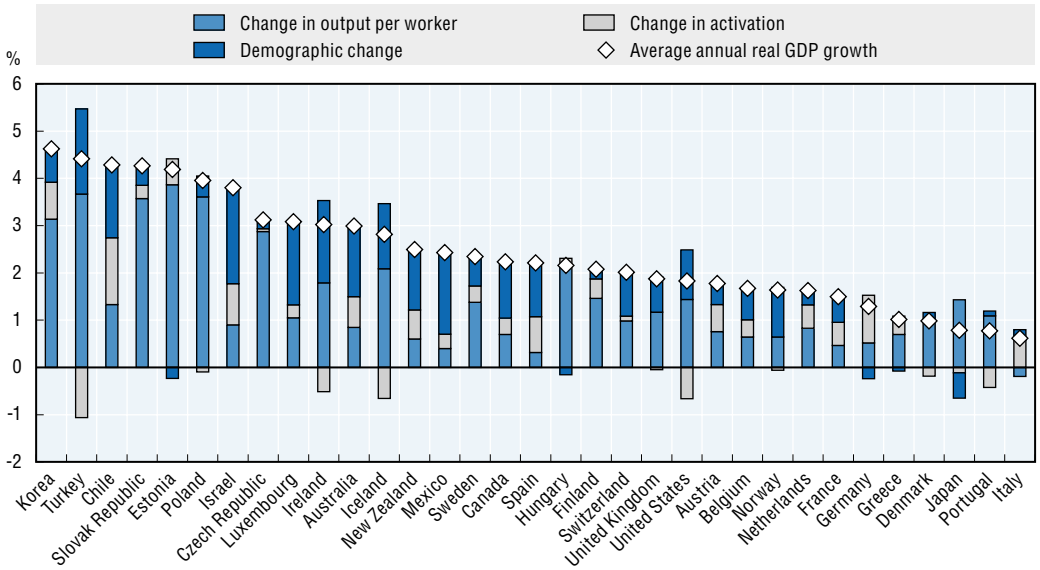
There is a paradox here, insofar as Japan invests heavily in many of the factors that should drive productivity growth – particularly human capital and research and development – and yet it has recorded relatively poor productivity performance for a quarter-century. Overall, Japanese productivity in 2013 was 4.7% below the OECD average. What makes this especially worrying in a shrinking labour market is that the gap in terms of GDP per hour worked was far greater, at almost 14.9%; it was partially offset by the greater number of hours worked (OECD, 2015i).

Demographic change makes productivity growth more important than ever

Reviving productivity growth is perhaps Japan's most urgent economic priority. If an ageing economy is to sustain continued prosperity, then output per worker must rise faster than would be required in a healthier demographic context. The increasing importance of productivity for growth – and the growing drag effect of demographic change – is illustrated in Figure 1.12, which presents a slightly unusual decomposition of real GDP growth in OECD countries over 1999-2011.[12] Instead of simply contrasting the contributions of labour input and output per worker, it splits the labour-supply component into two: one that depends on individuals' activation decisions and the state of the labour market (i.e., employment and labour force participation) and another that reflects the combined effects of ageing and migration (change in the working-age population). As can be seen, Japan is the only OECD country in which there is a substantial negative effect of demography – equivalent to just over one-half a percentage point of GDP growth. This negative contribution is also, as noted above, set to increase, because the rate of shrinkage of the working-age population is projected to accelerate over the coming decades. Between 2015 and 2050, the working-age population is expected to decline by an average of 1.2% per year on average and in some periods by up to 1.7%.

Figure 1.12. **Decomposition of real GDP growth for selected OECD countries, 1999-2011**



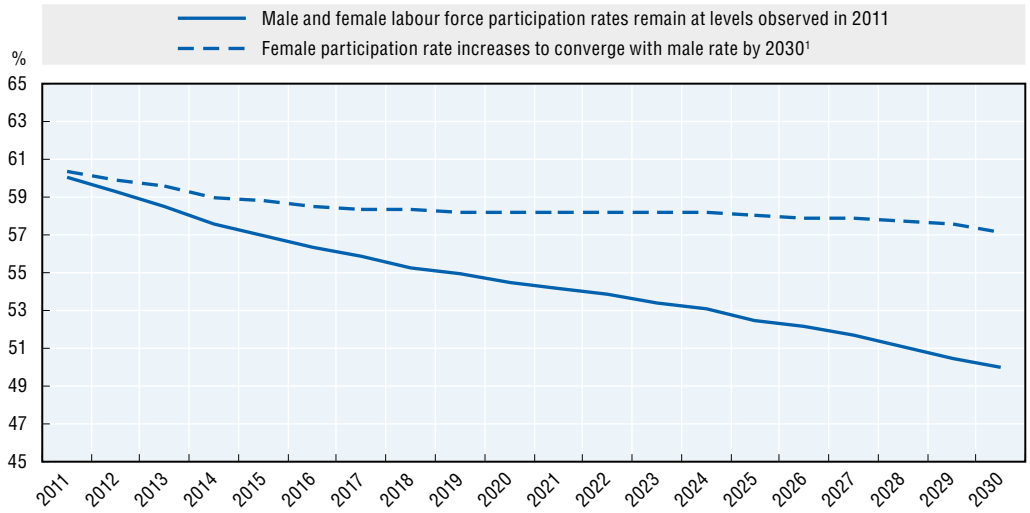
Note: "Change in activation" reflects only the combined effect of changes in the participation rate and changes in the employment rate. The expansion or contraction of the working-age population is encompassed in the "demographic change" variable.

Source: OECD (2015j), *OECD Economic Outlook: Statistics and Projections* (database), *http://www.oecd-ilibrary.org/economics/data/oecd-economic-outlook-statistics-and-projections_eo-data-en* (accessed 16 October 2015).

StatLink *http://dx.doi.org/10.1787/888933324496*

In productivity terms, then, Japan will have to run faster and faster simply to maintain its position in relation to other economies. To sustain a constant rate of growth of GDP of, say, 2% per annum (the government's current target for 2020) over the period to 2050, and assuming a constant employment rate, Japan will need to achieve an average annual rate of growth of about 3.3% in GDP per worker. Of course, the other things being equal assumption in this example is wholly unrealistic, but it serves to highlight the magnitude of the purely demographic contribution to growth performance. In reality, increases in labour force participation and longer careers must surely be part of the solution, as well as labour market reforms to increase labour force participation – and, in particular, full-time employment – among women. At present, the male labour force participation rate is about 21 percentage points above that of women. OECD (2015h) observes that if female employment rates were to converge to those of men over the next 20 years, the labour supply would decline by only 5%, as compared to a projected decline of 17% (Figure 1.13). The opportunity cost of existing gender imbalances is all the greater, given that young women in Japan tend to be more educated than young men.[13]

Figure 1.13. **The potential impact of female employment on labour supply**



Note: 1. Assuming that the labour force participation rate for men remains constant from 2011 to 2030.

Source: OECD (2014), *Japan: Advancing the Third Arrow for a Resilient Economy and Inclusive Growth*, Better Policies, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264215955-en*.

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Unemployment has remained low but inequality has increased

Despite sluggish growth for more than two decades, Japan continues to experience relatively high activation rates and low unemployment. In 2013, the OECD's estimates of harmonised unemployment rates[14] showed Japan at just 4.0%, lower than all but two OECD countries, while its activation and employment rates were well above the OECD averages for men and women in all age groups. Older (55-64) people had particularly high employment rates by OECD standards. Overall, Japan's ratio of employment to working-age population, at 71.7%, was 6.4 percentage points above the OECD average. This is good news, and it is likely to have reduced considerably the level of social stress caused by this prolonged period of economic stagnation. Strikingly, though, the gap between men and

women, at 18.3 percentage points, was wider than the OECD-wide differential (16 points), though Japanese women still had employment rates well above the OECD average.

Continued high employment rates and low unemployment have not been sufficient to prevent rising income inequality and poverty. The Gini coefficient for interpersonal income (net of taxes and transfers) reached 33.6 in 2009, the tenth-highest in the OECD area and somewhat above the OECD average, while the relative poverty rate[15] in 2012 was the sixth-highest in the OECD area. There is, however, comparatively little variation in levels of inter-personal inequality across Japanese regions: the interpersonal Ginis for all Japanese TL2 regions fall within about three points of the national average, and the country ranks 17th among the OECD-28 in terms of the variation across regions in the Gini coefficient for personal incomes. Moreover, the inter-regional variation in Ginis post-taxes and transfers is less than half that observed before taxes and transfers are taken into account, which suggests that the fiscal system plays an important role in smoothing out spatial inequalities, even if it is less effective in reducing inter-personal inequality (OECD, 2015h).

A further consequence of Japan's long-term low-growth trajectory has been increasing labour market dualism (CJF, 2014). Japan's labour market is segmented between regular and non-regular workers. Non-regular workers are primarily part-time, fixed-term and dispatched workers (i.e. workers sent from private employment agencies). The share of non-regular workers rose for almost three decades, from 16.4% in 1985 to a peak of 38.2% of total employment in 2012; it fell back somewhat to 37% in 2014. Non-standard contracts offer firms greater flexibility and enable them to hold down costs, but they also have a number of troubling effects. OECD (2015h) notes that non-standard workers not only have lower wages and less job security, they typically also receive less firm-based training and are less well protected by the social safety net (many are not covered by employment insurance, despite the greater risk of unemployment). The evidence also suggests that, once employed in non-regular jobs, workers have little chance to move into regular employment: the second-tier labour market is, for many, a trap (OECD, 2013c).

Labour market dualism is also reflected in subjective measures of life satisfaction. While Japan scores better than most OECD countries on many dimensions of well-being, such as life expectancy and education, it scores near the bottom of the OECD on measures of work-life balance, a dimension of well-being directly linked to labour market institutions and practices, as well as health status and reported life satisfaction (OECD, 2013b). Moreover, the happiness level reported by non-regular workers is significantly below that of regular workers and the self-employed (OECD, 2015h). The work-life balance issue also has implications for productivity. The evidence suggests that very long working hours are indeed detrimental to labour productivity: up to a certain level (perhaps 48-50 hours per week), output appears to be roughly proportional to hours; above that threshold, output rises at a rapidly decreasing rate as hours increase (Pencavel, 2014). The long-hours culture of many countries thus confers no productivity advantage and imposes high costs in terms of accidents and injuries (Dembe et al., 2005; Rho, 2010; Ricci et al., 2007), as well as life satisfaction.

Labour market institutions and practices seem to contribute to demographic decline

The evidence also suggests that labour market segmentation and work-life balance contribute to Japan's demographic situation. Roughly 70% of non-regular workers are women, while men account for an almost identical proportion of regular employees. Strikingly, Japan has among the lowest rates of employment for university-educated women in the OECD, despite the fact that the female employment rate overall, at 63%, is five points

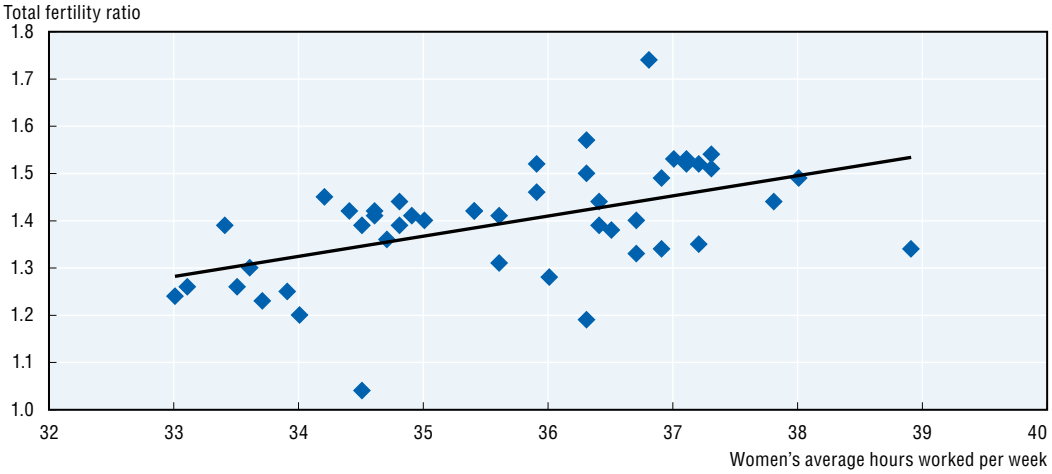
above the OECD average. OECD (2015h) cites analyses finding that, after adjusting for type of job and educational attainment, the wage gap between full- and part-time workers is 31% for men and round 48% for women. The income of a household headed by a regular worker aged 45-49 was more than four times that of a household headed by a non-regular worker. The lower income of non-regular workers also discourages marriage and hence reduces the fertility rate. Women with children find it particularly difficult to sustain regular, full-time employment, owing to the country's long-hours culture – Japan ranks third, after Turkey and Mexico, in the proportion of employees working 50 hours a week or more on average. Moreover, commutes are often very long, employment practices can be relatively inflexible for regular workers and available child-care is lacking.[16] Although the authorities have in recent years taken steps to reduce the barriers to combining parenthood with employment, labour market institutions still tend to force a choice between career and child-bearing. The very low fertility rate is to some extent a reflection of that choice (CJF, 2014).

A look at prefectural-level data confirms two important facts about this situation. First, as can be seen from Figure 1.14, there is a clear and consistent positive relationship between fertility and female labour supply in terms of hours worked in Japanese prefectures. There is also a consistent and positive relationship between fertility and female labour force participation. The issue is not a choice between policies promoting high fertility and low employment, as opposed to low fertility and high employment. It is possible to achieve both high fertility and high female employment. Indeed, whereas there was a broadly negative relationship between female employment and fertility in OECD countries in 1980, by the mid-2000s the relationship was positive, suggesting that women are likely to have more children where structures are in place to support combining family and work rather than forcing a choice between them (OECD, 2007). The second point is that both fertility and female labour force participation are consistently higher in predominantly rural regions than in urban areas: in 2008, female labour force participation rates were on average 13 percentage points higher in PR prefectures than in predominantly urban ones, while fertility rates were almost 12% higher. Intermediate regions fell between the two on both counts. For a variety of reasons to be explored in Chapter 3, Japanese cities are particularly inhospitable to combining careers with child-rearing. Yet economic pressures are drawing more young people, particularly young women, to the cities – and they are being drawn disproportionately to Tokyo and the other very large metropolitan areas, which tend, in turn, to have the lowest fertility (Cabinet Secretariat, 2015).

A generation of underperformance has put public finances under strain

Japan's public finance challenge has been building up over a very long period, as government spending has risen sharply since 1990, due to population ageing and frequent fiscal stimulus packages, while revenues have failed to keep pace. Gross government debt had reached 226% of GDP by 2014, and net debt reached 129% of GDP; both figures are the highest in the OECD. The debt continues to climb, with the primary budget deficit hovering around 8% of GDP during 2008-13, before declining to roughly 7% in 2014. Sluggish growth and rising social spending have meant that total revenues have largely stagnated, while total expenditures have climbed steadily. Persistent deflation has aggravated the growth of debt ratios by reducing nominal GDP. Public finances came under further pressure as a result of the 2011 Great East Japan Earthquake, the worst disaster in Japan's post-war history.

Figure 1.14. **Fertility and female labour supply, Japanese prefectures, 2011**



Source: OECD (2015d), *Regional Statistics*, (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015); information provided directly by Official Statistics Japan (Government of Japan).

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The impact of such high debt on government interest payments has hitherto been mitigated by exceptionally low interest rates. Indeed, the effective interest on government debt in early 2015 was the lowest in the OECD at 0.9%. Net interest payments were thus limited to just 1.2% of GDP, well below the OECD average of 1.6%, despite Japan's very high debt levels (OECD, 2015h). Around 90% of government debt is domestically held, limiting the government's external debt to less than USD 1 trillion in mid-2014, far below the levels of the United States (USD 6.6 trillion) and the euro area (USD 4.2 trillion). However, this relatively benign state of affairs will not continue indefinitely, leaving Japan vulnerable to rising interest rates in future, even as demographic change continues to add to the strain on public finances. A loss of confidence in Japan's fiscal sustainability could result in a run-up in long-term interest rates, with negative implications for the financial sector, fiscal sustainability and growth.

This danger is one of the major constraints on the government's ability to use fiscal stimulus to prevent growth from stalling. It is also a crucial factor conditioning the response to population ageing, since it ensures that the social and infrastructure spending needed to cope with demographic change will remain under pressure for some time. Financing the transition to a new demographic equilibrium will be extremely difficult.

The government has undertaken a three-pronged strategy to re-launch growth

In early 2013, the government launched a three-pronged strategy, known colloquially as "Abenomics" after Prime Minister Shinzō Abe, aimed at reviving growth. The "three arrows" of Abenomics comprise:

- bold monetary policy, aimed at fighting deflation, even via such unorthodox measures as "qualitative and quantitative easing" and the establishment of a 2% inflation target
- flexible fiscal policy, intended to support growth in the short term while establishing a credible path to fiscal sustainability of over the medium-to-long term and
- a package of structural reforms to relax the supply-side constraints on growth and trigger the revitalisation of Japan's regions which was unveiled in June 2013 and revised a year later, in an effort to boost real GDP growth to 2% per annum over the period through 2022.

The first two arrows initially delivered encouraging results. In 2013-14, nominal GDP increased for 6 consecutive quarters for the first time in over 20 years, as inflation picked up and yen depreciation gave a boost to exports. However, the economy tipped back into recession following a consumption tax hike in April 2014. This led to the postponement of plans for a further hike in 2015, ensuring that the primary deficit would remain large until at least 2017. An OECD (2015h) simulation suggests that, in the absence of further steps to reduce the deficit, the government debt ratio would exceed 400% of GDP by 2040, even on the optimistic assumption of average nominal GDP growth of 3% per year. The government thus faces the very difficult challenge of trying to balance growth and fiscal sustainability objectives over the coming years, in a context of population ageing and decline.

The third arrow of Abenomics, on which there has been less progress to date, is where the regional dimension becomes prominent. At the end of June 2015, the government approved a number of key policy documents, including a new basic strategy for job creation in small cities and towns, as well as rural areas. Known colloquially as "local Abenomics", they focus on employment generation as the key to sustaining local economies and, in particular, to attracting younger people. The key policy priorities outlined in the strategy include strengthening the efficiency of the service sector in regions, promoting regional innovation, and supporting efforts linked to the "branding" of regions. The strategy aims to overcome the fragmentation that has often prevailed across policy sectors and across prefectural and municipal boundaries, fostering co-operation across regions and across the public-private divide to unlock regional potential. Public-Private Partnerships (PPPs) and Public Finance Initiative (PFI) will be central to these efforts.[17]

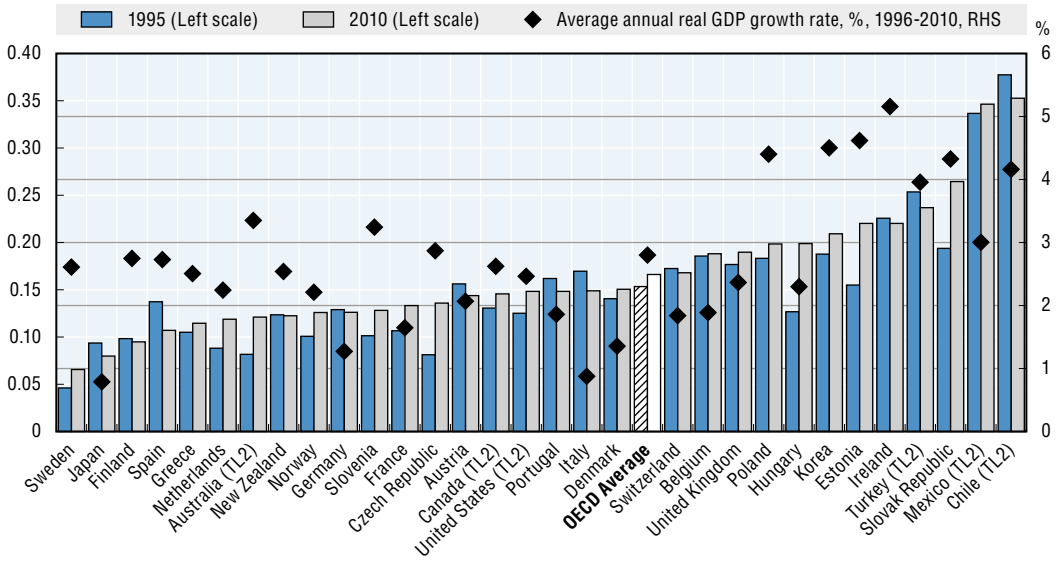
Inter-regional disparities and living standards

Economic disparities among Japanese regions remain low…

As noted above, inter-regional inequalities in income in Japan are exceptionally low by OECD standards: in 2010, Japan had the second-lowest level of inequality among regions in GDP per capita (Figure 1.15). Moreover, inequality across Japanese regions has been falling over time, even as it has been increasing in most other OECD countries (Figure 1.16). In some respects, this may seem quite surprising, given the concentration of population and activity in the three main metropolitan areas. In this, Japan resembles perhaps some of the Nordic countries, which also combine high concentrations of population and economic activity with low territorial disparities. Like them, Japan has traditionally been a highly centralised country with a strong commitment to territorial cohesion. It is possible that the extremely high urbanisation rate contributes to lower rural-urban inequalities; the highest differentials in the OECD area tend to be in countries with lower levels of urbanisation, possibly because the greater relative weight of the rural population raises the cost of policies aimed at improving service provision outside the cities or raising the living standards of rural dwellers (Figure 1.16). As will be seen, the data also suggest that there is a labour market equilibrium in Japan that serves to limit wage disparities across space. This is likely to be the more important factor in explaining such low spatial inequality.

Limited territorial disparities in per capita GDP are mirrored in the data for poverty rates for Japan's major (TL2) regions. As noted above, poverty rates in Japan are comparatively high, but the variation in poverty rates across regions is smaller than the OECD average and well below the variation seen across regions in such large OECD countries as Germany, Italy, Turkey, and the United States.

Figure 1.15. **Gini index of GDP per capita across TL3 regions, 1995 and 2010**



Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

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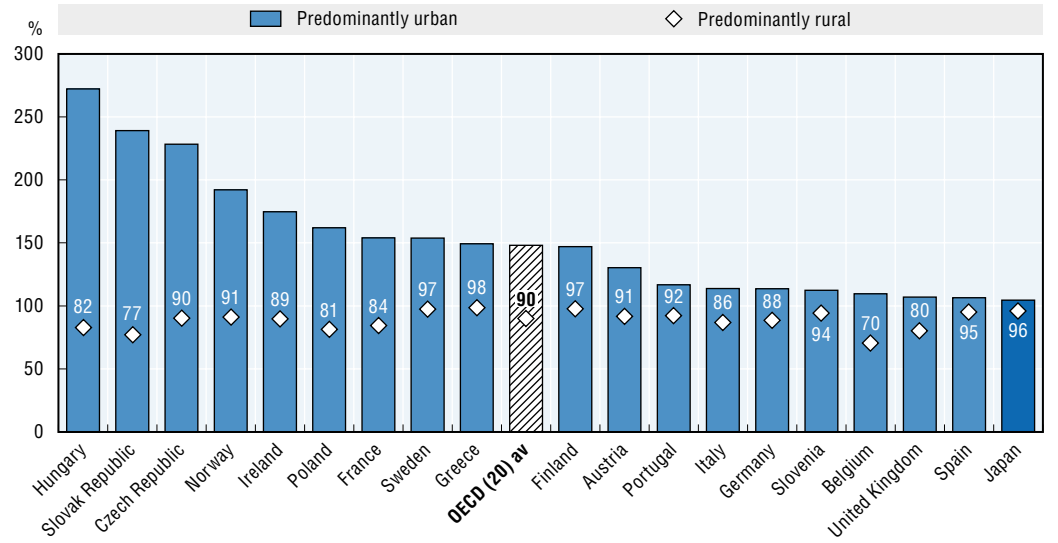
Figure 1.16. **GDP per capita in predominantly urban and rural regions relative to the national average**



Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

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...but the picture with respect to non-monetary aspects of well-being is more complex

Japan's performance on the non-pecuniary dimensions of well-being is rather more mixed, as can be seen in Table 1.2. On indicators such as health, safety and jobs, Japan ranks very high among OECD countries and also has very low levels of inter-regional inequality. By contrast, it performs less well – and exhibits greater spatial disparities – on access to services, education and environmental quality.

Table 1.2. **Performance and dispersion on regional well-being indicators in Japan**

Dimension of well-being	Rank among OECD countries on this dimension	Rank among OECD countries concerning inequalities on this dimension (higher rank = greater inequality)
Access to services	18/34	28/33
Education	16/34	21/33
Health	1/34	4/32
Safety	4/34	5/33
Jobs	3/34	8/33
Environment	18/34	28/33

Source: OECD (2015g), "Regional well-being", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00707-en* (accessed 10 September 2015); for detail on the indicators, see OECD (n.d.), Regional Well-being website, *http://oecdregionalwellbeing.org/* (accessed 1 September 2015).

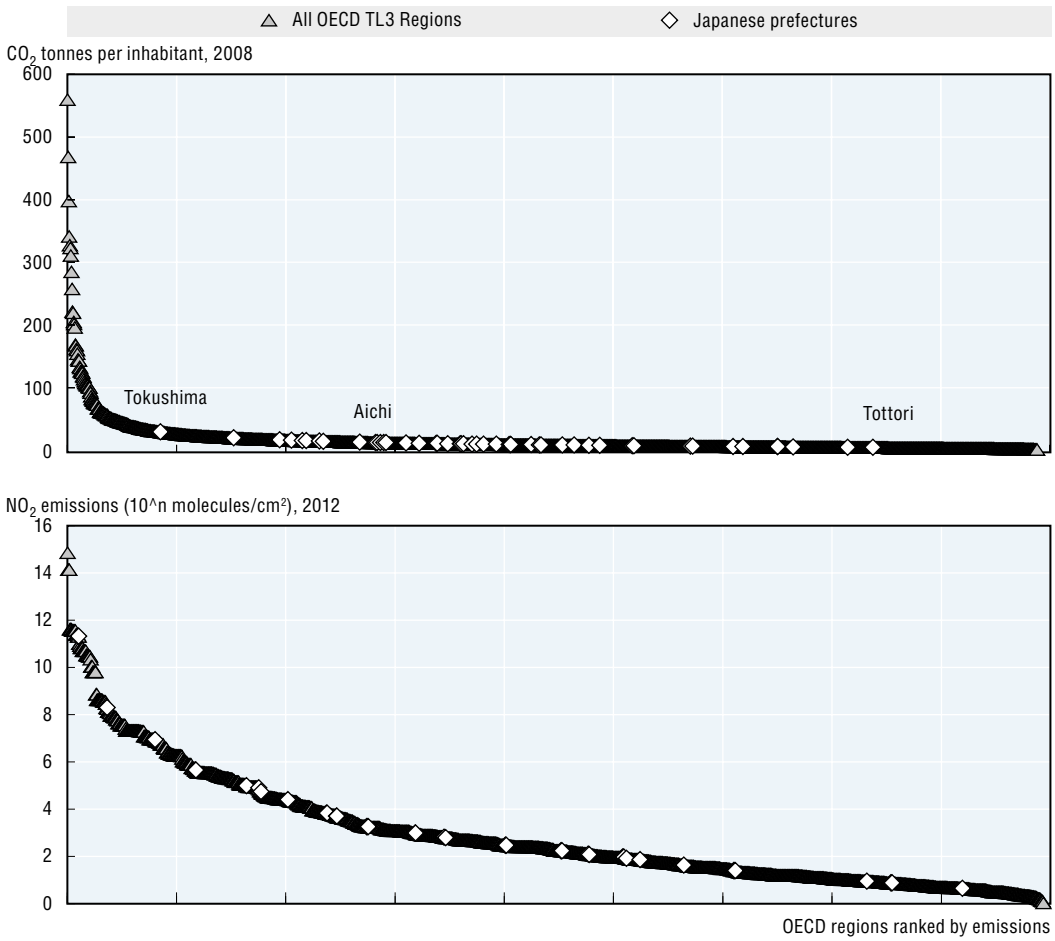
Japanese prefectures perform comparatively well when it comes to CO_2 emissions (Figure 1.17, top panel). This reflects the fact that the country's CO_2 emissions per capita have long been below the OECD average, although by 2012 they were converging with it. Japanese emissions per capita rose 13.1% from a low point in 2009, while the OECD average slightly declined. Here again, the demographic factor has played a role, as aggregate emissions rose by somewhat less than the per capita figure. So, too, has economic performance: sluggish growth has helped to limit emissions, but the emissions intensity of the economy (CO_2 emissions/unit of GDP at constant prices) rose steadily until the 2008-10 period, when it stabilised. It fell more than 6% in 2011-12, though it was still 4.6% higher in 2012 than in 2000, and it is not clear whether this trend has been sustained since.

With respect to NO_2 emissions, Japanese regions overall perform less well with respect to other OECD regions (some are very near the top of the distribution) and there is far greater disparity in performance (Figure 1.17, bottom panel). While both CO_2 and NO_2 emissions contribute to global environmental damage, the local effects of the latter are also quite serious, making high concentrations an important challenge for regions and cities. Short-term NO_2 exposures, ranging from 30 minutes to 24 hours, have been linked with adverse respiratory effects including airway inflammation in healthy people and increased respiratory symptoms in people with asthma. Studies also show a connection between breathing high short-term NO_2 concentrations and increased visits to emergency rooms and hospital admissions for respiratory issues, especially asthma. NO_2 exposure concentrations are of particular concern for susceptible groups, including asthmatics, children, and the elderly. Moreover, emissions that lead to the formation of NO_2 generally also lead to the formation of other harmful nitrogen oxides. Emissions control measures leading to reductions in NO_2 can generally be expected to reduce population exposures to all gaseous nitrogen oxides. This can also help reduce the formation of ozone and fine particulate matter, both of which pose significant public health threats.

Japanese regions also perform less well in respect of particulate matter (PM), perhaps the most immediate threat to public health stemming from air quality. Exposure to small particulate matter can affect both lungs and heart. Fine particles typically contain microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems, including: premature death in those with heart or lung disease, heart attacks, irregular heartbeat, aggravated asthma, reduced lung function, and respiratory symptoms such as irritation of the airways, coughing

or difficulty breathing. They are also a main cause of reduced visibility (haze) in many places, and they can settle on ground or water, potentially making lakes and streams acidic; changing the nutrient balance in coastal waters and large river basins; depleting soil nutrients; damaging forests and farm crops; and reducing biodiversity. Data for PM are not available for small (TL3) regions across the OECD, but the data for large (TL2) regions show that most Japanese regions are in the middle-to-upper reaches of the distribution when it comes to fine particulate matter, or $PM_{2.5}$ (Figure 1.18). Indeed, only Tōhoku and Hokkaidō fall in the lower half of the distribution. While the worst-affected region (Southern Kantō) ranks only 56th – making it far from the worst performer in the OECD area – the fact is that Japan's population is heavily concentrated in the areas with the highest levels of $PM_{2.5}$ (apart from Hokuriku). Altogether, more than 95% of Japan's population lives in regions with average $PM_{2.5}$ levels above the WHO standard (10 μg/m³ annual mean).

Figure 1.17. **CO_2 and NO_2 emissions, OECD TL3 regions**



Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

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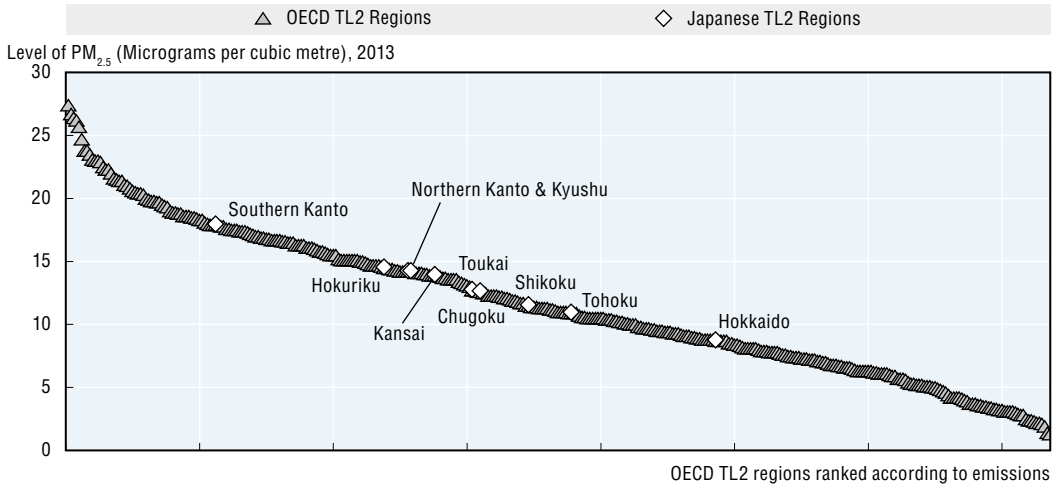
Figure 1.18. **Exposure to $PM_{2.5}$ in OECD TL2 regions**



Source: OECD (2015g), "Regional well-being", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00707-en* (accessed 10 September 2015).

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Trends in regional economic performance

As seen above, Japan's growth performance, both in per capita terms and in aggregate, has been relatively weak since the early 1990s. This section examines the regional patterns that underlie this national performance, looking at both per capita and aggregate performance.

The growth of GDP per capita has been weak but broadly consistent across space

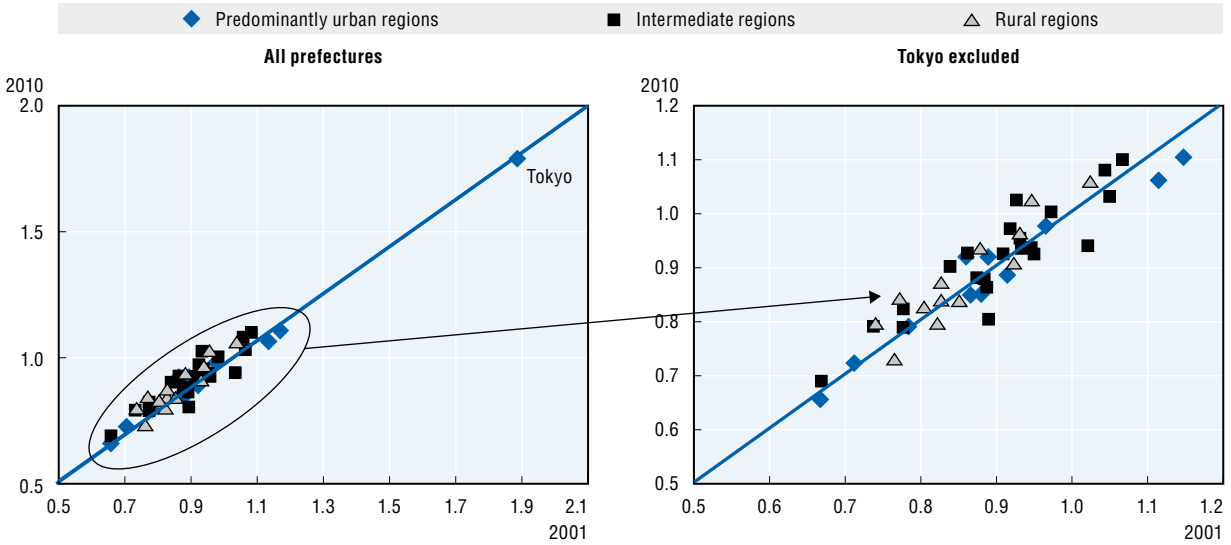
There has been a modest reduction in divergence in terms of GDP per capita since the mid-1990s. As can be seen in Figure 1.19, Tokyo even lost ground in per capita terms, albeit only slightly, during the decade to 2010. Owing to changes in the system of national accounts, data from before 2000 are not directly comparable, but an analysis using the old series, which runs from 1995 to 2009, reveals more or less the same picture. Concentration of population and activity has not so far resulted in greater inter-regional disparities, with roughly as many regions gaining ground as losing, and by remarkably similar magnitudes. Moreover, regions of all types (predominantly urban, intermediate and rural) may be observed along the entire spectrum. In fact, per capita GDP growth was higher in predominantly rural than in predominantly urban or intermediate regions over the period. However, growth across all regions was relatively weak, and no Japanese prefecture managed to achieve even the average level of growth recorded by all OECD regions over the period.

Repeating the somewhat unorthodox decomposition of per capita GDP growth presented above at prefectural level (Figure 1.20) highlights the variation in the relative importance of productivity, labour-supply decisions and demographics across Japanese prefectures. In particular, it throws into sharp relief the far greater impact of demographic decline on intermediate and rural regions than on predominantly urban ones. The imperfect correlation between trends in productivity, defined as GDP per worker, and the growth of GDP per capita is also striking. Output per worker has grown in only four of Japan's twelve predominantly urban regions. This need not imply that all other cities are performing badly. In some cases, poor productivity may be a side effect of migration: newcomers to cities tend to be – initially, at least – less productive than incumbent residents. As a result, rapid inflows of population

often tend to reduce per capita and per worker growth rates even in very dynamic cities. Yet they are beneficial both for a country and for the affected individuals, as long as the new arrivals are more productive in the cities than they would have been in sending regions. However, in four predominantly urban regions,[18] output per worker has fallen even against the backdrop of stagnant or declining labour input. This is very bad news indeed.

Figure 1.19. **Trends in relative GDP per capita by prefecture, 2001-10**

Ratio of prefectural GDP per capita to the national average (National average = 1)



Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

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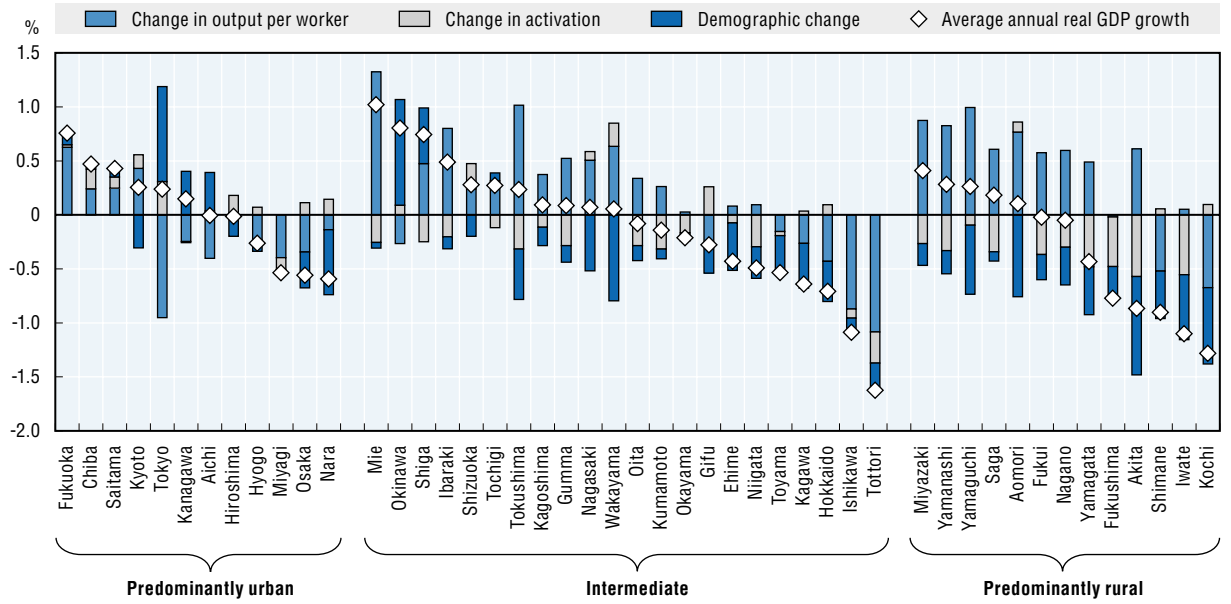
Figure 1.20. **Decomposition of GDP growth by prefecture, 2000-10**



Note: "Change in activation" reflects only the combined effect of changes in the participation rate and changes in the employment rate. The expansion or contraction of the working-age population is encompassed in the "demographic change" variable.

Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

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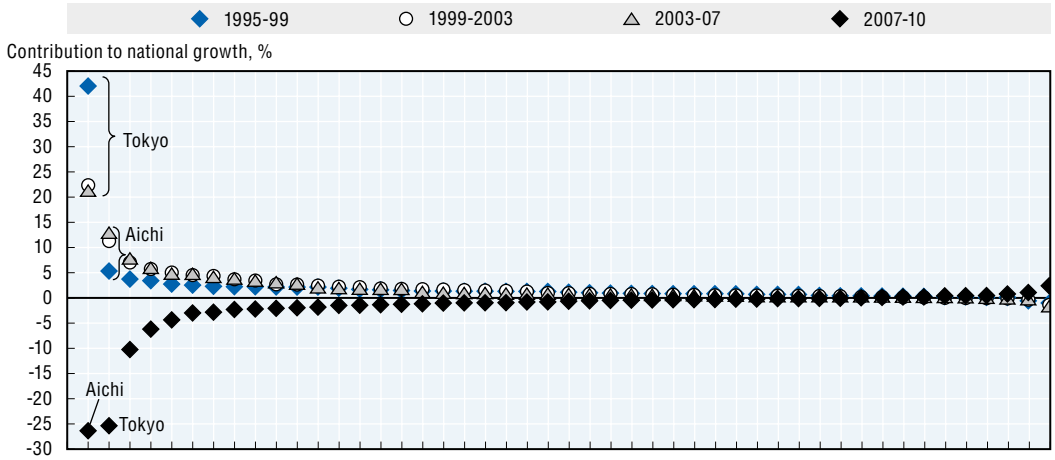
The pattern observed in the three big metropolitan areas (MAs) defined by Statistics Japan – specifically, those based on Tokyo (Kantō), Osaka (Keihanshin) and Nagoya (Chūkyō)[19] – is noteworthy. The "core" prefectures of Tokyo, Osaka and Aichi (where Nagoya is located) all recorded exceptionally poor productivity performance, whereas a number of the better-performing regions were adjacent to them, within the same MAs: Ibaraki, Yamanashi, Tochigi and Gunma in Kantō; Kyoto, Shiga and Wakayama in Keihanshin; and Mie (the best-performing prefecture in Japan) in Chūkyō. In short, there have been significant divergences of performance within the MAs; the reasons for these are examined in more detail in Chapter 3.

Aggregate growth, by contrast, has been far more concentrated

Strikingly, while the growth of GDP per capita has been relatively consistent across regions, even leading to some reduction in inter-regional disparities, aggregate growth has been highly concentrated (Figure 1.21). At first glance, the degree of prefectural-level concentration seems to have gradually diminished over time – evident in the way the curve shifts gradually away from the origin in successive periods. However, this is mainly due to the declining contribution of Tokyo Prefecture, as well as the rising shares of a handful of dense, nearby prefectures. It definitely does not reflect any nation-wide spread of growth drivers. Overall, the growth contribution of the top ten prefectures rose from 68.6% in 1995-99 to 72.6% in 2003-07. The contraction that followed the crisis was even more concentrated: just ten prefectures accounted for 85% of the drop in output. What the data point to, then, is not a deconcentration of growth on any large scale but rather a rebalancing of growth within and among the three major MAs defined by Statistics Japan. Figure 1.22 shows that the combined growth contribution of these MAs has risen over time – they accounted for almost 75% of aggregate growth in the run-up to the crisis and 80% of the contraction that followed. This is well above their share of total GDP at the start of the period (roughly 62.5%). The contribution of Kantō fell somewhat over the period, while that of Chūkyō rose significantly. As will be seen, the analysis of functional urban areas in Chapter 3 presents a broadly similar picture.

Figure 1.21. **Contributions to growth by prefecture, 1995-2010**



Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

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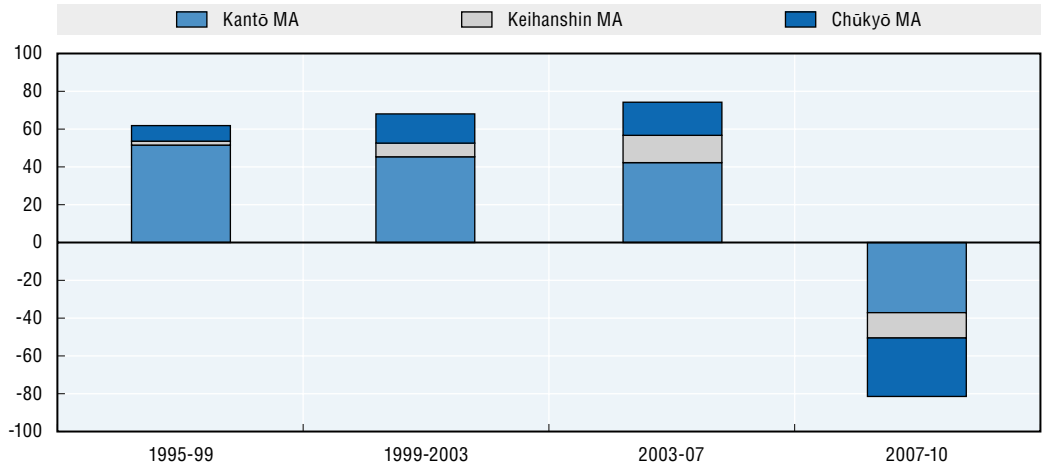
Figure 1.22. **Growth contributions of the main metropolitan areas**



Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

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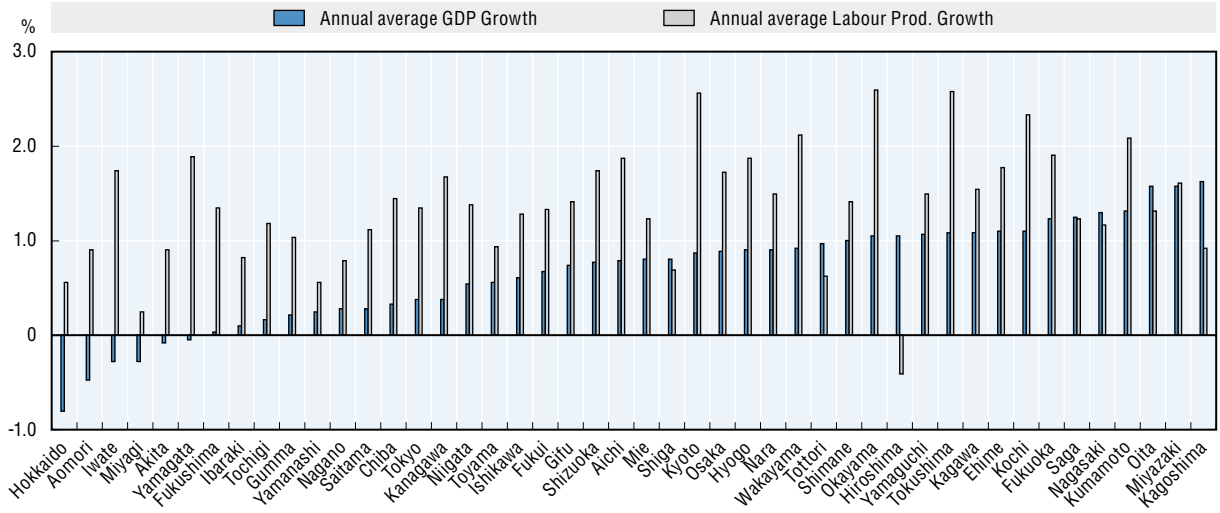
Productivity performance has varied widely across prefectures

Figure 1.23 shows the degree of variation in the relative growth rates of productivity and GDP over the decade to 2010. While the average rate of (aggregate) GDP growth barely exceeded 2% per annum in just 3 of Japan's 47 regions, labour productivity growth exceeded 2% in no fewer than 15 prefectures, including some that recorded little or no growth overall, and was at or above 3% in 3. This highlights the degree to which increasing concentration of economic activity is being driven by population change (differences in migration and ageing) rather than faster productivity growth in the big cities. The major cities' share of economic activity appears to be rising simply because that is where more and more people are.

Figure 1.23. **GDP and labour productivity by prefecture, 2001-10**



Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

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Table 1.3 presents an overview of growth and productivity performance by region type. It suggests several observations. First, while GDP per capita growth was similar across different types of regions in the run-up to the crisis, rural regions were far less affected by the downturn. Secondly, rural regions consistently record the highest levels of growth in output per worker. Thirdly, intermediate regions likewise do better than urban ones in terms of productivity, but in many places this has been insufficient to sustain regional prosperity. The impact of ageing and migration has been such that GDP per capita has fallen despite rising productivity.

Table 1.3. **GDP growth by type of region: Japan and the OECD**

Average annual real growth, %

A. GDP per capita						
	2001-2007		2007-2010		2001-2010	
	Japan	OECD	Japan	OECD	Japan	OECD
Predominantly urban	1.56	2.01	-1.19	-0.83	0.63	0.88
Intermediate	1.61	2.04	-0.40	-0.64	0.93	0.97
Predominantly rural	1.60	2.31	-0.06	-0.42	1.04	1.22
B. GDP per worker						
	2001-2007		2007-2010		2001-2010	
	Japan	OECD	Japan	OECD	Japan	OECD
Predominantly urban	1.55	1.65	-0.65	-0.60	0.81	0.72
Intermediate	1.89	1.62	0.29	-0.26	1.35	0.77
Predominantly rural	1.85	1.76	0.40	-0.35	1.53	0.91

Note: Averages for Japanese and all OECD TL3 regions are **not** weighted.

Source: OECD (2015d), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

The economic policy response to demographic change

To a great extent, the focus of this review is on policies to address the spatial/territorial dimension of the two-fold challenge of productivity and demographic change. However, economy-wide policies will have a vital role to play if Japan is to meet this challenge. They will also to some extent condition the prospects for success of regional and local initiatives. This section therefore presents a brief overview of economy-wide fiscal and structural policy priorities for restoring the public finances, boosting productivity and adapting the economy to demographic change.

Much remains to be done to address the public spending consequences of ageing

Achieving public finance sustainability is a critical priority, not least via reforms to expenditure items heavily influenced by ageing (pensions, healthcare, long-term care, etc.) but also by improving effectiveness and efficiency of service provisions in regions (merging healthcare centres for improving efficiency, utilising so-called small stations in villages to work as service hubs and leading healthy life in regions, reducing public investments in sparsely populated areas, re-examining the demands of large infrastructure, etc.). While the pension reforms of the last decade did much to ensure the long-term sustainability of pension provision, there is still more to do, and OECD (2015h) argues for raising the pension eligibility age, in order to reduce the fiscal burden while raising the labour force participation of older persons (Sutherland, Hoeller and Merola, 2012). Pension eligibility ages for both men and women are still low compared to Japan's life expectancy of 83.48 years.[20]

In contrast to pensions, health and long-term care spending is expected to continue rising. Between 2000 and 2012, healthcare spending rose from 7.6 to 10.1% of GDP, as spending rose by more than 2% per year while nominal GDP fell. Rising costs are driven mainly by spending on pharmaceuticals and very long hospital stays. Average hospital stays in Japan are the longest in the OECD, almost four times the average. This is linked to long-term care; the average stay for curative care in 2012 was just over half the average hospital stay (still the longest in the OECD), because only about half of hospital patients needed healthcare (OECD, 2015h). Reliance on hospitals to address what are in fact long-term care needs is expensive and reflects the lack of resources for home-based care and/or specialised long-term care institutions. Japan has been expanding the provision of long-term care (LTC) for the elderly for some years, but ensuring that provision keeps pace with population ageing has proved an enormous challenge (OECD/European Commission, 2013; Matsuyama, 2015; Asai, 2015).

The burden of providing LTC for the elderly is set to grow as the population ages, but its spatial impact is difficult to foresee. On the one hand, rural areas are ageing faster. There are, moreover, economies of scale in elderly care, and care at home is easier when the elderly are not widely dispersed, as they can be in rural places. However, the cost of both labour and space tends to be higher in cities, particularly the large ones, and providers in Tokyo and other major cities complain that systems of public support for LTC do not adequately reflect cost differentials between places (Matsuyama, 2015). Some rural places have tried to maintain population levels by specialising in welfare services for older people (variously known as, e.g. Silver Areas or Welfare Villages). The Japan Policy Council (JPC) recently argued for moving more of Tokyo's elderly to rural regions for nursing care, on the basis that over the next decade there would be a shortage of around 130 000 beds for LTC in the Greater Tokyo area over the coming decade. Indeed, labour supply appears to be a key constraint in many places – in the cities, because better pay is available in other activities and in rural areas because they often struggle to attract younger workers to staff LTC services. The JPC proposal has met criticism in some of the proposed "destination regions": though the Council suggests that they have spare capacity to provide additional health and nursing care, some of them face a chronic shortage of nursing-care providers and see the Council's proposal as an attempt to dump the capital's burden on them (Asai, 2015).

Healthcare and long-term care are, of course, only one aspect of the problem, since much can be done to promote healthier ageing. Indeed, much is already being done, and this is reflected in Japan's extraordinary levels of healthy life expectancy, which the WHO estimates at 75 years in 2012. Healthy ageing is also an area in which there is much that regions and cities can do, as is evident in the recent experiences of Japanese cities like Toyama and Yokohama (OECD, 2015c). However, super-ageing brings its own problems: while people in their 60s and 70s are now healthier than ever, the rapid growth of the very elderly – over-80s are projected to constitute more than 16% of the population by 2050 – will entail costs of its own, particularly for dealing with diseases like Alzheimer's and dementia.

Structural reforms particularly need to address labour supply and fertility…

OECD (2015h) sketches a range of structural reforms that could enhance innovation and competition, thereby strengthening productivity performance, while mitigating the problem of declining labour supply. The most important concerns here include increasing labour force participation, particularly among women and older workers

(enhancing the provision of training to such workers, reducing inefficient overtime work, etc.). Immigration could address some skills gaps or specific bottlenecks, but overseas immigration on a scale sufficient to change the demographic picture substantially is extremely unlikely and probably not feasible. That makes policies to boost fertility all the more important.

Above all, there is a need to press ahead with measures that help Japanese families to combine parenthood with child-care; otherwise, the recovery in fertility on which current strategies hinge may not be realised. This concerns in the first instance the position of women in the labour force, an issue with implications for gender equity as well as economic efficiency: the potential productivity gains that are forfeited when women are forced to choose between child-rearing and full participation on the labour market also entail significant costs for the women themselves. These costs go far beyond the wages forgone when their children are born. The evidence suggests that long periods outside the workforce or in non-regular employment result in lower wages over the rest of the working life. Human capital deteriorates during such spells, while opportunities for advancement are missed.[21] The prospect of lower lifetime earnings, in turn, tends to depress the returns to investment in human capital and may thus encourage women to invest in skills less than they otherwise would.[22]

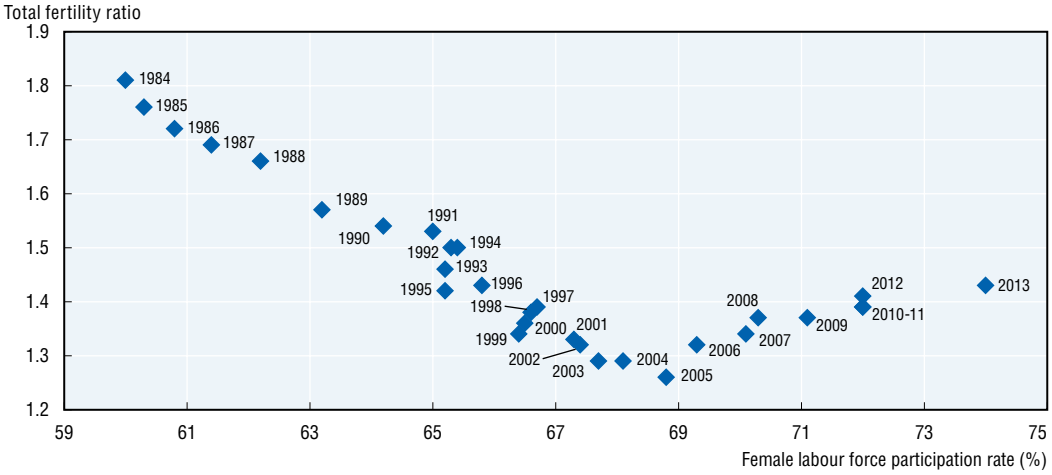
While some steps have been taken to address these challenges and some improvement has been observed in recent years (Figure 1.24), more needs to be done. The total fertility rate (TFR) is still extremely low, and it is not yet clear whether and to what extent the progress seen since 2005 reflects cohort effects:

- The older cohorts of working-age women are, other things being equal, less likely to be employed than younger women, so as time passes, cohorts with lower labour force participation rates pass out of the working-age population, while the younger cohorts coming up behind them are more likely to be employed.
- Demographic transitions in many countries have gone through a J-curve that reflects cohort effects. While the main shift was from high to low fertility, there was also a tendency of younger cohorts to start having children later. As figure 1.24 illustrates, this transition led to a deep dip in the curve initially followed by a partial recovery.

In light of these considerations, it is too soon to argue that the recovery in Japan's fertility rates will continue, let alone how far it will go.

The authorities plan a significant expansion in child-care and after-school places for older children in the coming years, but measures are also needed to make the tax and benefit systems neutral with regard to work decisions by secondary earners in households: at present, there are significant incentives (e.g. high tax thresholds) for second earners to limit their earnings (OECD, 2015h). CJF (2014) argues for a weighted support system for birth, nursing and education that would give greater support for the third child and children born after that, somewhat similar to arrangements in place in France. However, it is also important to recognise that pro-fertility/pro-family policies are not concerned solely with women's working conditions. It would also be advisable to move ahead with more flexible arrangements for fathers, such as proposals for paternity leave and related benefits. More broadly, as Cabinet Secretariat (2015) acknowledges, for men and women alike, there is a need to address the employment practices of firms and public-sector entities alike to reduce excessive working hours and improve work-life balance.

Figure 1.24. **Female labour force participation and the fertility rate**



Source: OECD (2015h), *OECD Economic Surveys: Japan 2015*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_surveys-jpn-2015-en* based on data provided directly by the Ministry of Internal Affairs and Communication (MIC) and the Ministry of Health, Labour and Welfare (MHLW).

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There is also considerable scope for local-level measures to make cities, in particular, more family-friendly, in terms of both urban form and the availability of childcare facilities, etc. These will be considered in Chapter 3.

...as well as innovation and entrepreneurship

Innovation and entrepreneurship have a critical role to play if Japan is to meet the productivity challenge outlined above. Yet its recent performance in these areas has been lacking:

- Japan spends heavily on inputs to innovation, particularly research and development (R&D) and education, but the return on that investment in terms of total factor productivity (TFP) growth has been modest, at best (OECD, 2015a). Gross expenditure on R&D (GERD), at 3.4% of GDP in 2012, was the fifth-highest in the OECD, and more than three-quarters of this was financed and conducted by the business sector, which tends to have the greatest impact on TFP. Yet TFP growth, which averaged less than 0.5% per year during 1995-2010, has been far below the levels of countries with similarly high levels of GERD, such as Korea (over 1% average TFP growth over the period), Finland (above 1.5%) and Sweden (around 2%). Japanese companies remain world leaders in some critical high-tech sectors, such as robotics, automobiles and electronic components, but this has been insufficient to sustain better productivity growth overall.
- Japan consistently scores poorly on measures of entrepreneurship. The entry and exit rate over 2004-09 was just about 4.5% on average, less than half the rate recorded in the United Kingdom and the United States (OECD, 2015h). The government's Revitalisation Strategy aims to raise that figure to 10% in the coming years. On the 2015 Global Entrepreneurship Index (GEDI) Japan ranks 33rd of 130 countries rated and 26th among OECD countries, despite exceptional strength on some dimensions of entrepreneurship, such as technology absorption and process innovation. Significantly, Japan's main weaknesses on the index's different dimensions concern attitudes and skills rather than infrastructure or institutions.

These weaknesses are closely linked, of course, insofar as many innovations, particularly disruptive innovations, do not come from established large companies – they need entrepreneurs to bring them to the market.

OECD (2015h) canvasses a range of economy-wide reforms that can help to strengthen both innovation and entrepreneurship in Japan. These encompass reforms to framework conditions for innovation, measures to strengthen product-market competition, changes in the national science and technology system, steps to strengthen the role of venture capital-backed firms in both innovation and entrepreneurship, and reforms to stimulate greater dynamism in the small and medium enterprise (SME) sector. The current government has been increasingly active in this sphere, as well, taking steps to reorganise the central-level institutions responsible for innovation policy and introducing a range of new programmes and measures.[23] There is still much to do, including: addressing skill shortages in science and engineering, enhancing entrepreneurship education, upgrading universities and strengthening their links with both domestic firms and international partners, attracting more foreign students to Japan and encouraging more Japanese to study abroad. Public support for R&D could also be reshaped in order to benefit small firms and start-ups rather more than at present: the current reliance on tax credits tends to benefit large companies more than SMEs, which are subject to a lower corporate tax rate, or start-ups, which often have no profit tax liabilities to offset. One key challenge will be to change attitudes to entrepreneurship, which is not widely regarded as a desirable career path, owing to a perceived cultural preference for lifetime employment in large companies and public-sector institutions, with seniority based wages and high levels of job security (Makinen, 2015).

These are economy-wide challenges, but as will be seen in chapters 3 and 4, there is much that can and should be done by cities and regions to improve their performance. This is particularly true with respect to providing education in entrepreneurship. De Backer, K. and S. Miroudot (2013) reports that only 18% of Japanese believe that school had "helped to develop a sense of initiative and a sort of entrepreneurial attitude". This was the lowest share reported for any OECD country and far below the OECD-wide average of 52%. Only 20% thought that school had provided them with the skills and know-how to run a business. The authorities are aware of this challenge, and the Ministry of Education, Culture, Sports, Science and Technology has recently stepped up its promotion of entrepreneurship education, but its programmes are primarily aimed at university students and graduates. A growing body of evidence suggests that such entrepreneurial skills can and should be fostered even in primary and secondary schools, with the emphasis not on business skills *per se* (which can indeed be acquired later) but on creativity, entrepreneurial know-how, responsibility, risk-taking, problem solving, and team-working (European Commission, 2013).

While OECD (2015h) emphasises the need for inter-ministerial co-operation, as well as the support of public institutions and the private sector, to promote entrepreneurial education, this is a field in which there is great scope for regional and local action and experimentation, particularly with respect to the design and delivery of curricula, an issue to be explored in the chapters to come. Strengthening links among key institutions in the innovation process, particularly universities and businesses, can also benefit from a place-based approach, as the experience of many OECD countries attests (OECD, 2011).

A shrinking Japan, seeking to regain its economic dynamism, cannot afford to turn inward

The period of fast growth in Japan was founded on its export dynamism. The country was extremely successful in integrating itself into the post-war world economy. Its prosperity today derives in no small measure from its central position in some key global value chains (GVCs), particularly autos and electronics. Its estimated GVC participation index in 2009 was close to that of Germany and above those of other large economies, such as Canada, France, Italy, the United Kingdom and the United States (De Backer and Miroudot, 2013).[24] Japan's central role in GVCs as a producer of higher value parts and components used in industries across the globe was a major reason for the speed with which the economic consequences of the 2011 Great East Japan Earthquake were felt around the world. Japanese firms reported production slowdowns in their affiliates abroad and slowdowns also occurred in some foreign industries like automotive and electronics that rely heavily on inputs from Japan. The earthquake and tsunami disrupted the activities of both direct and indirect suppliers, leading in some cases to the complete disruption of international supply chains (De Backer and Miroudot, 2013).

Nevertheless, in important respects, Japan has failed to keep pace with globalisation in recent decades (Cabinet Office, 2011). Its import penetration ratio is well below the OECD average, thanks in large measure to significant non-tariff barriers, notably in the form of product-market regulation.[25] Its level of intra-industry trade is also exceptionally low compared to other large economies, and while it has been an active investor overseas, the stock of inward foreign direct investment (FDI) relative to GDP was the lowest among OECD economies in 2012. It also hosts the lowest stock of foreign workers as a share of the labour force among OECD countries for which data are available (OECD, 2012b). This is not just a question of money: foreign investors and workers bring ideas, as well as money, and FDI-induced spillovers can play a significant role in stimulating technology transfer and innovation (Ewe-Ghee, 2001, and Savvides and Zachariadis, 2005). Japan's agriculture and services sectors are far less integrated into GVCs than its powerhouse manufacturing industries (De Backer and Miroudot, 2013), and this must be a concern given the growing role of services in both the Japanese economy and the growth of international trade in services. Japan's share of world exports fell from almost 10% in 1992 to only 4% in 2012, while its share of high-tech exports from OECD economies dropped by roughly half (OECD, 2015h).

Deeper internationalisation is critical to Japan's future prosperity. Access to imported inputs and inflows of FDI and expertise can reduce costs and also enhance productivity through technology spillovers. Lowering non-tariff measures would better enable Japanese firms to access potential efficiency gains and opportunities for innovation by further developing global supply chains. Jones and Yoon (2006) emphasise the need for a comprehensive approach, involving changes in a number of different policies, and they identify four broad priorities: i) reducing barriers to FDI and imports through multilateral trade negotiations and regional trade agreements; ii) relaxing product market regulations, notably in the service sector; iii) fully opening the market for corporate control (mergers and acquisitions) to foreign firms; and iv) relaxing restrictions on the inflow of foreign workers, including those in non-technical occupations.

The government recognises the need to address these issues and is strongly committed to increasing Japan's integration into the world economy, not least in aiming to double the flow of inward FDI into Japan over the coming years (Cabinet Secretariat, 2015). In two areas, at least, the government's internationalisation priorities have important regional and local dimensions: the internationalisation of SMEs, which are the backbone of many local economies in Japan, and the internationalisation of education.

SMEs, which account for over 99% of firms, 74% of employment and over 50% of value added in Japan, rely almost exclusively on domestic demand. Only around 0.2% of them are exporters, and exports typically constitute just 7% of sales in manufacturing SMEs, as opposed to 28% for larger firms (EIU, 2010). Reliance on domestic demand leaves Japanese SMEs extremely vulnerable to domestic economic and demographic conditions: the domestic market is, after all, shrinking. The SME sector thus needs to become more internationalised. SMEs were long treated by policy as a disadvantaged group requiring generous state support – SME policy was, in many respects, social policy – but they have been defined as a source of growth since 1999. The Revitalisation Strategy emphasises accelerated restructuring of the SME sector, and measures to help SMEs export and expand overseas are central to that effort (SMEA, 2014). Regional and local efforts to mobilise and support the internationalisation of SMEs are needed to supplement these efforts; the potential for action in cities and regions will be explored in chapters 3 and 4.

Education is further field in which Japan can do more to reap the benefits of globalisation. The Institute of International Education estimates the share of foreign students in Japanese universities at only 3.8%, in 2013, less than half of the OECD average of 8%, and the number of branch campuses of foreign universities in Japan fell from around 40 in the early 1990s to 4 at present (OECD, 2015h). The flow of Japanese students abroad has likewise been limited in recent years, although the trend has changed. According to IIE (2014), the number of Japanese students in overseas higher education institutions fell from just over 82 000 in 2004 to a low of around 40 000 in 2010 (just over 1% of the total). By 2013, however, the number had risen more than 50% to over 69 000 (Ministry of Education, Culture, Sports, Science and Technology, 2015) – still less than 2% of the total, but a dramatic rise over three years, particularly against the backdrop of a 6.8% drop in total student numbers. These modest numbers are particularly striking when set alongside a UNESCO (2012) estimate that international student mobility rose by 78% in 2000-10. Further internationalisation of education will help Japan to boost performance and develop globally-competitive talent.

While the recovery in the number of students going abroad is encouraging for Japan's future, the numbers of foreign students coming to Japan are in some ways more striking. Once seen as a "source" country for students seeking to study abroad, Japan has in recent years been trying to reposition itself as a study abroad destination, part of the government's larger drive to promote the internationalisation of Japanese higher education. The goal of its Global 30 programme is to bring in 300 000 international students by 2020; the government has also set a target of 120 000 Japanese students studying abroad in the same year. There are some encouraging signs on this front. Six Japanese universities have entered the top 100 of the QS World University Rankings (for 2014/15), up from 4 in 2009, and foreign student numbers have begun rising again following the disruption caused by the Great East Japan

Earthquake. In a 2012 roundtable discussion of ways to attract foreign students, Japanese experts identified a number of issues, including:

- a lack of pathways for students from other Asian countries to come study and work in Japan
- the lack of an official "foreign student support system"
- inadequate government, industry and private sector collaboration with respect to the recruitment of students post-study to the workforce, and
- a perceived lack of confidence when it comes to promoting the country.

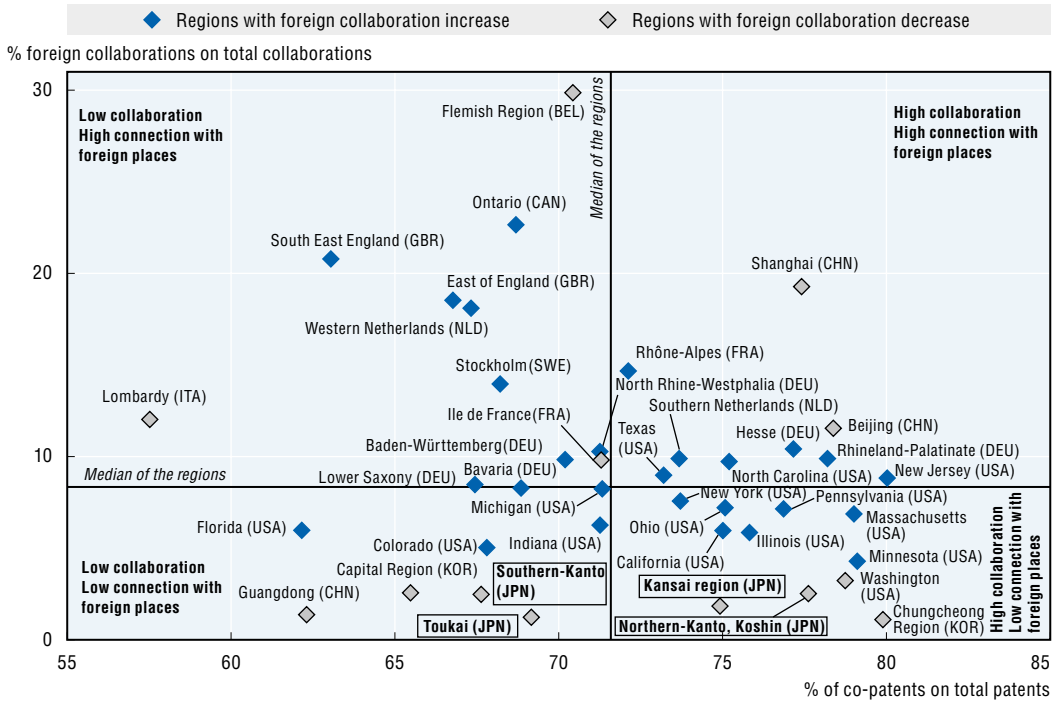
Much is being done to address these shortcomings, including the government's "skilled migration approach," which promotes the employment of international students in Japan after their studies, efforts to expand the range of English-taught courses in Japanese universities and more aggressive recruitment efforts in Asian countries, particularly China. Moreover, the government has also committed to financial support for universities that expand their study-abroad programmes.[26] There are also plans to provide scholarships to help high school graduates take part in short-term overseas study programmes prior to beginning their university studies in Japan. There is considerable scope for regions and cities to take advantage of these opportunities, particularly in promoting themselves as potential destinations for study. While many foreign students will doubtless gravitate to Tokyo, such factors as cost of living, environmental quality, historical and cultural amenities, and strong academic specialisations should enable some regions and cities to promote themselves effectively. Potential actions in this sphere will be considered in the chapters that follow.

Internationalisation is particularly important for Japan's innovation systems

Strengthening international business links and the internationalisation of education should do much to facilitate the deeper global integration of Japan's innovation system. Recent years have seen a growing trend towards "open innovation in global networks", in which firms collaborate with external partners at home and abroad (OECD, 2008). This trend has largely passed Japan by. Japanese firms have not embraced open innovation to the same extent as their foreign peers, reflecting concerns about losing technology to competitors (Motohashi, 2013). As OECD (2015h) shows, the result is that Japan lags other OECD countries on a range of indicators when it comes to cross-border innovation and knowledge creation activities. This is clearly reflected in the relatively weak innovation connections between Japanese regions and foreign partners. Japan's most innovative regions are not so deeply integrated into global innovation networks, and the trend between 1995 and 2010 was towards decreasing international collaboration (Figure 1.25). OECD (2011) finds a couple of Japan's leading regions connected to the periphery of international green patenting networks, but overall integration was low. In 2008-10, all Japanese regions ranked below the OECD median in terms of the share of co-patents filed with foreign co-inventors. Indeed, only 28.1% of Japanese patents filed during the period involved co-inventors in more than 1 prefecture, and only 2.7% involved foreign co-inventors. The corresponding figures for all OECD TL3 regions were 34.4% and 17.8%, respectively. While Japan is home to some strong regional innovation systems, they appear to remain very Japan-centred and even, to a surprising degree, disconnected from each other. They have much to offer the rest of the world and much to gain from it, and efforts to integrate Japan's innovative regions into global networks will be crucial in the years ahead.

Figure 1.25. **Regional patterns of co-patenting**

Per cent of co-patents (X axis) and per cent of foreign collaborations (Y axis) in the top 40 regions with the highest patent applications, 2008-10 and compared to their values in 1995-97



Note: Average number of co-patent applications over the period 2008-2010. The number of foreign co-inventors is defined as the number of co-inventors that reside/work in a TL region outside national borders.

Source: OECD (2011), *Regions and Innovation Policy*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264097803-en*.

StatLink http://dx.doi.org/10.1787/888933324623

The spatial consequences of Japan's restructuring challenge

The spatial effects of demographic change are difficult to anticipate

Predicting the spatial consequences of demographic change in Japan is difficult, since no country has ever experienced what is now unfolding there. There is widespread fear, in particular, of an over-concentration of population in the main urban centres, leaving rural areas and smaller towns and cities under-populated, aged and impoverished. Indeed, there are already policies in place that are explicitly aimed at reducing the population growth of Greater Tokyo, in particular (see below). The concentration of economic activity and population in the centre of the country is unusually great for a country of Japan's size and it appears on some indicators to have been increasing in recent years. At present, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) anticipates that concentration in Tokyo will increase further, with Greater Tokyo being the only major region of the country expected to gain population between now and 2020, after which it, too, will begin to lose population. The capital region is currently experiencing net inward migration flows of about 100 000 per year, with 15-29 year-olds constituting the vast majority of new arrivals.

This is of some concern to the authorities, not least because Tokyo has by far the lowest fertility rate in Japan (1.13 in 2013, as against 1.43 nationally). And Tokyo is just the most extreme case: more generally, young adults appear to be moving to the major cities,

where fertility rates overall tend to be lower. Low metropolitan fertility is generally seen as linked to high living costs, lack of affordable housing and the pressures of work, but it may also be linked to gender mismatches. Ishikawa (2011) cites data showing that migrant flows from the periphery to the major metropolitan areas are mostly young men, whereas young women who move tend to migrate to larger cities within their prefectures of origin. Few women move from prefecture to prefecture. The result is a complicated pattern of spatial gender imbalances in origin and destination areas. Male-female ratios, especially among young adults, are very high in eastern Japan but much lower in the western regions. Within prefectures, though, they tend to be higher in mountainous and farming areas and lower in urban places, including prefectural capitals. The data suggest that these imbalances are indeed related to lower marriage rates.

Policy makers face a dilemma with respect to the degree of concentration that may be desirable

Closely related to this is the question of whether and how the government should attempt to shape the settlement pattern as depopulation proceeds. The productivity imperative would seem to point to a need for greater concentration in an effort to realise the potential productivity benefits of agglomeration, achieve economies of scale in infrastructure and service provision and sustain the global competitiveness of Japan's major cities, particularly the Tokyo-Nagoya-Osaka urban mega-region. Firms in regions that lose a lot of population – and especially places where population decline coincides with rapid ageing – will confront smaller and less resilient labour markets, as well as problems in finding efficient suppliers and generating links with other businesses. Low-population locations will struggle to attain sufficient critical mass to provide basic public and private goods efficiently, since the fixed costs will have to be borne by a smaller number of clients and consumers (Sáez, Ayuda and Pinilla, 2011).

The productivity-focused logic of concentration, however, must be balanced against the need for a sustainable settlement pattern. The authorities are rightly concerned about the environmental deterioration that can occur in abandoned locations, as well as about the equity implications of leaving a substantial portion of the population living in places where depopulation trends may destroy the economic and social fabric of local communities. There is also a fear that over-concentration could leave the country even more vulnerable to both economic shocks and natural catastrophes. This is a particularly real concern in view of Tokyo's vulnerability to earthquakes; many observers believe the capital will experience a major quake in the coming decades. Such fears have been reinforced by analyses such as that contained in the so-called Masuda report, an analysis of the spatial and economic consequences of demographic change prepared by Hiroya Masuda, former Governor of Iwate Prefecture and former Minister of Internal Affairs and Communications. The report, prepared for the Japan Policy Council, created a sensation with its stark warning that 896 local governments – roughly half the total - risked "extinction" by 2040 (see Masuda, 2014, for an English-language summary).

For these reasons, policy makers have recently put increasing emphasis on the revitalisation of "non-metropolitan Japan", including both rural areas and small/medium towns and cities. Many such areas have struggled for decades, as growing population concentration led to depopulation even before fertility dropped to very low levels. In an environment of declining total population, the competition for people is even more acute and their position is even more vulnerable. The erosion of a small community's human

capital may quickly become self-reinforcing, if promising individuals leave because they see that the departure of others with high human capital reduces the opportunities available locally. This, in turn, can have a knock-on effect on asset prices, prompting disinvestment by asset owners keen to exit before prices drop too far. This redistribution mechanism has evident effects on the generation of local fiscal revenues and thus on the investment capacities of local authorities, which add to the risk of a sustained downward spiral. Moreover, the experience of some countries suggests that "winding down" remote communities and relocating their inhabitants closer to facilities and economic activities can be expensive (OECD, 2010b). In any case, states are territorial entities, and most are to a greater or lesser extent concerned with the occupation and exploitation of the national territory, for security or other reasons. Few governments view the depopulation of large swathes of their territory with indifference.

The tension between the logic of concentration and the need for a sustainable settlement pattern cannot be definitively resolved – it must be managed. The authorities are right to be concerned with the global competitiveness of the country's major cities. However, it would be very unwise to neglect the potential of non-metropolitan Japan. Pursuing both these goals with a shrinking population and over-stretched public finances require some trade-offs, but it is difficult to imagine abandoning either of them. Chapters 2 and 4 of this review will look closely at the kinds of policies that might support these objectives without creating unnecessary contradictions or making excessive demands on fiscal resources.

However, the risk of hyper-concentration may not be as great as it sometimes appears

The policy dilemma outlined above may nevertheless be somewhat exaggerated, insofar as there is no *a priori* reason to believe that Japan's settlement pattern will actually be far more concentrated in a shrinking society than in a growing one. There will be fewer settlements and they will, on average, be smaller – that is an inevitable consequence of such large-scale population decline – but it is not at all clear why one might expect that population concentration will increase sharply. Indeed, one of the striking features of urban systems is the persistence observed in the structure of urban systems over time, even in the face of extremely powerful shocks. While the degree of spatial differentiation (concentration) has increased gradually over time, as cities have grown larger, the relative positions of cities in the distribution of city sizes are remarkably stable, owing to a combination of locational fundamentals and path dependence. The spatial structure of economies passing through economic revolutions (agricultural, industrial, informational), as well as major wars and other political upheavals, has been surprisingly persistent, and Japan is no exception (Davis and Weinstein, 2002). It is not clear why the demographic transition should lead to some more radical break with the past.

Despite varying degrees of population concentration across countries, national urban systems typically encompass cities across a range of sizes. Variety is beneficial in the size and character of places no less than in the availability of goods and services. Firms and households choose cities of different sizes as a function of their needs and resources, and there is no obvious reason for depopulation to change this:

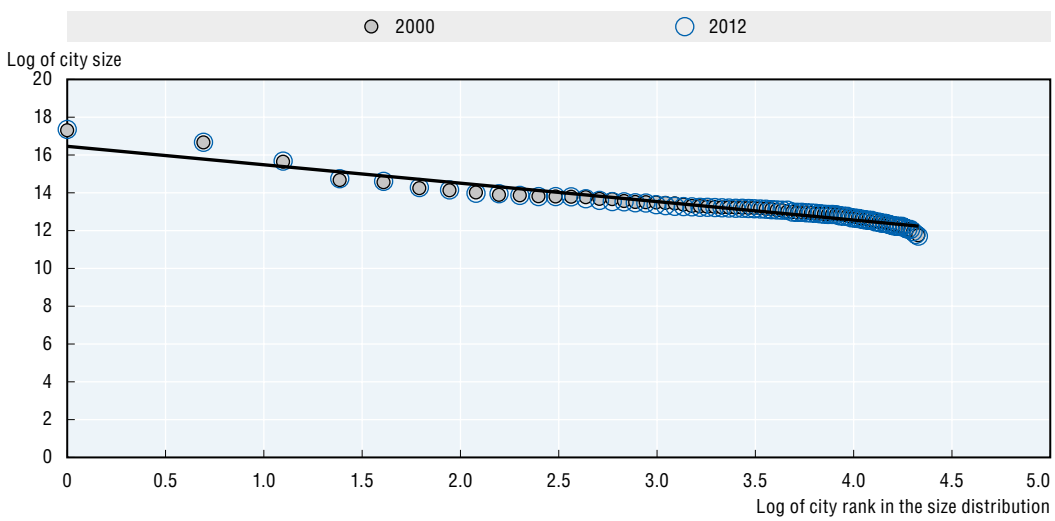
- In terms of functions, **urban and rural activities tend to be complements, not substitutes**. This is true with respect to the consumption and amenities opportunities they offer one another, as well as their production profiles. Cities need rural areas, and rural areas

need cities. Moreover, because relatively small-scale successes can make a big difference locally in a rural setting, it is likely that many rural communities can and will find paths to a prosperous and sustainable future, even if they are smaller than before. This issue is considered in detail in Chapter 3.

- **Cities, by contrast, compete with one another**, and larger cities typically enjoy important advantages when competing with respect to many urban functions. This suggests that the most difficult challenges may face not the rural areas but the small and medium cities. And since large cities are themselves likely to shrink, the suburban hinterlands of the major urban areas may likewise face particular problems.

The city-size distribution in most places tends to conform to the rank-size relationship known as Zipf's law (Box 1.3), at least for cities above a certain size (it tends to break down at very small scales). Japan's urban system is indeed a bit more concentrated at the top than Zipf's law would predict – i.e., Tokyo, Osaka and Nagoya are indeed larger than one would expect (Figure 1.26)[27] However, the difference is not dramatic and there was little change in urban concentration between the 2000 and 2010 censuses, as the population peaked and started to decline. Zipf's law is merely an empirical observation: it has no obvious normative implications and it does not constitute the basis of for any policy recommendations. However, unless there are good reasons to suspect that population decline will lead to major deviations from Zipf's law (for example, if it can be shown that the elderly population really will prefer to concentrate in large cities), there is little reason to imagine that Japan will experience a further dramatic increase in population concentration. The challenge, then, will not be preventing a huge influx into Greater Tokyo but devising policies to improve the performance and viability of cities of all sizes, as well as rural areas, in order to sustain growth and well-being.

Figure 1.26. **City-size distribution in Japan**



Note: City sizes are based on functional urban areas defined in the OECD Metropolitan database rather than on the basis of political-administrative frontiers; Veneri (2013) shows in a cross-national study of OECD metros that functional cities conform more closely to Zipf's Law than administrative cities.

Source: OECD (2015e), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

StatLink *http://dx.doi.org/10.1787/888933324636*

Box 1.3. **Zipf's law and the urban hierarchy**

In the context of urban studies, the term Zipf's law refers to an empirical regularity concerning city-size distributions that has been observed and debated for over a century (Auerbach, 1913; Zipf, 1949): the population ranks of cities in various countries follow a power law of a specific type such that, under the hypothesis of a Pareto probability distribution, the log(rank)-log(size) relationship is linear, with a coefficient equal or close to -1. Put more simply, this implies that the largest city is twice as large as the second largest city, three times as large as the third and so on along the urban hierarchy. While the relationship tends to break down at very small scales, it holds remarkably well for many countries across a very wide range of city sizes (Gabaix and Ioannides 2004). The relevance of Zipf's law in the context of city-size distribution is twofold. First, it relates to efforts to understand the distribution of population and human activity across space; Krugman (1996: 40) has argued that so stable regularity is "spooky" and that there should be a theoretical explanation for it. There is also the question of whether Zipf's law implies some constraints in the pattern of urban growth –i.e., that the growth trajectories of individual cities could not change the overall city-size distribution (Duranton, 2007). Others raise the question of whether there are different levels of economic efficiency for different shapes of the urban systems (number of cities and their sizes) (Storper, 2013).

Sources: P. Veneri (2013), "On City Size Distribution: Evidence from OECD Functional Urban Areas", *OECD Regional Development Working Papers*, 2013/27, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5k3tt100wf7j-en*; F. Auerbach (1913), "Das Gesetz der Bevölkerungskonzentration", *Petermanns Geographische Mitteilungen* 59, pp. 74-76. Gabaix, X. and Y.M. Ioannides (2004), "The evolution of city distributions", in J.V. Henderson and J.F. Thisse (eds.) *Handbook of Regional and Urban Economics*, Ch. 53, North Holland, Amsterdam, pp. 2 341-2 378; G. Duranton (2007), "Urban evolutions: the fast, the slow, and the still", *American Economic Review*, Vol. 97/1, pp. 197-221; Krugman, P. (1996), *The Self-Organizing Economy*, Blackwell, Cambridge, MA; Storper, M. (2013), *Keys to the City. How Economics, Institutions, Social Interaction, and Politics Shape Development*, Princeton University Press, Oxford; Zipf, G. (1949), *Human Behavior and the Principle of Least Effort*, Addison-Wesley, Cambridge, MA.

Ageing might be the one factor that leads to a sharp deviation from the traditional pattern of city-size distribution. It may be that the changing structure of the population will drive increased concentration in large metropolitan areas, above and beyond what one would otherwise expect. Indeed, this hypothesis underlies many recent initiatives, which are based on the expectation that the elderly will (or, in some cases, should) tend to prefer more compact urban living (OECD, 2015c). However, population ageing has been under way in many OECD countries for decades and has not triggered a large-scale shift in the elderly population to the cities. In many cases, rural and suburban areas are ageing faster. Moreover, in Japan as elsewhere, there are significant numbers of older people moving out of urban areas. The typical life-cycle migration pattern in some countries sees young singles moving to dense urban areas in search of jobs and urban amenities, before moving to the suburbs as they have children and then even further out of town as they retire (Detang-Dessendre, Goffette-Nagot and Piguet, 2004; Johnson, Winkler and Rogers, 2013). While this is not such a typical Japanese pattern, Ishikawa (2011) observes that people in late middle age and early retirement age (especially Baby-Boomers) are particularly prominent among reverse (centre to periphery) migrants. He estimates net migration of the 60-64 age group to the periphery at around 50 000 in 2010 – still relatively small as a proportion of the relevant cohorts, at least when compared with other OECD countries. By contrast, later-stage elderly (75+) are more likely to return to the metropolitan areas.

The policy challenges ahead are enormous and will need a multi-dimensional response

The foregoing suggests that some of the most extreme scenarios look very improbable – the country is unlikely just to contract "inwards" towards the great urban mega region in the centre of Honshū. However, the spatial consequences of Japan's demographic shift will still be painful for many places. The country will in future have fewer and smaller settlements. Some will downsize; others may disappear. The baseline assumption, in the absence of strong reasons to expect the contrary, should be that the settlement pattern will remain rather diverse. It is also critical to bear in mind that in some places, downsizing may be the key to prosperity rather than barrier to it: in a number of OECD countries, struggling rural regions have found new sources of growth in less labour-intensive activities (OECD, 2010b). They do not lack the potential for a prosperous future, but that future will be based on fewer people living there. While such restructuring and downsizing can be painful, the long-term goal must surely be to keep people prosperous, not necessarily to keep places populated.

Demographic change will entail important policy responses and significant costs – adapting infrastructure, altering service provision and, in some cases, encouraging or even facilitating the relocation of some populations. Ensuring continued prosperity in such a context will require a co-ordinated approach encompassing spatial planning at various scales from the national to the local, infrastructure and service provision, regulatory reform, and policies for the promotion of innovation and entrepreneurship. The chapters to come will explore these in various dimensions. First, the discussion will look at the national context, focusing on the role of national-level spatial planning and territorial governance (Chapter 2). Then it will turn to the challenges of ensuring the continued dynamism and global competitiveness of Japan's major cities (Chapter 3) before addressing the challenges associated with regional revitalisation – policies critical to sustaining the prosperity and even viability of many smaller cities and rural areas (Chapter 4).

Notes

1. Defined as the ratio of elderly to working-age people.
2. This contrasts with a figure of 15.5% for those OECD countries for which 2013 data are available. In 2011, the last year for which data on all OECD countries are available, Japan's figure was 23.3% and the OECD-wide share was 14.9%.
3. Cabinet Secretariat (2015) projects that, even with a rise in the TFR to 1.8 in 2030 and 2.07 by 2040, the population would be not much above 100 million in 2050 and would fall to around 90 million by the end of the century.
4. Japan experienced substantial inflows of foreign workers from the late Meiji period until the Second World War. These consisted mainly of Chinese, who for a time formed substantial communities in the major port cities, and Koreans who entered Japan between 1910 and 1945, many of them conscripted labourers brought over during the war. After 1945, over 500 000 Koreans and much smaller numbers of Taiwanese and mainland Chinese remained in Japan. These and their descendants constituted the vast majority of foreign residents of Japan until well into the 1980s.
5. In 1970, South Korea recorded a TFR of 4.54, Chinese Taipei 4.00 and the People's Republic of China (hereafter simply "China") 5.44. By 2007 or so, Korea was at 1.26, Chinese Taipei at 1.10 and China, thanks to its one-child policy, at 1.6.
6. The Geographic Concentration index of population is defined as: $\left(\sum_{i=1}^{N} \left|p_i - a_i\right| / 2\right) * 100$ where p_i is the population share of region i, a_i is the area of region i as a percentage of the country area, N stands for the number of regions and $|\ |$ indicates the absolute value. The index lies between 0 (no concentration) and 1 (maximum concentration) in all countries.

7. The increase in concentration of population as measured by the TL3-level concentration index was not out of line with trends elsewhere in the OECD and was only slightly above the OECD average. However, this, again, reflects in part the construction of the index, which does not reflect the concentration in the Tokyo-Nagoya-Osaka mega-region.
8. Canada, Greece, Norway, Portugal and Switzerland. It is noteworthy that two of these countries have extremely remote northerly regions based on resource-extraction, while Greece also has plethora of small islands and Switzerland an extremely mountainous topography, which tends to favour fragmentation.
9. Data for some OECD countries are not available for 2012 and 2013.
10. Expenditure on public works did rise substantially in the 1990s but has since fallen back to below the level of 1990.
11. Non-interest central government spending (i.e. total expenditures minus national debt service, local allocation tax grants, etc.).
12. It should be noted that the period of coverage is not identical to that in Figure 1.11, so the two are not strictly comparable.
13. In 2011, 63% of women aged 25-34 had university degrees, as against 55% of men in the same age group.
14. The OECD harmonised unemployment rates are compiled for 34 OECD member countries and conform to the guidelines of the 13th Conference of Labour Statisticians of the International Labour Office (referred to as the ILO guidelines). In so far as possible, the data have been adjusted to ensure comparability over time. All series are benchmarked to labour force-survey-based estimates. The unemployment rates for the European Union member countries, Norway and Turkey are produced by the Statistical Office of the European Communities (Eurostat). For the remaining OECD countries, the OECD is responsible for collecting data and calculating unemployment rates.
15. Post-taxes and transfers, 50% threshold.
16. According to the OECD's Social Expenditure Database, the ratio of family-related social expenditures to GDP was 0.96% in Japan in 2009, as against an OECD average of 2.3% and levels of 3.2 and 3.8% in France and Sweden, respectively. A Japanese estimate for 2011, showed a somewhat higher figure for Japan, at 1.35% (CJF, 2014).
17. *http://www.kantei.go.jp/jp/singi/sousei/pdf/20150630siryou1.pdf*; *http://www.kantei.go.jp/jp/singi/sousei/pdf/20150630siryou2.pdf*.
18. Osaka, Hyogo, Miyagi and Nara.
19. Chapter 2 will rely chiefly on the OECD's Metropolitan Database to analyse urban performance in terms of FUAs. However, because the coverage of the database is still limited, owing to the need to construct all the indicators included in it, the prefectural-level data is far richer and the analysis will, from time to time, use Statistics Japan's MAs as a unit of analysis.
20. The pension eligibility age is now 65 for men (63 for women) for the basic pension and 61 for men (60 for women) for the Employees' Pension Insurance.
21. See, inter alia, Joshi (1990); Joshi and Davies (1992); Gray and Chapman (2001); Joshi and Davies (2002); Davies and Pierre (2005).
22. Note that the cost of education is the same for women and men; lower earnings make it harder for women to recover the cost of their studies.
23. See OECD (2015h) for an overview. The Council on Science and Technology Policy, in particular, has been reorganised and renamed the Council on Science, Technology and Innovation.
24. Small, open economies must, of necessity, source more inputs from abroad in GVCs than larger countries such as Japan and the United States, where more of the value chain is likely to be domestic. The appropriate comparators for Japan are therefore the other G7 countries.
25. Japan maintains relatively low tariffs but non-tariff barriers are significant, such that the country ranks 49th out of 105 countries in the latest iteration of the World Bank's Overall Trade Restrictiveness Index; only 4 OECD countries were found to be more restrictive.
26. Between JPY 120 million and JPY 260 million in subsidies are available each year for 5 years to 40 universities that commit to increase the number of Japanese students going overseas.
27. The reasons for this and its implications are explored in Chapter 3.

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Chapter 2

Long-term vision, planning and governance in Japan

This chapter considers the institutional and policy framework that Japan is putting into place in order to secure national prosperity and a sustainable settlement pattern in the face of the quite radical demographic changes now under way. It starts with an analysis of the National Spatial Strategy adopted in 2015 and a look at the work of the Government Headquarters for Overcoming Population Decline and Revitalising the Local Economy. This is followed by a discussion of the relationship between revitalisation efforts and policies aimed at greater decentralisation in Japan's public governance. Two further sections focus on inter-governmental revenue-sharing and grant allocation and on possible pathways for reforming inter-governmental transfer mechanisms. The final portions of the chapter consider national infrastructure policies and the future of local public corporations, particularly – but not only – those working in infrastructure sectors.

As seen in Chapter 1, the prospect of a large-scale and sustained fall in population has led to considerable debate about how the settlement pattern of the country will – or should – change. The trends in question are not new – the Basic Act on Measures for the Ageing Society was adopted as long ago as 1995 – but they are unfolding only gradually, so it has taken some time to generate a sense of urgency about them. That is now changing, and the current government has made Japan's demographic transition one of the central items on its domestic policy agenda. This chapter therefore examines the broad national frameworks shaping the response to Japan's economic and demographic challenges: first, it looks at the national-level spatial vision embodied in the Grand Design for National Spatial Development to 2050 and the National Spatial Strategy; it then provides an overview of the activities and agenda of the new Government Headquarters for Overcoming Population Decline and Revitalising Local Economies. Because so much of the spatial dimension of Japan's adaptation to economic and demographic change will depend on subnational governments, the discussion then shifts to multi-level governance issues, particularly the systems of municipal finance, intergovernmental transfers and infrastructure maintenance and renewal.

The local revitalisation project that the government has developed since early 2013 is intended to provide a framework for coherent, long-term policy aimed at turning Japan's forbidding demographic and economic challenges into opportunities for growth, innovation and enhanced well-being. This was embodied in the Grand Design, published by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) in July 2014.[1] The Grand Design's very long-term perspective has, in turn, been incorporated into key government strategies, including the new ten-year National Spatial Strategy (NSS) adopted in August 2015 and a five-year comprehensive development strategy prepared by the Government Headquarters for Overcoming Population Decline and Revitalising Local Economies. These efforts are predicated in part on building on a sense of crisis (*kikikan*) in order to overcome institutional inertia and the tendency of bureaucratic structures to operate within narrowly defined sectoral policy "silos". There are important potential complementarities among different strands of public policy that can only be realised with a whole-of-government approach, and that is precisely what the government has been working to realise. At the same time, there has been clear emphasis on the need to combine stronger leadership from the centre of government with bottom-up processes that allow the policy response to demographic change to reflect Japan's economic, geographic and social diversity (Box 2.1).

These two emphases – a move from sectoral to integrated policies and from a very top-down approach to one that combines top-down and bottom-up initiative – are central both to the government's long-term spatial vision and in its creation of new institutions and strategies for co-ordination of policy across sectors and levels of government. The next sections consider these two central-level innovations. The discussion will then turn to the multi-level governance issues involved in realising that vision.

Box 2.1. **Transcending sectoral approaches to policy**

Speaking to the first meeting of the Government Headquarters on Overcoming Population Decline and Revitalising Local Economies in September 2014, Prime Minister Shinzō Abe stated that "vertically-segmented ministries and agencies with hand-out style responses must be resolutely eliminated. Regional characteristics will be respected to ensure that approaches are not adopted that seek to apply identical frameworks nationwide". Two months later, he reiterated the point emphatically at the Council's November meeting:

"The most important aspect of measures to be implemented by this Council is that they eliminate vertical segmentation and employ one-stop responses. For some time, eliminating vertical segmentation and employing one-stop responses have been points of emphasis. Our mission is to make solid progress with the areas that have yet been addressed or advanced. I would like our response to be truly beneficial to regions. For this reason, at the end of last month I instructed Minister Ishiba and relevant ministries to reorganise and integrate similar policies, and actively endeavour to review new issues from the standpoint of concentrating on effective policies while eliminating vertical segmentation and redundancies".

Source: Prime Minister and Cabinet (2014a), "Headquarters for Overcoming Population Decline and Vitalizing Local Economy", web site of the Prime Minister of Japan and His Cabinet, 12 September, *http://japan.kantei.go.jp/96_abe/actions/201409/12article3.html* (accessed 15 July 2015); Prime Minister and Cabinet (2014b), "Headquarters for Overcoming Population Decline and Vitalizing Local Economy", web site of the Prime Minister of Japan and His Cabinet, 6 November, *http://japan.kantei.go.jp/96_abe/actions/201411/06article2.html* (accessed 15 July 2015).

The National Spatial Strategy

The government sees Japan's future as compact, networked and diverse

The NSS adopted in August 2015 focuses squarely on issues of depopulation and regional revitalisation, as well as disaster resilience and environmental sustainability. The new plan also places particular emphasis on competitiveness and innovation. Its adoption represents an important step beyond the 2014 Grand Design in two important respects. First, it is a truly horizontal initiative, in the sense that it has been adopted by the government as a whole, not merely a single ministry. Its adoption followed an intensive exercise in inter-ministerial co-ordination and consultations extending beyond the government itself under the aegis of the National Land Council, which brings together parliamentarians, academic experts, representatives of the private sector, elected officials from the cities and regions, and others. This process represents an important source of legitimacy for the NSS.[2] Secondly, at least twenty other national laws reference the NSS in one way or another, stipulating that their provisions must be implemented in harmony with the National Spatial Strategy.[3] This makes it a more potent instrument of policy than the Grand Design. It also means that many other plans drawn up by ministries and other bodies will need to be coherent with the NSS.

The central concepts defining the Strategy's national-level vision are **compact** and **networked**.

- In order to ensure effective service delivery, the settlement of Japan should become more compact. At a national scale, the NSS acknowledges that some areas will become effectively depopulated, though it seeks to sustain a broad settlement pattern throughout the national territory. At smaller scales, it addresses the restructuring of urban and rural settlements that will be needed to maintain their cohesion and the efficiency of service delivery.

- A Japan in which cities and towns are shrinking will need to be networked: improved connectivity will be critical to maximising the potential economic benefits of agglomeration. Better connectivity among towns and cities, as well as within them, is meant to offset to some extent the loss of agglomeration potential that will occur as a result of a shrinking population (and, even more, as a result of a shrinking workforce). This applies to both transport and communications connectivity. Better networking of people and firms should help encourage innovation and the exchange of ideas as well as goods and services.

Box 2.2. **Key policy directions of the National Spatial Strategy (National Plan)**

1. Attending to both local revitalisation and global competitiveness

The NSS expresses a clear commitment to harmonising the pursuit of the two key objectives identified in Chapter 1 of this review: revitalising regional and rural economies and strengthening the global competitiveness of the major metropolitan areas, especially the Tokyo-Osaka-Nagoya urban region. In addressing the challenges of population ageing and decline, it emphasises such instruments as collaborative core urban areas, compact city policies and small stations. The NSS looks outward, to Japan's global position, as well as inward at changing settlement patterns. It therefore places great emphasis on competitiveness and future development of the main urban centres, especially Tokyo. The Strategy thus includes sections on the 2020 Olympic Games and the construction of the *Chūō Shinkansen* magnetic levitating train from Tokyo to Nagoya and Osaka. At the same time, it identifies steps to improve the innovation performance of Japanese cities, to increase their resilience to shocks, to make cities better adapted to the needs of the elderly and to families with children.[4] Other competitive priorities in the strategy include the attraction of investment from other countries, and strengthening external connectivity by using both the Japan Sea side and Pacific Ocean sides of the country to tap into the dynamism of East Asia and Eurasia continent.

2. Safety and managing land/infrastructure

A second major set of concerns set out in the NSS concerns national resilience to natural disaster, which is a particular challenge for Japan in view of its location, topography and geology. The country is unusually subject to earthquakes, volcanic eruptions, typhoons, floods and heavy snowfalls, making resilience a central concern of spatial policies. The strategy also addresses sustainable development priorities, emphasising policies for appropriate natural resource management, and the need to make better use of infrastructure, while maintaining and upgrading it more efficiently.

3. Participation and cooperation

A final emphasis that should be mentioned concerns the human dimension – not merely human resource development to support regions but also mechanisms to enhance collaboration among and within regions, as well as to ensure that cross-cutting issues are addressed in the kind of integrated fashion described above.

Source: Ministry of Land, Infrastructure, Transport and Tourism (2015a), "National Spatial Strategy", Ministry of Land, Infrastructure, Transport and Tourism, August, available (in Japanese) at: *http://www.mlit.go.jp/common/001100233.pdf*.

These concepts – compact and networked – are to be applied differently at different scales and in different circumstances (Table 2.1). For example, the notion of compactness is intended not merely to adjust the physical structure of shrinking places in order to streamline service delivery (an essentially defensive response); it is also meant to prompt regions and cities to adopt more innovative approaches to inclusive growth and higher

productivity (a pro-active strategy). For very large cities, it reflects a determination to concentrate high-level urban functions, so that such cities can be effective engines of growth for their regions (e.g. Collaborative Core Urban Areas). One major concern is to avoid the emergence of sprawling, car-dependent cities, which would be economically and environmentally undesirable. The focus in cities is thus on concentrating key urban functions (especially medical care, elderly care, welfare functions and commerce) in city centres or in residential core areas, connected by public transport networks, and preventing further spatial expansion. For example, major hospitals would be located very centrally, while smaller clinics and elderly care or childcare facilities would be placed in core residential areas. In smaller towns, villages and rural areas, by contrast, the emphasis is on creating basic service-delivery hubs that will help sustain rural communities around small, multi-functional cores (the so-called small stations). Networking will likewise operate at different scales, from improved connections between very small hamlets and nearby service hubs (small stations) to the linking of proximate medium-sized cities and the creation in the heart of the country of an urban mega-region encompassing Tokyo, Nagoya and Osaka (see Chapter 3 for details).

Table 2.1. **Instruments for compact and networked places**

Name of initiative	Concept	Targets	Drivers	Plans contain the name of initiatives
Collaborative core urban areas (Renkei Chusu Toshi Ken)	To urge subnational governments to co-operate	No targets *60 areas are identified as candidate areas (MIC).	Subnational government is the unit, LAT and subsidies support from MIC are utilized.	Comprehensive strategy (Prime Minister and Cabinet, 2014a), National Spatial Strategy (MLIT, 2015)
Sustainable residential areas (*Teijyu Jiritsu Ken*)	To make smaller cities and villages that are sparsely populated to be sustainable	140 areas by 2020 (Comprehensive strategy, National Spatial Strategy) from 79 areas in 2014.	Municipality is the unit, LAT is utilised.	Comprehensive strategy (Prime Minister and Cabinet, 2014a), National Spatial Strategy (MLIT, 2015)
Small core station (*Chisana Kyoten*)	Ensure smaller cities and villages are sustainable. School districts (1 000 to 20 000 people) could be the sample size.	No targets	Subsidies from the Government Headquarters on Overcoming Population Decline and Revitalising Local Economies	Comprehensive strategy (Prime Minister and Cabinet, 2014a), Grand Design 2050 (MLIT, 2014), National Spatial Strategy (MLIT, 2015)

Source: OECD synthesis based on the Grand Design and the NSS.

With respect to regional development, the NSS emphasises diversity and collaboration. The logic here is fairly straightforward. As the population declines, the competition among regions and cities for people and resources will intensify – it will, indeed, be a negative-sum (not merely a zero-sum) game. This competition will be driven largely by similarities among them – similar endowments, needs and aspirations. However, since the majority of places must lose in any such competition, it is their diversity that offers the best hope for the future. First, most regions and cities will need to identify their specific assets and potentials in order to attract people and investment successfully. Secondly, this very diversity of endowments and strategies creates the possibility for collaboration, because it gives rise to the possibility of identifying complementarities among places and building strategies to exploit them. Fostering diversity thus offers a way to promote both regional innovation and collaboration across different communities.

Connectivity among cities is an important theme of the NSS. Linking proximate cities that are losing population could help them to prosper. For example, MLIT points to the cities of Matsue (Shimane Prefecture) and Yonago (Tottori Prefecture). Their respective populations in 2010 were 220 000 and 326 000, but both are shrinking. The projections for 2050 are 156 000 and 209 000 – a loss of roughly one-third (almost 30% for Matsue and 36% for Yonago). Connecting the cities with an expressway could reduce the population loss, albeit only slightly: the MLIT estimate with the expressway is 373 000 in 2050, as opposed to 365 000 without. However, the main effect would be to preserve a single FUR of over 300 000. This threshold is not accidental: the government reckons that a city with a population of 300 000 or more will be able to offer the full range of urban amenities and services.

Another theme that is central to the NSS's approach to future spatial organisation is the creation of small stations in rural areas. These will concentrate basic service delivery, including administrative services, healthcare, shopping and so on, in specific places with transport networks organised so as to make them as accessible as possible to the rural population of the surrounding areas. These, too, are to vary with scale: some will be quite basic and limited to essential functions, while others, where population and resource permit, may come to act as local centres of innovation, playing a role in supporting efforts to bridge primary, secondary and tertiary activities in rural areas (the so-called sixth industry initiative – see Chapter 4 for details) and in promoting renewable energy generation. These and similar initiatives are intended to promote a degree of de-urbanisation, in an effort to deconcentrate the economy and the settlement pattern and help revive rural areas and non-metropolitan regions. Indeed, promoting migration to rural areas is an explicit aim of the NSS, as well as a central priority for the government's new Headquarters for Overcoming Population Decline and Revitalising Local Economies (see Chapter 4).

The creation and maintenance of small stations will largely be left to prefectures and local authorities, although the funds involved will often come from the central government (see below). This is clearly an area where prefectures can play a central role: the ministries in Tokyo lack the local knowledge and information needed to plan the location of small stations, but leaving it to municipalities alone risks triggering a race to invest public funds into too many small stations in an effort to stem local population decline. Even the prefectures may be inclined to over-supply them, though. For example, Kochi prefecture, on the south coast of the island of Shikoku, plans to create 130 small stations over the next decade. This implies a catchment area for each small station of about 54 km^2, meaning that one would never be more than 4-5 km from a small station. On a nation-wide basis, this would imply the construction of around 7 000 small stations.

The small stations initiative is similar to approaches to service provision undertaken in some other OECD countries, such as France's *Maisons de service au public* (Box 2.3). Similar initiatives may also be observed in places like Australia (the Rural Transaction Centres) and Finland (Citizen Service Offices), to name but two others. These and other one-stop shops (OSS) can cut provider costs and increase access by rural dwellers to necessary services. The range of services offered by OSS in OECD countries can include anything from education, childcare, government information, referrals and advice, health/elder care, social support services (rehabilitation, housing support), to cultural and recreational activities. Driven largely by community need and involvement these "all purpose" service centres are expected to continue to grow in rural areas because they allow governments to provide rural services on the basis of cost-efficiency (OECD, 2010). Having said that, Japan's small station initiative looks in some ways even more ambitious than OSS found in most

other OECD countries, since small stations are to play a role in concentrating the delivery of private as well as public services, in reshaping the settlement pattern over time and in some cases acting as centres of innovation.

Box 2.3. **France's Maisons de service au public**

After an initial experimental period, the French government decided in July 2013 to develop one-stop shops for citizens, called *Maisons de services au public* ("Public services houses"), offering access to such public services as post offices, public transport ticketing, energy utilities, unemployment insurance and welfare services (pensions, family allowances, health insurance, etc.). The purpose of the *maisons* initiative is to guarantee public service delivery in low-density or isolated territories by sharing costs and employees as far as possible. For technical and statutory reasons, the sharing of employees has proved more complex than the sharing of costs or premises.

The *maisons* are usually financed by local authorities (50%), public operators (25%) and the national government (25%). Beyond subsidising them, the French government plays an important role in promoting this policy, harmonising the services provided and giving them a common label. It has also set up a partnership with the French postal service, *La Poste*, to transform some post offices with low activity (mainly in rural or mountainous territories) into *Maisons de services au public* in order to make them more profitable and to avoid financing specific buildings.

In March 2015, the government's Inter-ministerial Committee for Rural Development set a goal of increasing the number of MSPs threefold, up to 1 000, by 2017, in accordance with the departmental schemes for the accessibility of public services that are enshrined in legislation for a new territorial organisation of the French Republic adopted in the summer of 2015.

Source: Information provided directly by the Commissariat Général à l'Égalité des Territoires.

The NSS also addresses resilience concerns. At a national level, the focus is on creating multi-modal corridors connecting the Pacific Rim and Japan Sea sides of the country in order to improve resilience to earthquakes and other natural disasters.[5] This reflects to some extent the experience of the Great East Japan Earthquake in 2011, when relief efforts were hampered by transport bottlenecks.

The Strategy offers a coherent long-term vision to serve as a framework for policy

The new NSS marks an important milestone in the evolution of Japan's response to demographic change. It is, of necessity, a very broad vision and it remains to be seen whether and how certain of its basic strategies (Box 2.2) will be realised in practice. Even so, at a time when Japan needs an integrated, cross-sectoral policy approach to ageing, it offers a coherent framework against which more specific concrete initiatives can be assessed and within which they can be rolled out. Together with the Grand Design for National Spatial Development to 2050, it also represents an important source of data and analysis for central and subnational governments to draw on. Overall, the strategy's compact and networked approach seems broadly correct. The aim is to sustain a settlement pattern that facilitates the realisation of agglomeration economies while avoiding the abandonment of very large parts of the national territory.

The evidence on the economic benefits of connectivity is compelling. While the evidence is overwhelming that, other things being equal, agglomeration benefits are increasing with city size, smaller cities are not that much disadvantaged where they are well-connected.

They can "borrow" agglomeration from neighbouring cities. OECD (2015a) finds that, for a doubling of the population living within a 300-km radius around a city, the productivity of the city in the centre increases by 1.0-1.5%.[6] Nor are such positive spillovers limited to cities; cities typically increase the prosperity of the whole region in which they are located. The spread effects of growth generated by a city of 2 million people can extend 200-300 km outwards. So the emphasis on networks clearly makes sense. This emphasis on the link between networks and agglomeration effects reflects the authorities' recognition of the distinction between concentration and agglomeration. Though closely related and often treated almost as synonyms, the two are not identical. Agglomeration is not simply about density or concentration but about the ease with which agents can interact and transact with a large number of other agents. Concentration can increase if the density of firms or inhabitants rises, but if this leads to congestion or runs up against bottlenecks to internal connectivity, there may be little agglomeration effect. Conversely, if connectivity is improved and transaction costs fall, agglomeration can increase even if no firm or household changes location. The current vision for the future turns in no small measure on finding ways to increase agglomeration benefits without necessarily increasing the concentration of population or economic activity.

Policy makers will need to adapt the NSS's core concepts to widely differing circumstances

It is important to remember that the NSS is an overall vision. It provides a framework for thinking about Japan's future and trying to ensure overall policy coherence, rather than a set of highly prescriptive measures and indicators. The vision itself is based on one of a number of possible scenarios reviewed by MLIT and it may need to be adapted if Japan's evolution departs too far from that baseline scenario. The implementation of this overall vision will in many cases be up to other ministries and levels of government. In translating its broad parameters into concrete policies, they will need to recognise that its core concepts must be applied in different ways in different places.

For example, the emphasis on "compactification" need not imply a need for strong densification policies across all cities. As will be seen in Chapter 3, compact development is about much more than just increasing densities. The economic and environmental benefits of well-planned urban density depend in part on scale, so there will be a strong case for trying to ensure that large cities retain fairly dense cores as their populations decline. It will also be important to avoid the emergence of "perforated" cities, patchworks of settled and abandoned territory with huge random chunks of wasteland. In some ways, ensuring the coherence and cohesion of major cities will be more of a priority, economically and environmentally, than their density. In smaller towns and cities, lower densities could be welfare enhancing at low cost in terms of productivity or the environment.

Moreover, allowing different settlement patterns and lifestyles in different places will be critical to sustaining communities across the country and limiting tendencies to over-concentration. That is one reason why the NSS's emphasis on diversity is so important – and should not be forgotten when it comes to turning the other broad concepts into concrete policies. One of the problems with some past urban policies in Japan (e.g. zoning legislation, urban planning) was a tendency to standardise too much, often extending to the entire country policies that made sense for Tokyo but that were far less relevant to conditions elsewhere. This cuts against the logic of diversity and collaboration. The more alike places become, the harder it will be for the smaller ones, in particular, to compete

and the harder it will be to allow collaboration to emerge on the basis of complementary endowments. Policies designed in keeping with the vision embodied in the NSS should thus allow plenty of room for local experimentation and adaptation, including sustainable low-density living.

The networked dimension of the vision should also be approached carefully. The emphasis on networking will require improved connectivity, but this does not necessarily imply that extensive new connective infrastructure must be built. Some new connections will surely be needed but, at a time when the country has major public finance challenges and increasing difficulty in maintaining its already dense physical infrastructure, the emphasis in the first instance will probably need to be on optimising the use of existing networks and incremental investments in them to remove bottlenecks and increase efficiency. In some parts of the country, population decline may even point to the need for the downsizing of some infrastructures. Yet for many local authorities, additional social and connective infrastructure may be seen as central to their longer-term viability. Infrastructure issues are addressed at greater length below and in chapters 3 and 4, but it should be emphasised at the outset that resource constraints and declining population will make infrastructure investment decisions both more important and more difficult.

The NSS's emphasis on urban-to-rural migration raises important questions. The authorities understandably view the movement of young people to the major cities as a threat to the economic vitality and even viability of many smaller towns and cities and rural areas. The government also notes that birth rates are lowest in the big cities and higher in rural areas, implying that reverse migration could help raise fertility. Moreover, survey evidence suggests that a significant proportion of urban Japanese would welcome the opportunity to live in more rural settings. As seen in Chapter 1, the principal challenge here concerns job creation: in recent years, Tokyo, in particular, has been the only significant generator of new employment in Japan. Any attempt to rebalance the economy, then, should begin with efforts to promote the creation of more and better jobs in non-metropolitan areas. This would be a most welcome development and, as will be seen, there are steps the authorities can take to promote it. Two caveats are in order, though. First, the scale of the task and the state of public finances mean that such job creation can only be sustained if it does not depend on constant infusions of central support in the form of tax breaks, subsidies or public investment. Secondly, even a very successful policy is unlikely to have dramatic results: large-scale urban-to-rural migration in peacetime is almost unprecedented in the absence of famine, epidemic or natural catastrophe.[7] In any case, given Japan's productivity challenge, the emphasis must be on creating high-productivity employment, whether in Tokyo or the regions.

The National Spatial Strategy will have an important influence on the future settlement pattern

Policy makers cannot determine or know in advance where people will live in future. People and firms will "vote with their feet" in response to demographic, economic and other changes. However, national policies play a critical role in shaping the choices that households and firms confront and in avoiding undesirable social, economic or environmental outcomes. Central policies regarding spatial planning, infrastructure provision and the organisation of public services clearly influence the location decisions of households and firms: in some cases, infrastructure investment decisions can to have a decisive impact on the long-term viability of one community as opposed to another.

This, of course, is true of most countries at most times, but it is a particularly important issue in a Japan that is experiencing rapid demographic decline. The trade-offs involved in such choices were far less painful in a fast-growing economy with a rising population. Yet while shaping agents' location choices, policies will also need to respond to them. Infrastructure plans will have to adjust as and when forecasts of population trends, economic growth or migration patterns prove to be off the mark. Infrastructure investment, in particular, will involve very difficult and politically contentious decisions about where to renew or expand provision and where to downsize.

The National Spatial Strategy is the most important of a number of key planning documents. There are also eight regional plans, which are prepared as part of the National Spatial Strategy process. On the basis of the National Plan, the central government and the relevant prefectural governments work together to formulate regional plans for eight broad regions defined in the legislation.[8] Hokkaidō, the northern-most of the large Japanese islands, and Okinawa, a chain of islands scattered over a large area of the ocean to the south, have statutory regional development plans prepared for each of them under separate statutes, with the necessary arrangements made to align them with the National Spatial Strategy. In addition, there are three areas in which joint committees or subcommittees work across the regional planning boundaries, to ensure coherence and address connectivity issues:

- Hokuriku and Chūbu co-operate to address the need for a regional transport system connecting the Japan Sea and the Pacific Ocean in central Honshū and to manage the mountainous areas of Chūbu in an integrated manner.
- The Chūgoku and Shikoku areas are to address joint projects to develop connections across the Sea of Japan to the Pacific and to manage the natural environment of the Seto Inland Sea.
- A subcommittee was formed to address the development of the three northern prefectures of North Kantō and the prefectures of Fukushima and Niigata in the Tōhoku area.

The plans are being prepared in parallel with the national strategy, but the timescales for completion are staggered in such a way that the regional plans can be prepared relatively quickly following approval of the National Spatial Strategy.

The history of past plans highlights both the potential and limits of national spatial planning

Japan has practised national-level spatial planning for over half a century, following the adoption of the Comprehensive National Land Development Act of 1950. The first Comprehensive National Development Plan was adopted in 1962, with a horizon to 1970. That plan, like its successor, the New Comprehensive Development Plan adopted in 1969, was oriented to guiding the spatial development of Japan's then fast-growing economy. This was a time of rapid population growth, urbanisation and industrialisation, each of which had important spatial consequences. Two further Comprehensive National Development Plans were adopted in 1977 and 1987, each with a horizon of about a decade or more. However, as economic and population growth slowed, the settlement pattern and economic geography of the country were more stable and there was less urgency about spatial planning. By the end of the century, this was changing again, leading to the approval in 1998 of a Grand Design for the 21st Century that – despite its name – targeted the 2010-15 period and explicitly addressed the consequences of globalisation, demographic change and the information technology (IT) revolution. In 2005, the 1962 legislation was fundamentally revised and

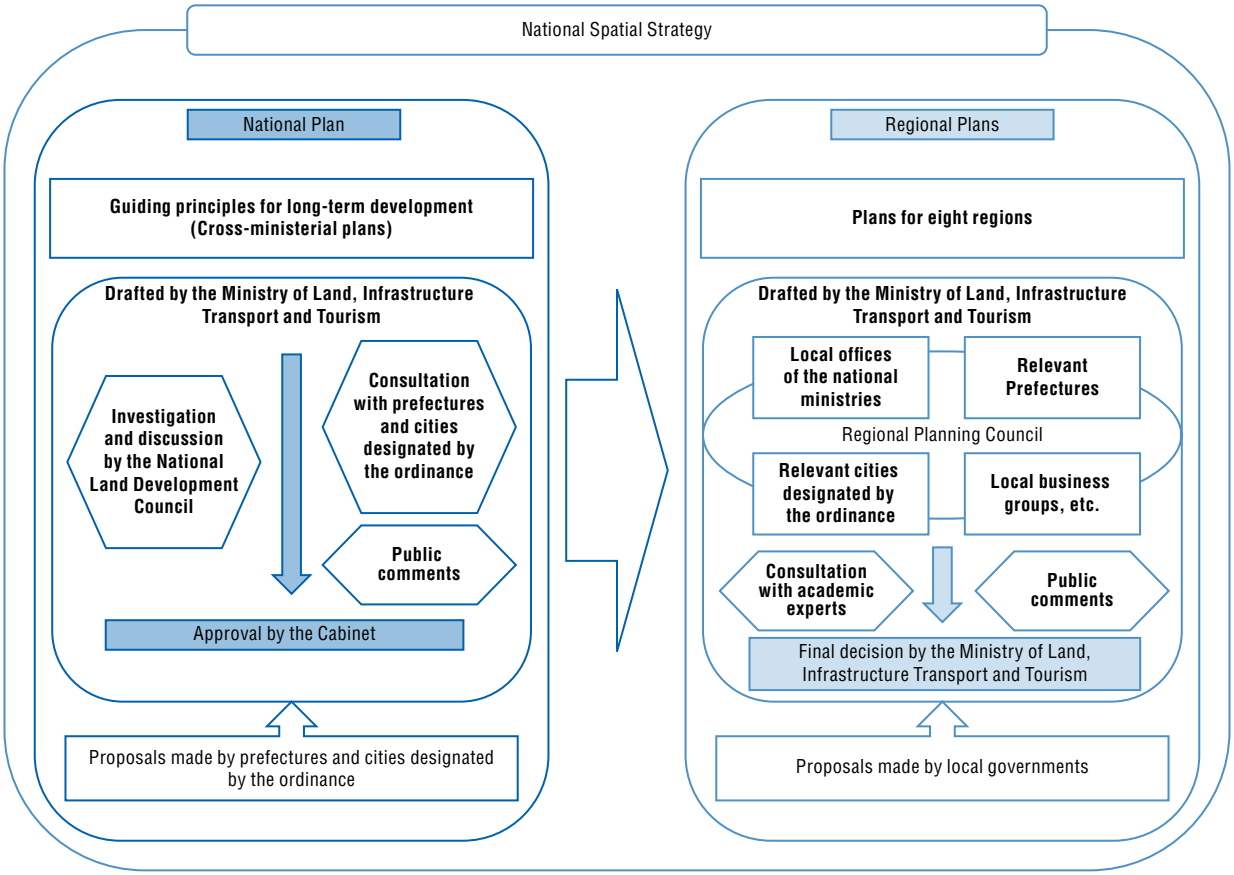
was renamed the National Spatial Planning Act. The new act places more emphasis on the efficient use of existing stocks of land and resources and on their preservation, reflecting a very important shift from a planning regime driven by growth and development goals to one concerned with demographic decline and the sustainable use of the national territory.[9] The 2008 National Spatial Strategy reflects this change in priorities.

The history of spatial planning in Japan illustrates both its limits and its potential. On the one hand, the ability to shape the economic and human geography of the country is constrained. The decentralised location choices of households and firms have consistently overwhelmed any policy preference for a more balanced settlement pattern. As early as 1962, the Comprehensive National Development Plan explicitly aimed to decentralise the industrial structure in an effort to correct what was perceived as overpopulation in the largest cities. Similar aims were set out in the 1969 and 1977 plans, as well as in the 1998 Grand Design for the 21st Century and the 2008 spatial strategy.[10] While these plans led to infrastructure investments and other initiatives to encourage manufacturing and other activities to relocate away from the Tokyo-Nagoya-Osaka urban region, the dominant trend has been towards further concentration of both people and economic activity. Yet it would be a mistake to overlook the extent to which the plans provided a framework for significant policy shifts and investments, such as growth pole strategies, the industrial development of the Pacific coast of Honshū, the 1964 New Industrial City Development Act, and the national networks of motorways and high-speed railways (*Shinkansen*).

Both the limits and potential of national spatial planning efforts should be borne in mind when assessing its role in addressing demographic change. The national-level planning system does not offer a definitive solution to the problem of "what goes where". What it does provide, which is critical in a context of uncertainty and demographic change, is a coherent, long-term vision of the government's priorities and objectives and thus a framework within which to ensure the coherence of various sectoral policies with spatial impacts and, in particular, the co-ordination of more detailed land-use, transport and infrastructure planning processes. Such co-ordination is particularly important given Japan's population density and settlement pattern. It is noteworthy that the four countries identified by OECD (2001) as placing relatively great emphasis on the role of the central government in spatial planning (e.g. Belgium, Japan, Korea, the Netherlands) are all densely populated and face important land-use constraints. In a situation characterised by high levels of uncertainty, the strategy also provides a body of analysis and evidence on the basis of which to present or evaluate options for the future, consistent with the principle of reversibility in planning.

In a real sense, such national plans and strategies are primarily as a co-ordination instrument, involving a large number of public and private sector players and contributing to the formation of a consensus around shared goals (OECD, 2001). Indeed, the process of planning is arguably more important than the specific plans that result. A truly dynamic, participatory planning process can strengthen communication among public and private sector stakeholders, reveal information and promote economic self-discovery. The plans that are prepared along the way are understood to be provisional documents, snapshots of something that is constantly changing, but they are crucial in providing agents with the data, analysis and projections of future scenarios needed to operate in an uncertain environment. At a time when the government is devoting enormous energy to overcoming traditional sectoral approaches to policy in favour of an integrated, government-wide approach to the challenges of demographic change, such a co-ordinating device is indispensable.

Figure 2.1. **Formulation of the National Spatial Strategy**



Source: Ministry of Land, Infrastructure, Transport and Tourism (2014a), "Grand Design of National Spatial Development Towards 2050, Japan", Ministry of Land, Infrastructure, Transport and Tourism, Tokyo, July, available at: *www.mlit.go.jp/common/001088248.pdf*.

A new government headquarters

Since September 2014, co-ordination of local revitalisation efforts has been the responsibility of a newly designated Minister for Overcoming Population Decline and Revitalisation of the Local Economy. The Minister oversees the Headquarters for Overcoming Population Decline and Revitalising the Local Economy created in 2014. Its mission is also central to the "third arrow" of Abenomics. It is significant that the revitalisation minister is in charge of another new government initiative, the National Special Strategic Zones (Chapter 4 for details). This is a clear recognition of the need for these two strands of policy to be closely aligned. The Headquarters, formed under the aegis of the Cabinet Secretariat, operates on two levels: at a political level, there is a Council on Overcoming Population Decline and Revitalising the Local Economy, chaired by the Prime Minister and bringing together ministers concerned with demographic change and regional revitalisation. At a working level, there is a staff of civil servants to support the minister day-to-day. The Headquarters is supposed to bring together previous local revitalisation initiatives and ensure coherence among them – a serious challenge, given the enormous number of initiatives spread across central government agencies.

The Headquarters has made a fast start

In its first months, the Headquarters prepared a long-term vision for Japan's population and a five-year comprehensive strategy starting with fiscal year (FY) 2015 to support the revitalisation of local economies.

- The long-term vision estimates that the total fertility rate will rise from 1.43 in 2013 to around 1.8, if young people are provided with an adequate environment. If the fertility rate recovers to replacement levels, around 2.07, in 2040, then Japan's population could be around 100 million in 2060 and would stabilise around 2090. Among the central problems it identifies is the over-concentration of population (especially youth) in Tokyo, not least because the capital is not such an attractive place for those wishing to raise children. Fertility rates in Tokyo are the lowest in the country and other big cities also have very low fertility.
- The five-year strategy for the most part builds on existing measures – more could hardly be expected less than half a year after the Headquarters' creation. For the most part, it consists of new types of central support and subsidies that towns, villages, prefectures could use at their own discretion to promote measures for stopping population decline and revitalising their economies. The strategy provides for preferential corporate income tax treatment to urge companies to enlarge their activities in the regions. Among the key weaknesses it identifies in past policies are: the prevalence of sectoral approaches; a tendency to impose standardised solutions across the country; and the use of subsidy schemes without adequate monitoring and evaluation of effectiveness and efficiency.[11]

One explicit aim of the strategy, which is consistent with the National Spatial Strategy's broader vision, is to eliminate the net inflow of population from the regions to Tokyo – currently running at about 100 000 per year – by 2020. This is to be done by both reducing migration to the capital and increasing flows from Tokyo back to the regions. Given the 2020 Olympic preparations and the *Chūō Shinkansen* project, however, this target is very unlikely to be realised. In any case, the goal is perhaps poorly framed. As seen in previous chapters, Tokyo has played a huge role in preventing the emergence of larger inter-regional income disparities or pockets of very high unemployment in many regions. The key challenge is not to deter people from going to Tokyo but to attract them elsewhere. This will require the creation of sustainable, productive jobs in the regions.

In FY 2015, the government is requiring local governments to work out their own revitalisation plans in light of the national strategy. All prefectures and municipalities are to formulate local long-term visions of their populations and five-year comprehensive revitalisation strategies beginning with FY 2105. The strategies are to include clear objectives and key performance indicators, as well as to follow the PDCA cycle when implementing them.[12] They are expected to prepare these documents with the active participation of experts, private firms, citizens' groups and elected politicians. While more attention tends to focus on plans and strategies, the population visions are a critical step; if prefectures and localities are made to adopt a rigorous approach to this exercise, then most will have to acknowledge the likelihood of further demographic decline, something many of them have long resisted. It has long been a common joke among officials in Japan that the sum of municipalities' population projections is two or three times the country's actual population. The joke reveals a key problem: everyone knows that the population is falling but no local authority wishes to admit that it is destined to shrink or disappear. The problem is by no means unique to Japan, but it is rendered particularly acute by Japan's demographic

situation. Getting Japanese regions and municipalities to face their demographic futures realistically would be an important step forward.

The Office for Revitalising the Local Economy, based in the Cabinet Office,[13] is to provide informational and financial support for local and prefectural authorities in undertaking these exercises, as well as human resources where required. The government is putting a "regional economy analysis system" on line, along with a great deal of data (including private-sector big data) to support prefectural and local analyses; it will in some cases dispatch civil servants to help smaller municipalities with their visions and strategies. At a municipality's request, the government may appoint a "concierge", a central official with ties to the region or municipality who can act as a consultant and advisor.

Sustaining a coherent, whole-of-government approach will be difficult

The Headquarters produced two important policy documents in a matter of months, an impressive and highly visible start. The emphasis it has placed on combining an integrated, cross-sectoral approach to revitalisation with respect for local diversity is to be commended. Such a co-ordinating body is surely needed, given the transversal nature of the demographic/revitalisation agenda and the number of line ministries involved. These include, in addition to the Cabinet Office[14], at least seven line ministries:

- The Ministry of Land, Infrastructure, Transport and Tourism (MLIT) is in charge of spatial planning, land use, urban and rural development, infrastructure policy, transport and tourism.
- The Ministry of Economy, Trade and Industry (METI) is in charge of regional economic development, particularly support for small/medium enterprises and some aspects of innovation policy.
- The Ministry of Internal Affairs and Communications (MIC) is the principal central body responsible for subnational governments, including local finance, decentralisation, municipal mergers and inter-municipal co-operation.
- The Ministry of Finance (MoF) is responsible for the central government budget and debt management, both of which have significant implications for subnational public finances.
- The Ministry of Agriculture, Food and Fisheries (MAFF) is in charge of agricultural policies and active in rural development;
- The Ministry of Education, Culture, Sports, Science and Technology (MEXT) is responsible for education and for some facets of innovation policy.
- The Ministry of Health, Labour and Welfare (MHLW) is responsible for policies with respect to the labour market, vocational training, etc., and health.

More generally, the Headquarters has helped the government to create a sense of urgency about the issue, as is evident in the increasing press discussion and the activism of prefectural and local governments on revitalisation issues. The National Governors Association, groups of mayors and even an association of credit unions, agricultural banks and other local financial institutions have all mobilised around different dimensions of the revitalisation agenda.

Sustaining this momentum will be a challenge for the Headquarters, given the historically independent nature of Japanese ministries. The fate of the past "Headquarters" provides a reminder of the difficulty of sustaining such a transversal approach. In 2003,

the government created a Headquarters for Regional Revitalisation, supported by the newly created Office for Regional Revitalisation, to promote economic growth and job creation outside the three big metropolitan areas. It, too, was a ministerial-level initiative, chaired by the Prime Minister and run from the centre of government. It, too, called on local governments to prepare regional revitalisation plans, and in 2005, the Local Revitalisation Act came into force. The menu of policy instruments was broadly similar to much of what is under discussion now and many of them are still administered by the Office. Yet its achievements were limited. Nor is it only the experience of the early 2000s that is relevant here: local revitalisation policies have been launched, often with great fanfare, since at least the 1980s: there were grants for "hometown revitalisation" in the late 1980s, "regional promotion coupons" at the end of the 1990s, and a "hometown tax" system in the late 2000s. The critical challenge now is to ensure that the momentum generated by the new revitalisation agenda is not dissipated.

Reliable and focused resourcing will be part of the solution. At present, many of the recent revitalisation initiatives are financed – or to be financed – from an amalgamation of previous spending, as well as expectations of future gains from shrinking specific subsides, enhancing the efficiency of local service delivery, and other measures (see below for detail). Many of these funding sources are not guaranteed, suggesting that a more solid fiscal base is needed. This could be implemented in tandem with expanding the role of general subsidies and thus enhancing the scope for local decision making. This issue is addressed in greater detail below, but the key point in respect of the Headquarters is the need to ensure that revitalisation programmes are linked to adequate, stable resources and are administered so as to encourage real initiative and not a local culture of dependence on central resources. This issue will be explored below in the larger context of intergovernmental fiscal relations.

The emphasis on revitalisation raises questions about some policies affecting Tokyo

There is a need for the government to better align policies targeting Tokyo with the NSS and the vision advanced by the Headquarters. The Grand Design and the current Headquarters strategy both place great emphasis on the need to generate a significant degree of "de-urbanisation" and, in particular, to halt the increasing concentration of people and activity in and around Tokyo. The authorities recognise that this has to be done without undermining the capital's competitiveness: enhancing Tokyo's global competitiveness is important to Japan's prosperity and need not imply neglect of other cities or rural regions (the Headquarters' remit does not extend to the big city). The question is how the government aims to harmonise these two ambitions. There are some policies that clearly promote further concentration in and around Tokyo.

Clearly, both goals are legitimate – indeed, both are essential. The government cannot afford to neglect the global position of a metropolitan area that is home to more than one-quarter of the population and that generates around a third of GDP. Neither can it afford to turn its back on the regions and rural areas. This should not be seen as a contradiction in policy but as an unavoidable tension. However, if they are to be well managed, such trade-offs need to be acknowledged and confronted. A whole-of-government view on spatial development should make that possible, but so far, it is not clear how the government wishes to balance these ambitions. Simply put, large public investments in things like the 2020 Olympics and the super-high speed magnetic levitating train from Tokyo to Osaka[15] are difficult to square with the goal of ending the concentration of population in Tokyo by 2020.

Governance, decentralisation and revitalisation

The compact and networked future that the NSS envisages will need to be built in large measure from the bottom up. There is no way that central ministries or other national actors can understand all the myriad opportunities and constraints confronting regional and local economies, let alone design responses to them. Revitalisation will require ensuring that prefectural and local authorities have sufficient resources, know-how and authority to design and implement their own strategies. More local decision making should also facilitate better co-ordination across policy sectors. The role of the central government will be to provide a healthy framework within which local governments can build on its broad national vision in ways that reflect local potential and conditions. That framework is critical, because one important aspect of this process will be increasingly intense competition among places for people, fiscal resources and investment. That is not all bad: some forms of inter-jurisdictional competition are healthy and should be encouraged. Japan will be better off in the long run if prefectures and municipalities compete with one another to attract people and firms by offering, e.g. better and more efficient service provision, cleaner environments, a better business environment or more innovative schools. Other forms of inter-jurisdictional competition, however, may be negative: many countries have observed "race-to-the-bottom" competitions to attract firms with tax breaks or lax regulatory conditions, for example.

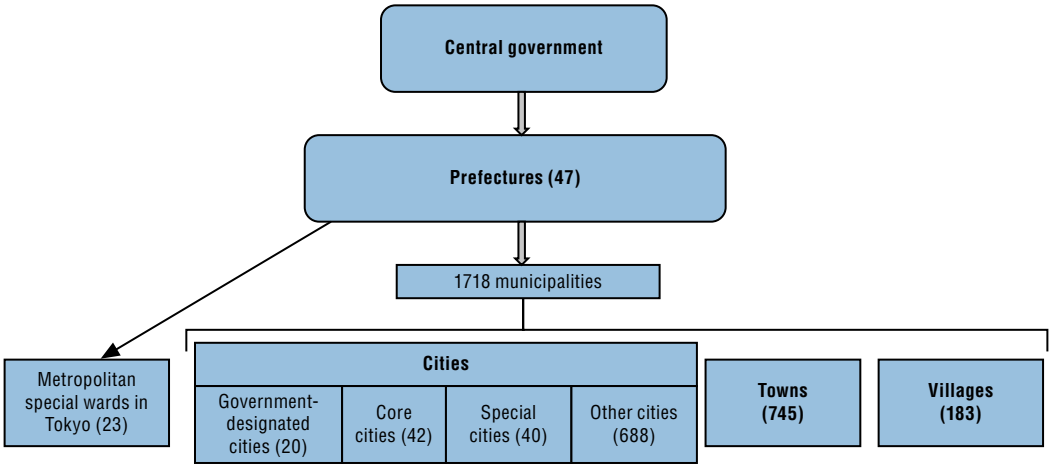
The central government, including MLIT, MIC and the Headquarters, thus has a vital role to play in structuring this competition.

- It should ensure that prefectures and municipalities ultimately bear the costs of the success or failure of the strategies they adopt; many of the worst forms of inter-jurisdictional rivalry are essentially lobbying competitions to attract an open-ended flow of resources from higher levels of government.
- It should emphasise the need for collaboration as well as competition across jurisdictions. While they may compete on some dimensions, municipalities and prefectures also need to co-operate on many others, to address challenges that none can tackle on its own. OECD experience suggests that higher levels of government have a critical role to play in fostering such collaboration (OECD, 2013a).
- It is necessary to recognise that real decentralisation may require Japan to tolerate wider territorial disparities than it has been accustomed to until now: some communities may adapt and prosper, while others will fail to prosper and may even disappear, particularly in rural places. Decentralisation offers greater scope for effective adaptation to demographic change, but it also implies great variation in outcomes.

Japan is a unitary state with a two-tier structure of subnational government

Subnational governments (SNGs) in Japan are separated into 2 tiers: a regional tier comprising 47 prefectures and a local tier made up of 1 718 municipalities and the 23 special wards within Tokyo (Figure 2.2). The prefectures, which include Metropolitan Tokyo, have considerably stronger administrative and fiscal powers than the municipalities and also have different tax bases. The municipalities are not uniform, being subdivided into 20 designated cities, 42 core cities, 40 special cities, and 688 other cities (Box 2.4). The 20 designated cities and the 23 Tokyo wards enjoy more administrative and fiscal autonomy than the rest of the municipalities, whose major differences are population size.

Figure 2.2. **The structure of territorial governance**



Source: Adapted from Uda, N. (2015), "Japan: Fiscal Discipline of Local Governments," paper given to IMF, ADB, PRI Conference on "Fiscal Policy for Long-Term Growth and Sustainability in Ageing Societies," 10-11 June, 2015, Tokyo, *www.mof.go.jp/english/pri/research/conference/tff2015e.htm* (accessed 15 July 2015).

Box 2.4. **Types of cities in Japan**

Tokyo

The city of Tokyo has the status of a prefecture governed by the Tokyo Metropolitan Government (TMG). It is further subdivided into 23 special wards. The wards are in many respects independent cities and, indeed, enjoy more powers than many cities elsewhere in Japan.

Designated cities (*shitei toshi*)

A city designated by government ordinance, must have a population in excess of 500 000 and must have been grated designated city status by an order of the central government under Article 252 of the Law on Local Autonomy. Designated cities are delegated certain functions in fields normally managed by prefectural governments in fields such as education, social welfare, sanitation, business licensing and urban planning. The prefecture still retains authority over major decisions but administrative functions are often devolved to the designated cities. Designated cities are subdivided into wards, which perform various administrative functions for the city government. Their duties vary, as the structure and responsibilities of the wards are determined by municipal ordinances.

Core cities (*chūkakushi*)

Core cities are likewise delegated many functions normally carried out by prefectural governments, but not as many as are assigned to designated cities. A core city must have a population of at least 300 000 and an area of at least 100 km^2, although special exceptions may be made by order of the government for cities with populations in the 200-300 000 range.

Special cities (*tokureishi*)

A special city has a population of at least 200 000 and performs a subset of the functions delegated to a core city.

Japan is a unitary rather than a federal state, so its SNGs – both the prefectural and local levels – are a creation of the central government, which has substantial authority to define their borders, structure, resources and responsibilities. In general, the national level of government in a unitary system has much more fiscal and administrative authority in relation to the SNGs than is the case in a federal or quasi-federal system, but there is great diversity within these broad categories and political realities often limit the freedom of governments in unitary states to reshape local institutions. For example, Japanese subnational governments are often seen as being dominated by the central government, whereas local governments in Sweden's unitary system enjoy considerable fiscal and administrative autonomy (Mochida, 2008: 14-15).

The prefectures, which are led by directly elected governors and prefectural assemblies, are responsible for a range of functions in the fields of economic development, social assistance, child care, public health, agriculture, environment, policing, and primary and secondary education. However, central legislation in many of these spheres often establishes uniform policies and standards for the whole country, and many subnational competencies were formally described in law as "agency-delegated functions" under the 1947 Law on Local Autonomy. Governors, though elected, were thus viewed as agents of the central government under the supervision of the relevant central ministry (Hooghe, Marks and Schakel, 2010). In 1999, the Omnibus Decentralisation Act changed this. It established that central state control of subnational governments had to have an explicit basis in statute (an effort to restrict the informal pressure exerted on SNGs by central ministries) and increased SNGs' autonomy over most of the previously deconcentrated agency-delegated functions. These were re-designated "inherent functions."

The long-standing debate over how tightly the central government controls subnational governments will not be resolved here. Such an assessment is beyond the scope of this review and would require an inquiry into the distribution of effective authority across the multiplicity of tax bases, fiscal transfers, debt finance, and spending programmes at both intermediate and local levels.[16] What is clear, and pertinent to this review, is that Japanese SNGs are embedded in a system that institutionalises a commitment to regional development as well as inter-regional equity. Moreover, Japan's SNGs have a large presence within its overall fiscal system and are enmeshed in a fiscal structure that links general subsidies, specific subsidies and debt finance in ways that appear unique among OECD countries.

Metropolitan governance solutions could help Japanese cities

The number of municipalities in Japan was nearly halved during 1999-2006 in the so-called "great Heisei merger wave" (*Heisei no daigappei*). Newly merged municipalities benefited from financial concessions and subsidies, as well as special merger bonds (Machida, 2006). The mergers still provoked resistance, as there was a perceived risk that smaller towns and villages would be treated as appendages of their larger neighbours if they merged. In several case studies on Honshū in the late 2000s, Elis (2011) found that the cost-cutting that followed mergers did indeed come frequently at the expense of the smaller municipalities: staff and infrastructure tended to be concentrated in the central settlements. School closures, healthcare downsizing and even the cutting of loss-making public transport services were more apparent in the peripheral areas of the new municipalities. In many cases, this may well have represented a sensible rationalisation of investment and services – the motivation for the mergers stemmed in large measure

from the fact that the smaller partners could not sustain the infrastructure and service obligations they were carrying and they were in most cases losing population. The mergers also led in some places to innovations in local governance, including the devolution of responsibilities to non-governmental institutions on the sub-municipal level. In some places, local volunteers receive lump-sum payments to work at the level of districts. This is driving a broader trend towards networked local governance in Japan, involving greater participation by local groups, associations and NGOs.

Little has happened since 2006, because the Heisei mergers were followed by a ten-year moratorium after which the preferential financial arrangements used to incentivise the mergers are to be phased out. However, the issue of the size of Japan's subnational authorities remains a real one. Japan still has many very small and struggling local governments; Weese (2008) suggests that the merger incentives could have been stronger and that the number of municipalities that resulted was still greater than would be efficient, though it should be noted that Japanese municipalities are on average quite large by OECD standards.[17] Whether or not the Heisei mergers should have resulted in further consolidation, the analysis of cities' performance presented in Chapter 3 suggests that many Japanese cities are still too fragmented in governance terms. The problem lies not with the largest cities but with a number of smaller and mid-sized cities. This striking result, which will be discussed further in the next chapter, suggests two things. First, while much of the debate over mergers has focused on merging small, weak municipalities with larger neighbours, fragmentation can be a problem even when all the municipalities involved are clearly viable. Secondly, while the focus of merger discussions has been on fiscal sustainability and cost-cutting, there is also a case for governance consolidation (even if not necessarily for mergers) based on growth.

OECD (2015a, 2015b) present the results of recent analysis based on both case studies and statistical work relying on the OECD Metropolitan Database and a unique survey of metropolitan governance arrangements in the OECD area. These results suggest that urban governance fragmentation is a problem. In many large urban areas, municipalities have grown together to form functional urban areas that encompass many local government authorities. The evidence suggests that greater governance fragmentation (measured simply as the number of local governments per head of population) is associated with poorer productivity performance, poorer service delivery and poorer environmental outcomes. This is typically the case because, although the areas in question have become integrated urban economies, the local governments involved do not manage to co-ordinate dimensions of policy that matter for the whole conurbation – especially transport, land-use planning and economic development policies. The argument is not a new one, but these studies are the first to use cross-national statistical data, based on common definitions of urban areas and governance structures, to substantiate it. As will be seen in Chapter 3, governance fragmentation seems to be a real issue for performance in Japan.

This does not mean that Japan needs a new merger wave. However, the government may want to attach great priority to fostering other metropolitan governance solutions – structures and procedures that facilitate co-ordination among adjacent municipalities in a larger urban area. There is a growing interest in many OECD countries in metropolitan governance bodies – broadly defined as bodies organising responsibilities among public authorities in metropolitan areas, including voluntary associations of municipalities, with few or no legal powers. There are different approaches to metropolitan governance, from informal/soft co-ordination to the creation of inter- or even supra-municipal authorities,

and, in a few cases, the creation of special status metropolitan cities. In most cases, these solutions are more flexible and less costly than mergers. They also can allow for the retention of truly local functions at local level, while permitting collaboration on issues that have a metropolitan significance. This approach would, in fact, be entirely consonant with the Grand Design's emphasis on the high-grade linking of cities. The point is that this is not just a question of infrastructure or economics but also of governance.

One cannot recommend any single metropolitan governance model to Japan, since this is a matter of political and social choice and the best solutions are likely to vary from place to place even within the country. However, OECD experience does suggest some lessons for effective metropolitan reforms.

- It is critical to identify a common cause for collaboration and build on successful collaboration outcomes (e.g. the creation of the metropolitan authority of Barcelona in 2011).
- Metropolitan leadership and ownership need to be developed and may in the first instance need to be provided by a higher level of government (e.g. the leadership of central government in the Paris metropolitan area).
- It is essential to empower and engage stakeholders at an early stage, and ensure accountability and transparency (e.g. the mix committee of elected officials and citizens of the Montreal Metropolitan Community to debate the strategic metropolitan plan).
- Secure sources of financing are critical (e.g. the London Business Board includes members form commerce and industry).
- There needs to be a balance between time frames and flexibility (e.g. Sweden's governance reforms were first tested in a few pilot regions before being extended).

Reform of metropolitan governance is a long-term process. It takes time to create institutions and trust, and even once they are up and running, governance structures may need to be further adapted (OECD, 2015b).

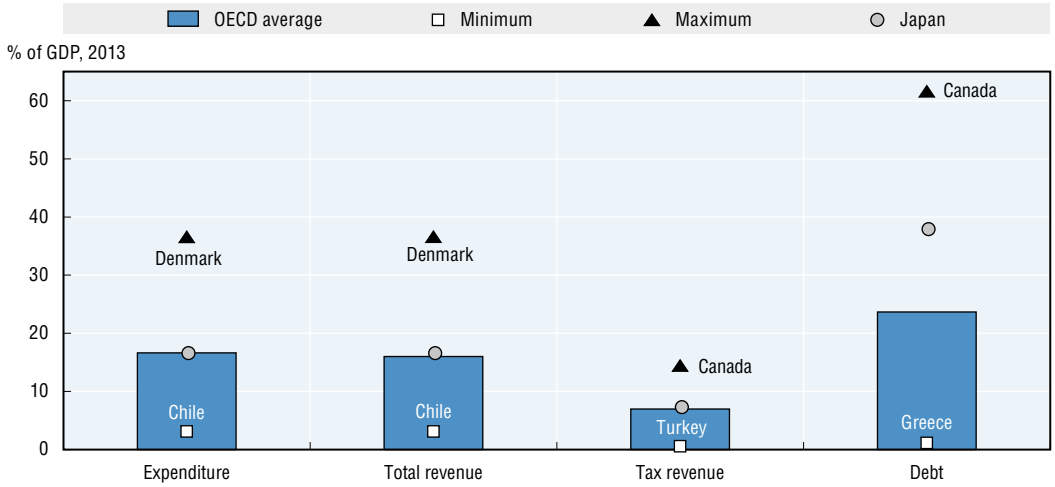
Public spending tends to be very decentralised

At first glance, Japan does not appear to be an outlier in the OECD when it comes to various indices of fiscal decentralisation. Japanese SNG revenue and spending as a share of GDP are both close to the OECD averages (Figure 2.3). SNG debt is far higher than average, a reflection of the generally high public debt that Japan now carries. As will be seen, critics argue that much of this debt was incurred in response to the incentives created by the system of inter-governmental transfers.

Where Japan does stand out is in the weight of SNGs in overall public spending. This is because Japan is not a large fiscal state. General government expenditure in Japan (exclusive of social security accounts) was 15.1% of GDP in 2012, as compared to 19.3% in the United States, 23.9% in the United Kingdom, and 30.4% in Sweden.[18] Moreover, despite the traditional image of Japan as a "construction state", heavily oriented to public works, such expenditures peaked in 1998 at JPY 15 trillion and had dropped to JPY 7 trillion by fiscal year[19] (FY) 2014 (Ministry of Finance, 2015). What this means is that SNG shares of revenue and expenditure that are typical for the OECD when measured relative to GDP are in fact rather large as a share of total public spending. In 2012, Japanese SNGs were responsible for 74% of general government spending (excluding social security), one of the highest shares in the OECD area. The corresponding figure for Sweden, for example, was 71%, though Swedish SNG spending was far higher relative to GDP. The figure for

Canada was 84% of public spending, equivalent to 31.1% of GDP. Thus the share of Japan's subnational government in general government spending is unusually large, though not unique. SNG spending dominates general government expenditure in most major areas in Japan (Figure 2.4), with the exception of agriculture, housing, debt service, pensions and, of course, defence.

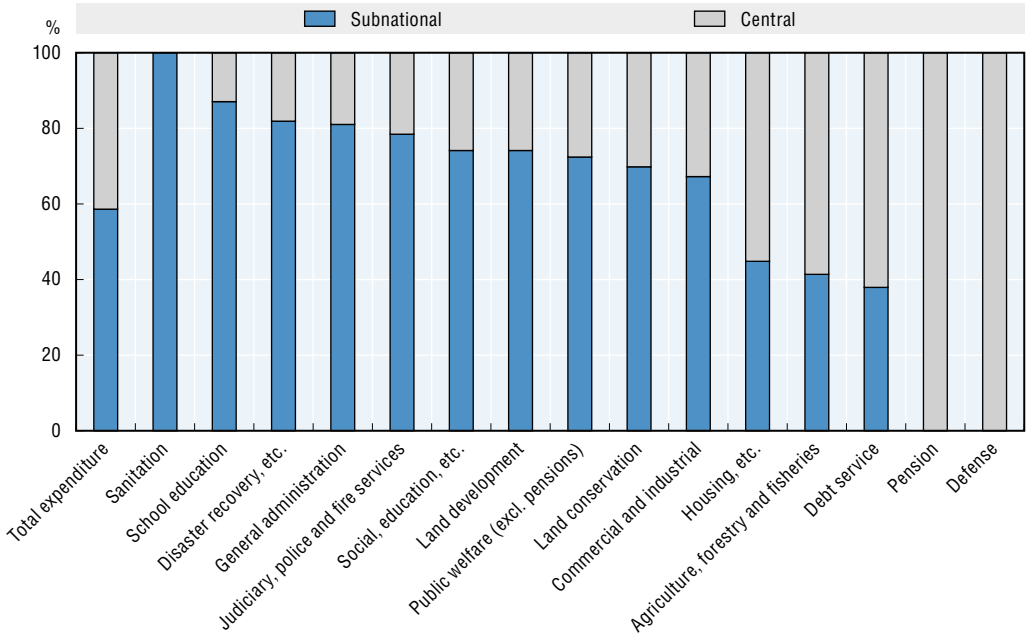
Figure 2.3. **Subnational government revenue expenditure and debt: Japan and the OECD**



Source: OECD (2015c), *Subnational Governments in OECD Countries: Key Data*, Paris, available at: *www.oecd.org/regional/regional-policy/Subnational-governments-in-OECD-Countries-Key-Data-2015.pdf*.

StatLink http://dx.doi.org/10.1787/888933324646

Figure 2.4. **Allocation of spending responsibility by function**



Source: Adapted from Uda, N. (2015), "Japan: Fiscal Discipline of Local Governments," paper given to IMF, ADB, PRI Conference on "Fiscal Policy for Long-Term Growth and Sustainability in Ageing Societies," 10-11 June, 2015, Tokyo, *www.mof.go.jp/english/pri/research/conference/tff2015e.htm* (accessed 15 July 2015).

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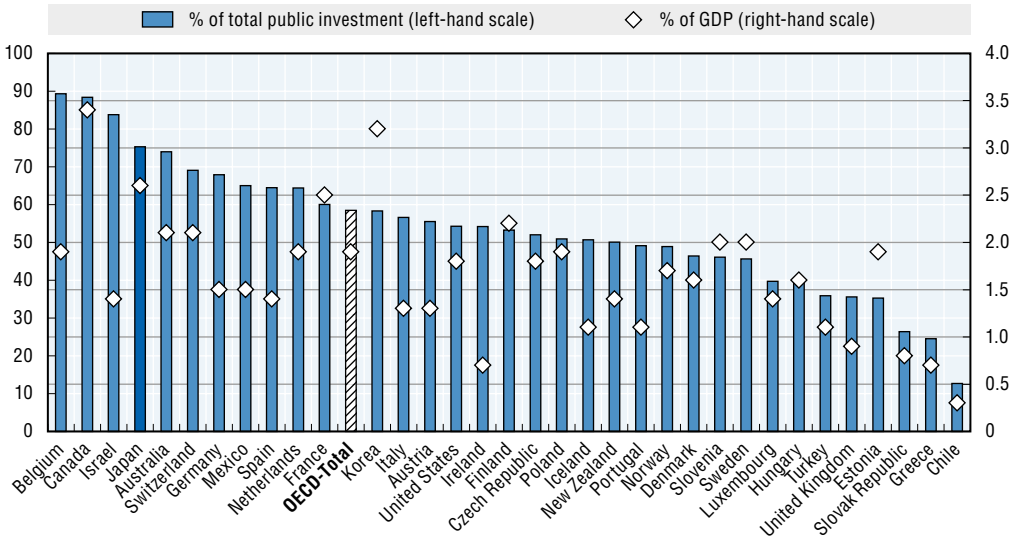
SNGs in Japan are assigned responsibilities that generally outweigh those assigned to their counterparts in other countries, especially other unitary states. Their role in public investment is particularly great (Figure 2.5). However, this does not make the Japanese state as decentralised as it might appear, because the central government has tended to delegate administrative functions to SNGs while retaining authority over finance and programme design. The prefectures are in charge of a great deal of public infrastructure, including national highways that are not under the national government, class A rivers that are not under the authority of the national government, class B rivers, harbours, and public housing. The prefectures are also prominent in education and welfare, including secondary education, salaries and personnel administration of elementary and middle school teachers, livelihood support in towns and villages, child welfare policy, and employment training. The municipalities have extensive responsibilities for urban planning, municipal roadways, some harbours, some public housing, and sewers. In education and welfare, the municipalities are in charge of elementary and middle schools, kindergartens, livelihood support in cities, child welfare, national health insurance, ageing insurance, waterworks, waste disposal, residential records, and fire-fighting.

Figure 2.5. **Subnational government investment in OECD countries, 2013**



Note: 2012 data for Chile, Japan, Korea and New Zealand; 2011 data for Turkey.

Source: OECD (2015c), *Subnational Governments in OECD Countries: Key Data*, Paris, available at: *www.oecd.org/regional/regional-policy/Subnational-governments-in-OECD-Countries-Key-Data-2015.pdf*.

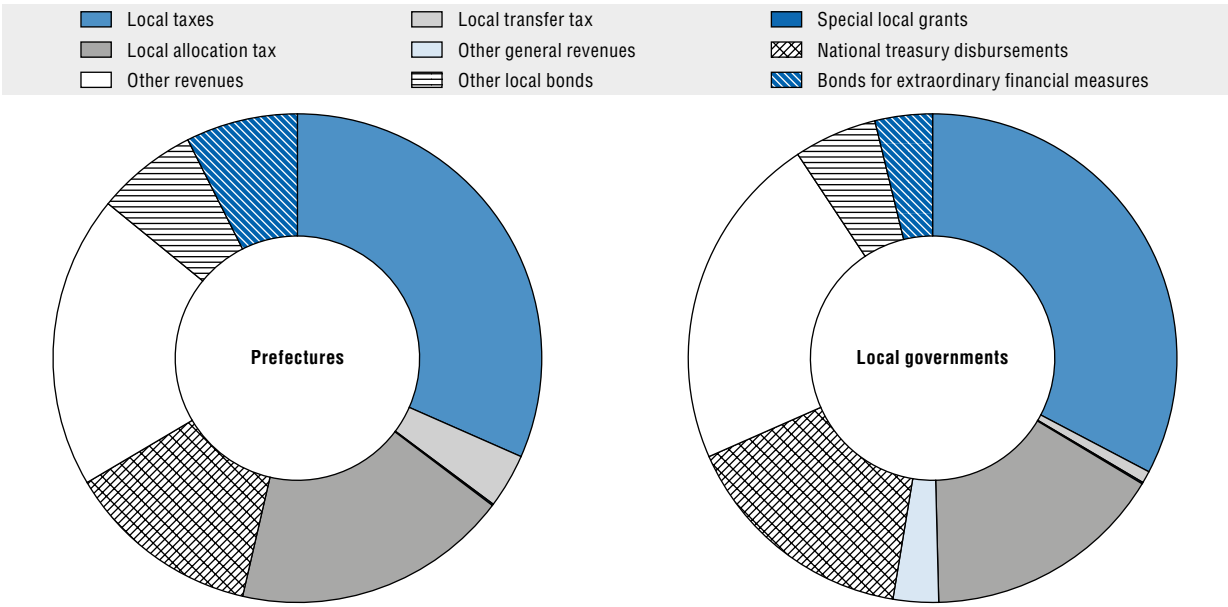
StatLink *http://dx.doi.org/10.1787/888933324664*

Japanese SNGs depend heavily on transfers from the centre

SNG revenues are nearly evenly split between taxes and transfers from the central government, with 44.1% of subnational revenues derived from taxes, 46.2% from grants and subsidies and the balance from other sources (2013 data). The respective averages for the OECD33 (excluding Chile) are 43.7% for subnational taxes and 37.3% for grants and subsidies. The difference is that other sources of income generate a far more important share of revenues in most OECD countries. For example, Japanese SNGs obtain only 5.7% of their revenue from tariffs and fees, and only 0.7% from property income. The OECD33 averages are, respectively, 15.2 and 2.3%. While social contributions make up 3.2% of Japan's SNG revenues, they only represent an average of 1.5% of subnational government revenues for the OECD33.

The most important taxes for prefectures include the resident's tax, levied on both legal and physical persons (39.8% of prefectural tax revenues in 2012), the enterprise tax (17.9%) and the local consumption tax (18.0%). For municipalities, the municipal resident's tax (44.7%) and the fixed asset tax (42.2%) constituted almost 90% of all tax revenues. Yet for both levels of government, own tax income amounted to less than one-third of revenues. The major income sources of the prefectures and local governments are presented in Figure 2.6.

Figure 2.6. **Composition of subnational government revenues, FY 2012**



Source: Ministry of Internal Affairs and Communications (2014), "White Paper on Local government Finance 2014", Tokyo, Ministry of Internal Affairs and Communications, available at: *www.soumu.go.jp/iken/zaisei/26data/chihouzaisei_2014_en.pdf*.

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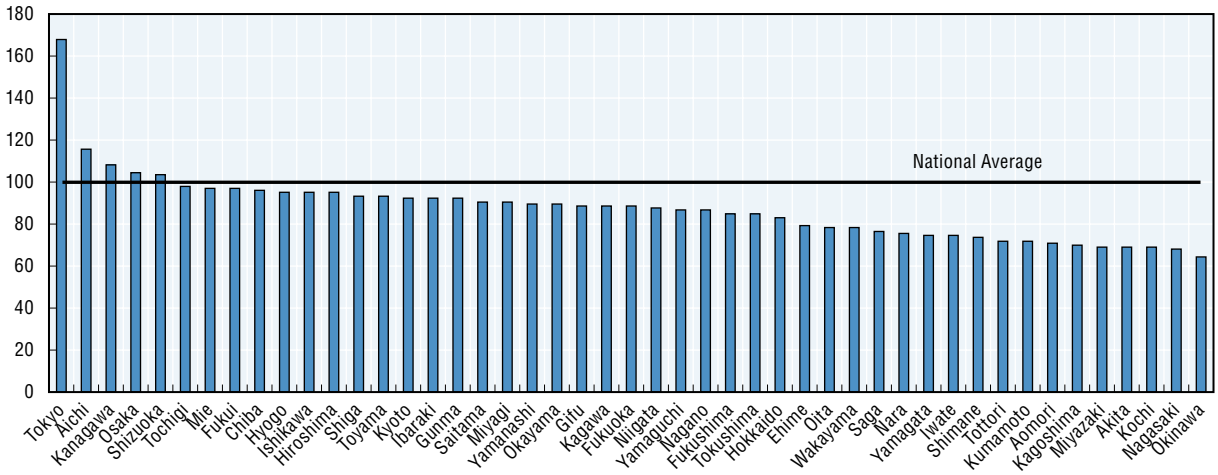
The degree of fiscal dependence varies greatly across prefectures and municipalities. Overall, SNGs in Japan received 36.4% of their revenues in the form of transfers from the centre in FY 2013. However, some, such as Metropolitan Tokyo, were almost entirely self-financing. Tokyo was able to do this because its average income is very high and because it has the nation's most intense concentration of businesses. As a result, it has the highest per capita tax income among prefectures (Figure 2.7). Indeed, 7 of Tokyo's 23 wards were among the nationwide top 10 SNGs for highest average taxpayer income. By contrast, Okinawa, Shimane Prefecture, and most of the Japan Sea coast, are relatively poor and receive well over half of their revenues from the central government's coffers.

The concentration of incomes and wealth in Tokyo has accelerated since the collapse of the bubble economy in the early 1990s. In June 2015, the problem had become so acute that Japan's largest business Federation, Nippon Keidanren, initiated an emergency survey among member companies in Tokyo to gather information on the hurdles in moving head office functions out of the metropolitan area. The government has also presented a proposal to confer tax reductions on firms that moved their head offices to the regions. In this case, "regions" are to be defined as areas that do not include the major cities of Osaka, Kyoto, Kobe, and Nagoya (Suwa, 2015). Towns and villages have especially high reliance on transfers, particularly those disbursed through the local allocation tax (Figure 2.8).

These dependent areas tend to have higher-than-average concentrations of the elderly, unemployed, low-wage workers, and small, low-revenue businesses. Without subsidies from the central government, they would struggle to deliver minimal public services except by imposing damagingly high local tax rates. They are also relatively small, which is why the aggregate numbers show a much smaller role for the local allocation tax in SNG revenues – 18.3% in FY 2012.

Figure 2.7. **Tax revenue per capita by prefecture**

As a percentage of the national average



Source: Ministry of Internal Affairs and Communications (2014), "White Paper on Local Government Finance, 2014", Ministry of Internal Affairs and Communications, Tokyo, available at: *www.soumu.go.jp/iken/zaisei/26data/chihouzaisei_2014_en.pdf*.

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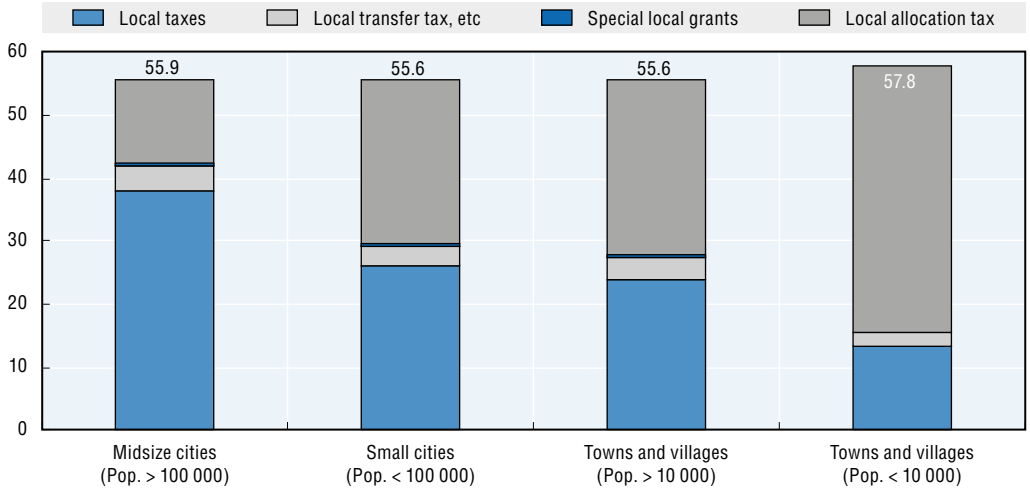
Figure 2.8. **Breakdown of Japanese municipalities' revenues, 2014**



Note: The midsize and small cities categories exclude designated cities, core cities and special cities. "Local transfer tax" is an umbrella term covering national taxes of which a fixed proportion of revenue collected is transferred to local governments.

Source: Ministry of Internal Affairs and Communications (2014), "White Paper on Local government Finance, 2014", Ministry of Internal Affairs and Communications, Tokyo, available at: *www.soumu.go.jp/iken/zaisei/26data/chihouzaisei_2014_en.pdf*.

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Inter-governmental revenue sharing and grant allocation

The Local Allocation Tax is the centrepiece of the inter-governmental transfer system

Japan's inter-governmental allocation of revenues does not correspond with the assignment of expenditure responsibilities outlined above. In FY 2013, for example, total national tax revenues of JPY 85.9 trillion were split roughly 60/40 between national and subnational governments, while expenditures (including the social security accounts) were divided roughly 42/58. The gap between SNGs' own resources and their spending responsibilities gives rise to the need for substantial inter-governmental transfers, which totalled almost JPY 37 trillion in 2013 (7.7% of GDP). Japan's inter-governmental transfers play a large role and have been the focus of numerous reform efforts. General and specific subsidies comprise a package aimed at guaranteeing minimal levels of public services throughout the country, in line with the constitution, as well as alleviating fiscal inequality among local governments.

There are both earmarked (conditional or specific-purpose) subsidies from the centre to SNGs and general-purpose transfers (block grants). The most important source of transfer by far is the "Local Allocation Tax" (LAT). The LAT is a mechanism for inter-governmental revenue sharing involving general purpose grants to SNGs. The use of the word tax in the LAT's name derives from the fact that the tax revenues that constitute its base were subnational revenues before fiscal centralisation in 1940. The retention of the LAT designation is more than incidental, however, as this fiscal history is one of the principal rationales underlying the maintenance of revenue sharing. The LAT should not be confused with a smaller (but still substantial) general grant programme, the Local Transfer Tax (LTT). The LTT comprises the local gasoline transfer tax and others that are collected as a national tax and transferred to local governments. The total for this programme is projected to be JPY 2.7 trillion in fiscal 2015. Unlike the LAT, it is not deliberately redistributive.

The LAT is largely funded by legally fixed percentages of the revenues from five major national taxes (the personal income tax, corporate income tax, and others). At present, it is slated to total JPY 16.75 trillion in fiscal 2015, or 19.7% of total subnational revenues. The fixed percentages of the taxes in the LAT's revenues base have repeatedly been changed and the tax base itself amended (Table 2.1), most recently in 2014-15, when 100% of the Local Business Tax (worth JPY 477 billion in 2015) was added to the LAT base in 2014 and the Tobacco Tax eliminated in 2015. Revenues from these sources are consolidated in a special account in the national government's budget. Whether these revenues are adequate (they usually are not) is determined by a macro-level assessment of SNGs' collective revenues and expenditure needs. The LAT account is then supplemented with additional finance, such as debt, as the need arises. As depicted in the above figure, the LAT is then further broken down into two components, an "ordinary LAT" and a "special LAT". The former composes 94% of the LAT funds, and is used for revenue sharing. The ordinary LAT has two core functions, the first being to guarantee local services[20] and the second being to alleviate intergovernmental fiscal inequality via revenue sharing according to SNGs' fiscal capacity. The remaining 6% is transferred to the special LAT, for such extraordinary and emergency expenses as damages from natural disasters.

Table 2.2. **Composition of the Local Allocation Tax revenues, 1999-2016**

Shares of national taxes allocated to the LAT

	Income tax	Corporate tax	Liquor tax	Consumption tax	Tobacco tax	Local business tax
1999	32.0	32.5	32.0	29.5	25.0	--
2000-06	32.0	35.8	32.0	29.5	25.0	--
2007-13	32.0	34.0	32.0	29.5	25.0	--
2014	32.0	34.0	32.0	22.3	25.0	--
2015	33.1	33.1	50.0	22.3	--	100

Source: Ministry of Internal Affairs and Communications (2014), "White Paper on Local government Finance 2014", Ministry of Internal Affairs and Communications, Tokyo available at: *www.soumu.go.jp/iken/zaisei/26data/chihouzaisei_2014_en.pdf*.

A larger issue concerns the LAT finances themselves. For nearly two decades, the LAT's base revenues of five national taxes have been inadequate to fund the estimated local financial demand. In FY 2015, the LAT statutory taxes provided JPY 14.9 trillion in revenues for the scheme, but it still required topping up from various fiscal mechanisms (Ministry of Internal Affairs Local Finance Bureau, 2015). These include a variety of measures derived mainly from two sources: i) the general account of the national government's budget; and ii) debt-financed measures whose burden is split 50/50 between the national and subnational governments. These measures are complicated and do not resolve the core problem. Debates over the financing of local revitalisation offer an opportunity to address this larger issue and revisit the arrangements for financing the LAT.

Box 2.5. **Local debt in Japan**

The Local Government Finance Act provides that the expenditures of local governments must be financed from revenue other than income from local bonds except where the income is to be used:

- to cover expenses required for public transport, gas, water and other local utilities
- to finance capital contributions and loans or to refinance local bonds
- to pay for disaster response, reconstruction or rescue projects, or
- to pay for the construction of community or public facilities, such as schools, nurseries, firefighting facilities, roads, rivers, ports and other civil engineering projects,[21] and
- to purchase land for public use or alternative land to be acquired in advance.

When an SNG intends to issue bonds or change the issuance method, interest rates or redemption methods, it must consult with the Minister of Internal Affairs and Communications or the relevant prefectural governor.

Source: Ministry of Land, Infrastructure, Transport and Tourism (2014b), "OECD National Territorial Review Background Report", Ministry of Land, Infrastructure, Transport and Tourism, Tokyo, December.

The measures employed over the years have generally seen a large part of the shortfall covered by debt financing, with the subnational portion of that debt effectively representing local governments borrowing against their future LAT revenues. This practice was ended in FY 2007 and 2008, but the onset of the global financial crisis in late 2008 led to the introduction of the "expenditure separate item" in FY 2009, at JPY 1 trillion. This special measure departed from previous practice by supplementing the LAT funding base straight from the national government's general account rather than through a 50/50 split of national-subnational borrowing (Tobita, 2014:12-13). The following years saw some

name changes and incremental increases, resulting in FY 2013's "local economic base bolstering and employment and other measures fund" of JPY 1.495 trillion. Similarly, the LAT "special addition", which involved additional revenues, was instituted in 2011 due to the severe economic conditions. This special measure totalled JPY 1.27 trillion that year and JPY 1.1 trillion in 2012.

Finance policy making in 2014-15 has centred on whether or not to eliminate the special measures for the LAT that had bridged the gap in local finance for several years. In December 2014, the Ministry of Finance's Fiscal Institutions Deliberation Committee advised changes to the local finance plan's expenditure separate item (JPY 1.495 trillion in 2013) as well as the special addition for the LAT (JPY 990 billion in 2013). It stressed that these measures were instituted to deal with the severe recessionary conditions and unprecedented challenge to budgeting following the Lehman shock of September 2008 and that in 2013, the national government's general accounts had seen the elimination of the various fiscal measures to stimulate local and national economies. The Committee argued that local public finance should likewise return to normal conditions through planning for the withdrawal of the expenditure separate item as well as the special addition and other measures. The Ministry of Finance made clear when preparing the 2015 budget that it believed the special addition should be ended immediately, arguing that local public debt had not grown over the past decade and that local tax revenues were growing with the economic recovery. By contrast, the national debt had increased 52.7% between 2004 and 2014 (*Sankei Shimbun*, 2014).

The Ministry of Finance argues that these emergency measures to cover the shortfall in local finance do not result in effective consumption and investment. SNGs and the Ministry of Internal Affairs and Communications counter that the measures provide important financing for employment relief, work and livelihood support for recipients of social security, local business creation, countermeasures for empty housing stock and other measures for regions coping with declining populations. Yet if these programmes are necessary, then it is a problem that they are not backed up by more stable, predictable finance (Sawai, 2014). This is why SNGs generally call for such increases. Reflecting a consensus among SNGs, Japan Association of City Mayors argued for a reinforcement of the basic LAT in June 2015 (Japan Association of City Mayors, 2015). Metropolitan Tokyo and the other eight area prefectures and cities also called on the national government to do this. These SNGs are especially adamant that the LAT not be used to impose conditions on SNGs nor to lead their policy-making decisions (Metro Tokyo, 2015).

Earmarked subsidies continue to play an important role, despite efforts to use them less

Specific (earmarked) subsidies accounted for JPY 13.07 trillion in FY 2015, or 15.3% of total local revenues. These subsidies are distributed by line ministries for designated local project costs in education, health, and other areas. The subsidies finance a portion of project costs, generally half or more, leaving the balance to be covered by the local government's general revenues and/or local bonds. Specific subsidies were central to the early post-war reconstruction of depleted and devastated infrastructure, as well as development of the transport and other systems required by high growth and rapid urbanisation. The centralisation of planning and allocation brought efficiencies, albeit at the expense of a greater degree of nationwide uniformity in infrastructure and urban design. However, reliance on such instruments means that a great deal of SNG spending is powerfully influenced by central incentives.

Earmarked subsidies have been the focus of a half-century of discussion and reform,[22] beginning with incremental steps and culminating in a series of ambitious initiatives in the early 2000s (Box 2.6). Until about the mid-1980s, though, specific subsidies constituted a larger proportion of local revenues than the LAT. However, the progress of fiscal decentralisation over the years has seen the role of specific subsidies decline in relation to general-purpose grants. This policy was driven by the confidence that general-purpose grants would allow for freedom of choice at local level and that this, in turn, might moderate the incentives for excessive spending on public works. The composition of specific subsidies has also changed over the decades. The devotion to public works during the high-growth years and into the 1990s has given way in recent years to a greater emphasis on other spending priorities. This is a welcome development. The public-works component of specific subsidies has dropped to under 20% of the total, with most of the rest devoted to social insurance, education and other spending on people. As specific subsidies were reduced, the LAT was increased in order to cover some of the expected expansion in local burdens. Local construction bonds were also increased to accomplish the same end.

As in many other countries, the perennial challenge in such reforms has been ensuring that they did not simply result in savings for the central budget and the shifting of expenditure burdens onto SNGs. This was one of the criticisms levelled by SNG representatives at the changes adopted in the 1980s and at subsequent reforms. Central government support for SNG budgets has long been an area of disagreement between the Ministry of Finance and the Ministry of Internal Affairs and Communications. The former is driven by its concern over national finances and seeks cuts to inter-governmental transfers whenever possible, while maintaining control over the national tax base. It argues that reforms to inter-governmental transfers should be part of local revitalisation. By contrast, the MIC supervises subnational finances, including the timely compilation of budgets and the calculation of general grants. It has resisted what it sees as the finance ministry's efforts to pass the costs of fiscal consolidation onto SNGs and continues to oppose the finance ministry's effort to eliminate special measures for the LAT (Council on Economic and Fiscal Policy, 2015).

Interactions among different fiscal instruments can have unexpected consequences

As noted above, a portion of the local costs for subsidised projects, as well as the local debt payments, has been funded through the LAT by special measures that entered the cost of the projects as well as via the inclusion of the debt repayment into the basic financial demand calculations for the LAT. This means that the LAT, the targeted subsidies, and the local debt need to be viewed together, in order to understand the incentives that SNGs may face. While these measures do not restrict or determine the choices made by SNGs, it is important to be sensitive to interactions among them, which may affect SNG spending priorities. Many local projects were financed by local debt approved by the central government. Because a portion of the principal and interest payments for this debt was included in the calculations of basic financial demand for the LAT, this arrangement became a mechanism for inducing the SNGs to prioritise eligible fiscal expenditures: rather than assessing the costs and benefits of specific projects at the local level, the local governments were selecting projects with reference to the entire scheme. The sums concerned were not trivial: in 2001, the total for the works-related expenses and the debt-related expenses entered into the calculation for the LAT allocation totalled JPY 6.3 trillion, equivalent to 13.4% of the total for "standard financial requirements".

Box 2.6. **Intergovernmental fiscal reforms since 2000**

In 2002, the government launched an ambitious reform of all three major sources of SNG revenues – local taxes, the LAT and specific grants. This came to be known as the "Trinity Reform". FY 2003 saw JPY 4 trillion worth of reforms to targeted subsidies. In the following year, FY 2004, JPY 3 trillion worth of revenues were transferred from the central government to SNGs, with a portion of the income tax shifted to local governments as a personal residents' tax. Altogether between 2003 and 2006, the reforms cut subsidies by JPY 8.8 trillion and devolved JPY 3.6 trillion in revenues (Ikawa, 2007).

One of the striking features of the reform was that, for FY 2005 and 2006, the central government asked local governments to submit proposals on which earmarked grants could be cut, aiming for an overall amount of JPY 3 trillion. After intensive discussions, groups of local government leaders proposed a JPY 9 trillion cut in earmarked grants,[23] thus surpassing the central government's target. The complexity of the arrangements prevailing may be inferred from the fact that the JPY 3.2 trillion in cuts proposed by local governments for 2005-06 involved the abolition of no fewer than 45 subsidies in the social security area, 33 in public works, 15 in education and 55 in other areas.

Strikingly, this proposal raised strong opposition from many central government ministries and members of the Diet, a reflection of the degree to which earmarking remained an important lever for national actors. This remains an issue: many line ministries derive a significant portion of their authority from influencing the character of local spending through their control over targeted subsidies. Decentralisation of finance and decision making thus erodes their ability to pursue their policy objectives, especially at a time of fiscal constraint.

The Trinity Reforms were followed at the end of the decade by efforts to convert a number of specific subsidies into general subsidies. Some central agencies strongly resisted this shift, which would have removed an important lever for delivering on their own policy goals, and they raised such objections as risks to food security and other national priorities. In the end, roughly 10% of public-works related measures were shifted into the general revenue scheme. In FY 2011, a total of JPY 512 billion in specific subsidies was removed from the hands of line ministries, their regulatory regimes loosened, and their finances bundled together. They were then distributed as a general subsidy and through a common gatekeeper: the Cabinet Office. In FY 2012, this figure increase to JPY 833 billion (Mihara, 2013: 33-36). This reform was qualitatively different from previous rounds of subsidy reform. The reform created a new "local autonomous strategy subsidy" that allowed recipient governments to allocate finances as they saw fit. This led to a substantial reduction in central authority over subsidies and disbursements and significant progress on reforming subsidies for public works.

Policy shifted again when the "local autonomy strategy subsidies" were eliminated in FY 2013, in part because the government wished to link more resources to support for local resilience, e.g. better infrastructure maintenance and the strengthening of homes and other assets facing earthquake, fire and other threats. This move away from "general-revenue-isation" of central support to SNGs has been fiercely criticised by some public finance specialists in Japan (e.g. Tobita, 2014), who fear a return to the kind of incentives that induced excessive SNG spending on public works in the past. However, supporters of the change point to potential spillovers from SNG activities (e.g., in respect of climate change, regional growth or resilience) and also to capacity challenges at local level, both of which might point to the need for greater central leadership.

A further problem that attracted attention in the early 2000s was that when local tax revenues declined in the post-bubble "lost decade," local governments that were not LAT recipients restricted their expenditures, whereas those that were recipients of LAT increased them. Local governments with low tax revenues actually saw their per capita general revenues increase. One of the factors responsible for this outcome was the inclusion of calculations to reflect differing natural and social conditions among the local governments

in the calculation of the LAT. In addition, the move to reduce earmarking in favour of a larger LAT probably increased the redistributive character of the system, since the LAT has an explicit equalisation function, whereas many of the previous projects financed by earmarked grants did not. For these and a number of other reasons, policy makers sought as much as possible to simplify the calculations of the LAT and focus them on "objective" measures (Cabinet Office, 2001). During the 2000s, reforms to the mechanisms of the LAT saw a gradual restriction of measures that encouraged public works via support for debt service. Except for a few items, the practice had been more or less eliminated by 2010 (Tobita, 2014: 17).

Policies to promote local revitalisation may reinforce pressures for fiscal decentralisation

Despite a partial reversal of the move from specific to general-purpose transfers in 2013 (Box 2.6 above), the government's current local revitalisation initiative could reinforce to the longer-term trend towards greater decentralisation through greater reliance on non-earmarked transfers and local decision making. One of the main features of the 2015 local finance plan was the creation of JPY 1 trillion worth of funds for local revitalisation – the "community, people, work creation fund". It will be allocated to SNGs to foster projects that maximise local initiative and autonomy. A further JPY 722.5 billion, in the initial 2015 budget, is for specific subsidies aimed at similar goals – supporting the national "community, people, work comprehensive strategy". These subsidies are divided into four broad categories:

- fostering stable employment opportunities (JPY 174.4 billion)
- encouraging people to move to local areas (JPY 64.4 billion)
- enhancing young people's desire to marry and start families (JPY 109.6 billion) and
- fostering networks among modernised local communities (JPY 374.1 billion).

An additional JPY 676.6 billion (which sum, when added to local matching funds, totals JPY 1.36 trillion) in the 2015 budget is aimed at bolstering the social insurance system through supplementing programmes for rearing and raising children, as well as the cost of programmes for taking care of the elderly.

In addition, the Cabinet in June 2015 confirmed a template for its "new-style disbursements" to fund local innovative and outstanding projects as well as overcome bureaucratic sectionalism. The funds are to be aimed at projects that, in principle, could not be covered by conventional subsidies because they are outside the ambit of existing programmes. The total amount of the new-style disbursements is expected to be about JPY 200 billion. These funds are to be distributed on the basis of objective assessments of the costs and benefits of proposed local projects. The disbursements are to continue through FY 2019. It is as yet unclear where the decisions will be taken concerning the relative merits of local proposals.

While the other local revitalisation spending is financed from stable sources such as the consumption tax, funding for the "community, people, work creation fund" will draw on a diverse range of sources. One is the refocusing of existing expenditures, such as JPY 350 billion from the "local revitalisation creation works fund", which will rise to a total of JPY 500 billion. A further JPY 500 billion is to be accrued from 1) JPY 100 billion in finances accruing through alleviation of fiscal inequalities accompanying the shift of

corporate resident's tax corporation levy to the LAT revenue base; 2) JPY 300 billion from the deployment of interest-rate fluctuation reserve funds held by local financial institutions; and 3) JPY 100 billion from using general revenues gained via reductions in debt servicing costs through past cuts to investment expenditures. Some of these sources of finance appear to be a useful and welcome repurposing of existing measures, thus ensuring that old programmes are not simply left in place through institutional inertia. However, many of the fiscal revenues depend on political and policy-related factors that may very well change over the coming years (Tobita, 2015).

Moreover, the revenues to fund the planned "new-style disbursement" are to come from revisions to existing specific subsidies. This requires the acquiescence of individual ministries in the reductions of their specific subsidies (Chunichi Shinbun, 2015). The line ministries have resisted such reforms in the past, at times successfully, but the government is determined to transcend bureaucratic sectionalism and to foster autonomous local development. Indeed, the government may want to extend this approach – of turning specific into general subsidies – to the "community, people, work creation fund," at least in the areas where its finances are also uncertain.

Pathways for reforming inter-governmental transfers

The authorities might want to review the allocation criteria for the LAT

The allocation of ordinary LAT funds among SNGs is determined by a complex formula that measures local fiscal capacity and expenditure needs (Table 2.3). The amount transferred to any given local government depends on the balance between its "standard financial revenues" and its "standard financial requirements". The calculation of standard financial revenues is based on standardised local tax revenues (assessed at standard tax rates) but these are then multiplied by 75% in order to incentivise local tax effort, as well as to allow room for local policies not included in the calculation of standard financial requirements. The local transfer tax and other non-LAT general subsidy allocations are then added. At the same time, the calculation of expenditure needs is based on an assessment of service standards for each local government for such things as education, fire services, etc. The complexity of the formula arises from the large number of indicators used to assess both unit costs for service delivery/task performance and also to calculate the relevant adjustment coefficients. If the result of subtracting a subnational government's standard financial revenues from its standard financial requirements exceeds 1, then it is not eligible to receive ordinary LAT payments. Among the 47 prefectures, only Tokyo falls into this category. In FY 2014, 54 cities and towns did as well.

Table 2.3. **Calculation of the Local Allocation Tax**

Financing gap = Standard financial requirements – Standard financial revenues
Standard financial requirements = unit cost of service provision x measurement unit x adjustment coefficient
Standard financial revenues = standard local tax revenues x 0.75 + local transfer tax allocation, etc.
Unit cost: per-unit expense of each administrative service/task
Measurement unit: population and other indices to assess the fiscal cost of each service/task
Adjustment coefficient: to reflect differences in cost of provision owing to natural or social conditions (e.g. extreme climate, demographic factors, remote location)

Source: Adapted from Uda, N. (2015), "Japan: Fiscal Discipline of Local Governments," paper given to IMF, ADB, PRI Conference on "Fiscal Policy for Long-Term Growth and Sustainability in Ageing Societies," 10-11 June, 2015, Tokyo, *www.mof.go.jp/english/pri/research/conference/tff2015e.htm* (accessed 15 July 2015).

In some cases, at least, there is likely to be room to reconsider the basis for the calculations underlying LAT allocations.

- Allocations should reflect actual needs, not historical levels of provision. Some of the measurements are input-based (numbers of personnel, such as police, or numbers of hospital beds) rather than needs-based. In some cases the numbers are derived from statutes and regulations rather than the actual number employed by a given SNG. The recent change in the calculation of the LAT from the approved number of sick beds to the actually operating number is thus a positive step; more can be done in this direction.
- The calculation also includes some of the cost of principal and interest on local debt floated to finance public works, as well as for other purposes such as revenue shortfalls. This is a fairly unusual feature of the Japanese fiscal equalisation system. It would seem to reflect the willingness of the centre to help SNGs take on debt when that debt is used to finance projects or other purposes supported by the centre. As will be seen, it can create some problematic incentives for SNGs.
- SNGs should not be able to manipulate the criteria for service-cost equalisation. Otherwise, general-purpose transfers can distort spending decisions no less than earmarked grants. For example, the fact that things like road construction volumes and interest payments are part of for the LAT allocation formula may create an incentive for SNGs to overspend (and perhaps over borrow) on roads. In Denmark, the length of local roads was an indicator of road spending need in the 1980s. This prompted local authorities to turn small, private dirt roads into public roads. This was financially attractive, since the cost of maintaining dirt roads was very low. The criterion was eventually dropped (Bergvall et al., 2006).
- Equalisation objectives must be balanced against the need for greater resource efficiency as demographic change proceeds. For example, many local communities with high rates of population decline have relatively high costs for delivering social services. While such an adjustment makes sense in terms of fiscal equalisation, there remain questions about the incentives for greater efficiency confronting such local authorities and about the extent to which shifting more resources to places with fewer people makes sense in a tight fiscal environment.

There is no perfect or final answer to this last question – it is a question of balance between equity and efficiency objectives – but the way the government chooses to manage this trade-off is closely linked to the spatial planning and infrastructure policy challenges discussed above. Fiscal and spatial policies need to be co-ordinated as Japan adjusts to its changing demographic situation. The authorities rightly wish to respect the rights and address the public service needs of people in remote, low-density regions. However, the government must avoid putting itself in the position of transferring ever larger sums of money to places with fewer and fewer people on an open-ended basis. This would be perverse from the perspective of both efficiency and equity. Care must also be taken to ensure that the LAT formula does not encourage a resurgence of the kind of *hakomono* ("empty box") public works spending seen in the past[24] or strategies of inter-municipal competition for people and resources that depend not on local potential, initiative and endowments but on better access to central funds.

The authorities should also be wary of fiscal gimmicks, like the "hometown tax" (*furusato nozei*) introduced in 2008. City residents in Japan are allowed to divert a portion of

their local resident's tax to a hometown (*furusato*) of their choice. Initially conceived as an attempt to mobilise the feelings that many urban Japanese have for their places of origin, it has been transformed into a competition for tax funds in which Japanese municipalities market themselves ever more aggressively. This is because many municipalities began offering gifts in return for *furusato nozei* donations. Often these may consist of locally produced foodstuffs – high-quality beef, exotic sea foods, rice, beer and sake are common – but in some cases they include things like hot-air balloon rides and gold ninja throwing knives. The gifts offered by the city of Nahari include an entire tuna fish, a selection of locally caught fish, 1kg of regional pork, 5 kg of local rice, 500 g of handmade miso and an assortment of regional desserts and sauces. Towns have begun to produce and circulate marketing brochures advertising the gifts that they offer. Since 2011, the *furusato nozei* has also – less controversially – been a popular way for people to support places recovering from the Great East Japan Earthquake.

The programme proved so popular that some 130 000 taxpayers diverted JPY 14.2 billion in donations to rural towns in FY 2014, resulting in JPY 6.1 billion in tax reductions. According to MIC data, the respective totals for the 2009-14 period were JPY 112.6 billion and JPY 37.3 billion respectively. For FY 2015, the government doubled the amount of tax that individuals can divert to their chosen. The requirement to claim the credit via the filing of an income tax return has also been dropped. Both measures are likely to increase uptake of the tax.

Despite its popularity, the programme has problems and aspects of it should certainly be reconsidered. The most common criticism is that the *furusato nozei* diverts revenues from the cities where people live (and therefore consume services) to places where they do not. This is inefficient from a public finance perspective, particularly in a system where fiscal equalisation already plays a large role. In fact, the programme is not yet large enough to distort things too much, and it has barely made a dent in the budget of Tokyo, where most of the donors live. However it is growing. The more serious immediate problem is that the programme results in a net loss to public budgets. The competition for donations is not even zero-sum – it is a negative-sum game. Some localities have spent the equivalent of 60-80% of the donations received, or more, on gifts and promotional efforts. One cannot criticise the municipalities for doing this: conceived as a business venture, it yields many of them a handsome profit. But seen as a fiscal transfer programme, from the perspective of the central government, it looks different: a support scheme that costs the budget three or four times what it yields the intended beneficiaries is not efficient. The scheme is widely (and rightly) seen by individuals as a way to cut their tax bills and it results in substantial foregone income for the general government budget. In a country facing tight fiscal circumstances for the foreseeable future, this is not an efficient way to support struggling rural towns: the costs to the budget far exceed the additional revenue gained by local governments.

Even so, the programme may well have served a useful purpose in that it prompted prefectures and municipalities to reach out to citizens all across the country and helped to stimulate local marketing and branding efforts. Many SNGs have created cartoon mascots to represent them and some of these have become huge popular successes: toys and other products using the image of Kumanon, a pink-cheeked black bear who represents Kumamoto Prefecture, have in recent years yielded the prefecture in excess of JPY 60 billion per year. Thus, in addition to channelling increased resources to SNGs

outside the capital region, it may also strengthen local revitalisation efforts, invigorating local economies and making it easier to attract young people to rural areas and smaller towns. It also offers an opportunity for people who have moved to large cities to maintain a connection to their hometowns if they so choose. The critical test with respect to local economic development is whether consumers will continue to buy such products when they cannot set the purchases against tax. Given the issues with the *furusato nozei* discussed above, the government should monitor trends with respect to the use of the scheme very closely and ensure rigorous evaluation of its costs, benefits and distributional consequences.

Earmarked grants also have a role to play…

Japan has not been alone in wrestling with the balance between general-purpose and earmarked grants. The latter are widely believed to distort SNG spending decisions, undermine fiscal discipline and reduce allocative efficiency (Bergvall et al., 2006; Blöchliger and Vammalle, 2010). For many years, there has been a strong consensus that in most circumstances, general-purpose grants should be preferred.[25] Yet although the problems with earmarked grants are well known and have prompted some countries to reduce their reliance on such instruments, many continue to use them extensively. This is not just an instance of bad policy. On the contrary, there has in recent years been growing recognition that they do have specific advantages in certain contexts:

- One of the attractive features of performance-based grants is thus that substantial prior consultation between donors and potential recipients is reckoned to be a *sine qua non* for their success. This can have a value of its own, contributing to communication and information sharing among levels of government long before they are awarded (Smart and Bird, 2009).
- Borge and Lilleschulstad (2010) conclude that earmarked grants with co-financing requirements may be more effective in shifting local spending priorities when linked to new activities (provision of new services, investment in new infrastructure, etc.). Such grants may even make things easier for local politicians interested in policy innovation, since it can be difficult for them to resist local lobbies and channel expenditure into new undertakings, for which no established local constituency (yet) exists.[26]
- Earmarked grants can be employed to address risk-sharing concerns, such as co-financing investments or supporting innovation and experimentation in public service delivery (Bergvall et al., 2006; Blöchliger and Vammalle, 2010).
- Temporary use of earmarked grants can help to build capacity at SNG level during decentralisation reforms, when new tasks are assigned to SNGs (OECD, 2007). This could be quite relevant in Japan: a recent finance ministry assessment found that the shift towards "general revenue-isation" of grants to SNGs did not lead to greater efficiency of local spending, as had been hoped; local authorities continued to invest in new *hakomono* infrastructure, with too attention to maintenance and other costs (Ministry of Finance, 2014a).
- Earmarked grants can help to finance recovery policies after crises or natural disasters. In the immediate aftermath of the financial crisis in 2008-09, many countries found them to be a very flexible and fast instrument to address exceptional situations which required timely, geographically targeted responses.

In the context of stimulus, earmarked grants were attractive both for their speed and for the perceived assurance of "additionality" – it was feared that general-purpose grants would simply crowd-out expenditure by lower-level governments. A great deal of infrastructure finance, which loomed large in many stimulus packages, was both earmarked and subject to matching requirements (Smart and Bird, 2009; Allain-Dupré, 2011). At the same time, the widespread trend towards attaching performance requirements to general purpose grants or broad categorical grants, in the form, e.g. of minimum service requirements or other conditions, also appears to be continuing (see, e.g. Slack, 2009; Shah, 2009, 2010; Steffensen, 2010). While one might expect a reversion to block grants in the context of fiscal consolidation – in the past, lower levels of support to subordinate governments have often gone hand in hand with greater freedom in the use of that support – earmarking may be seen as a way to protect growth-enhancing expenditure from broader budget cuts. Since the most growth-enhancing investments are likely to generate positive spillovers – benefits that extend beyond the spending jurisdiction – there may be a case for such grants to act as "Pigouvian subsidies"[27] (Oates, 2005). Otherwise, subnational governments may be tempted cut such spending, particularly investment spending, in order to sustain expenditure on consumption and services, where spillovers are likely to be small or non-existent.[28]

Performance-based grants are one option that has recently received increasing attention in many countries (see especially Shah, 2009, 2010). Performance-based grants are often linked to minimum delivery standards in respect of public services. Establishing minimum standards, generally for "essential public services", effectively places conditions on subnational governments but leaves them wide discretion when it comes to deciding how to fulfil those conditions. Standards may apply nationwide or may vary by region, and affect coverage, quality, or the price of services. Education, health, and other welfare services are frequently, but not exclusively, subject to such controls (Joumard and Kongsrud, 2003; OECD, 2007).

...but their use should be limited and co-ordinated across the government

The foregoing thus suggests that any review of the Japanese transfer system should aim not to eliminate, or even to minimise, specific grants but to determine, according to the kind of criteria outlined above, where and when such grants are appropriate. In the context of population decline and intensifying competition among locales for people and resources, earmarked grants may play a particularly important role in fostering co-operation around measures that may have positive spillovers that transcend local or prefectural boundaries (Box 2.7). This is already a key priority for the MIC, which has been working to create "central agglomerations of co-operation" – in essence, co-operation contracts among local governments that facilitate policy co-ordination among them and, in many cases, the concentration of key urban facilities or functions in core cities that can then support service provision to the surrounding population. Earmarked grants can also be of particular use for addressing national priorities like climate change and for addressing capacity gaps at local level.

That said, such grants should be used sparingly and should focus on a few key priorities. To this end, they should be defined and implemented in a whole-of-government perspective. Otherwise, there is a very real risk that different sectoral earmarked grant programmes, each of which might make sense according to one or more of these criteria, will cut across one another, confronting SNGs with contradictory, confusing or even perverse incentives. The experience of some other countries illustrates how easily and rapidly conditional

grant schemes can multiply where such discipline at the centre is lacking; each central ministry or department designs its own disbursements and programmes independently of the others. The result is an erosion of local autonomy, confusion about central priorities and the creation of a plethora of spending programmes are hard to monitor and evaluate.[30]

Box 2.7. **Central government leadership and inter-municipal co-operation**

Local governments may co-ordinate using a range of mechanisms. However, such co-ordination typically requires a degree of intervention from higher-level governments to overcome the number of impediments to collaboration across jurisdictional boundaries, some of which may be rooted in national policies and all of which may be easier to correct if the higher level governments are involved:

- There are collective action problems to be overcome. Even if all the municipalities in a large urban area or region stand to gain from co-operation, there may be none among them with the capacity and incentive to take on the costs of gathering the necessary information, mobilising others, etc. In some cases, municipalities may lack the capacities needed to engage in co-operation: a lack of strategic planning capabilities at the local level has impeded inter-municipal collaboration in such diverse country settings as Canada and Slovenia.
- Big differences in capacity and resources across jurisdictions may aggravate the problem by undermining trust or weakening incentives to collaborate. Differences in size, wealth and priorities can make it difficult for neighbouring municipalities to agree, particularly where very large cities are engaged with much smaller municipalities.
- Competition between municipalities can prevail, particularly if municipalities compete to obtain funding from higher levels of government.
- Where indivisible assets like schools and hospitals are concerned, collaboration can be harder still. Potential economies of scale notwithstanding, individual local authorities may prefer less-efficient local provision if the collaborative solution would deprive them of such facilities. In many places with declining populations, municipalities see the need to collaborate in fields like education and healthcare, but fear that their own long-term viability and attractiveness depend in part on ensuring that the key facilities (and related employment) are located within their own borders.[29]
- Where there are positive (negative) spillovers across jurisdictional boundaries, the benefits (costs) of a policy or investment to the wider region may be greater than to the municipality in which it is implemented. Left to its own devices, that municipality is likely to under- (over-) invest in such activities.

Such cross-jurisdictional co-ordination particularly deserves attention in view of recent empirical findings that suggest that, in some settings, public investment externalities (i.e., investment impacts that spill across administrative borders) are more relevant for regional growth than direct public investment in each region (Rodríguez-Pose, Psycharis and Tselios, 2012). Historically, it has been especially important for physical infrastructure provision where the efficient scale of projects transcends boundaries of individual localities (e.g. regional road networks). This also holds true when physical or social infrastructure must be streamlined or downsized (e.g., regionalisation of hospitals where healthcare demand is falling). It can also pay dividends in areas like human capital development and innovation in conditions where functional economies cross administrative borders.

Sources: OECD (2014a), *OECD Regional Outlook: Regions and Cities: Where Policies and People Meet*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264201415-en*; OECD (2013a), *Investing Together: Working Effectively across Levels of Government*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264197022-en*.

A clearer division of labour between different instruments may be needed

As noted above, decentralisation measures need to be bolstered by steps to ensure that local authorities have strong incentives to co-operate in both service provision and investment in instances where there are obvious spillovers or scale economies. The authorities are already trying to adapt the LAT to the need to promote such co-operation. One example is the use of special measures in the LAT to promote the concentration and comprehensive use of public hospital facilities in local areas. The LAT back-end financing measure applied to public hospitals previously covered 30% of the bond redemption costs for the construction or replacement of a hospital, but for FY 2015 to 2020, that rate has been reduced to 25% for ordinary costs but raised to 40% where the project is aimed at a reorganisation and networking of the public hospital, in accordance with local revitalisation. These measures are part of the overall strategy of building networks in the regions supported by both MIC and MLIT. Moreover, the prefectural role in making these determinations is to be decisive – an effort to ensure that a broader (regional rather than local) view informs such decisions (Hiraoka, 2015; The Daily Engineering and Construction News, 2015).[31]

Another, potentially rather problematic, recent innovation is the inclusion of the "community, people, work creation fund" in the calculation of basic fiscal demand in the ordinary LAT. One of the new initiatives includes the "fund for special measures to deal with declining population and other challenges" which was instituted in 2015 and is calculated on the basis of population and the need for the revitalisation projects, as well as objective measures to reflect its success. The indicators of the need for the projects are quite detailed, and include rates of increase or decrease in population, the proportion of incoming population, the proportion of outgoing population, the proportion of youth, the natural increase or decrease in population, the rate of youth employment, the rate of female employment, the rate of effective labour demand, and the annual sales per capita of area businesses. The measures to reflect success of the initiatives are similarly detailed.

Both these initiatives are in some respects quite promising, but they raise two important problems. The first problem is that they risk making the LAT needlessly complex in an effort to use it as an instrument for the pursuit of too many different priorities. If the formula is overly complex, its incentive effects may be blunted, as it may be difficult for local governments to understand how the relative success of their various initiatives is reflected in the calculations for the LAT. A more explicit measure to achieve that recognition may be necessary in order to incentivise the local governments to deploy countermeasures against population decline (Enatsu, 2015). The second problem is that they raise once again the prospect of SNGs being able to influence their LAT allocations, which is undesirable in the case of a fiscal equalisation mechanism.

The LAT calculations of basic fiscal need have traditionally seen a number of variables used to capture inter-regional differences in conditions that affect the cost of programme delivery, and thus preserve equity. The new measures (from 2015) in the LAT calculations have a different purpose, that of introducing objective measures of performance, as opposed to simply measuring different local conditions affecting programme spending. The new measures are also meant to provide signal to SNGs of the importance that the national government attaches to local revitalisation. However, some analysts warn that

these kinds of incentives in the LAT threaten a return to the inducement of public works spending that became such a problem in the past (Tobita, 2014:17).

One way forward would be to recognise fiscal equalisation and local revitalisation as separate and distinct (even if related) goals. The LAT could be streamlined with a clear focus on ensuring fiscal equalisation in the interests of equity in the delivery of essential public services. Other instruments, including performance-based grants where appropriate, could then be designed to promote revitalisation initiatives. For the most part, support for revitalisation efforts should not have too many conditions attached, even if it is separated from the LAT: if the purpose is to allow prefectural and local actors to identify and mobilise endogenous assets, then the process cannot be too centrally driven. It would also be useful to streamline the indicators used to the core elements of local revitalisation. These would appear to be building local and regional communities attractive to young people. Measures of youth and female employment seem especially relevant in this regard, and could perhaps be refined to reflect income levels and other markers for employment conditions. This is because it is not merely jobs, but good jobs, that will likely be the key to attracting the young to Japanese regions.[32] The multiplication of grant instruments should be limited: as noted above, this can undermine policy coherence. Such instruments need to be embedded in a whole-of-government strategy oriented towards a limited number of national goals.

Infrastructure policy

Japan is exceptionally well-endowed with infrastructure

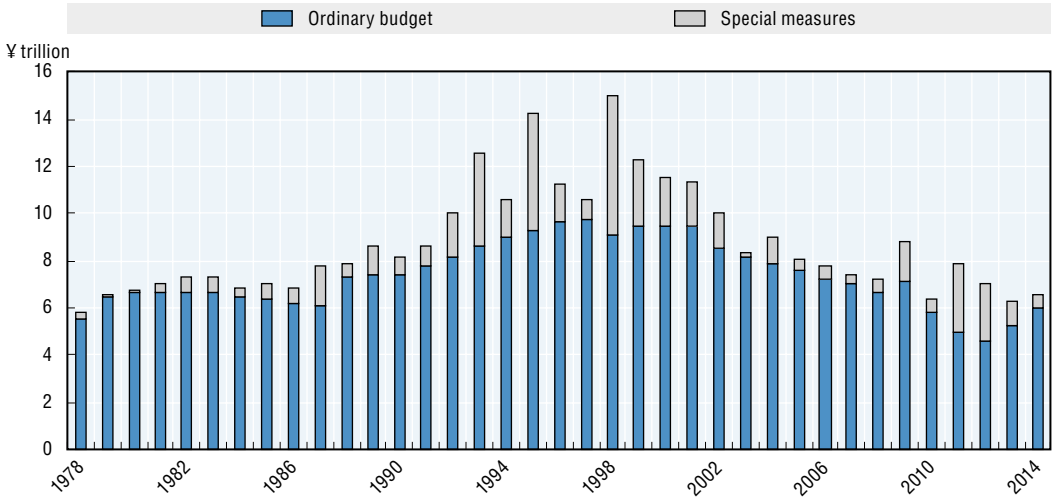
Japan may well be the most infrastructure-intensive major economy in the world. In 2013, CAO (2013) estimated its value in 2005 at JPY 463 trillion, equivalent to around 92% of 2005 GDP, despite the exclusion of some network sectors. In part, this is because, as a rich, densely populated country, Japan has a lot of infrastructure in places with very high land values. It is also very highly urbanised, and this, too, contributes to infrastructure density. Moreover, Japan's topography and geography arguably necessitate far higher levels of infrastructure investment than might be appropriate elsewhere. The mountainous topography of much of the country leads to greater investment in bridges and tunnels, for example, while its exceptional vulnerability to natural disasters – including typhoons, earthquakes, volcanic eruptions, floods and extreme snowfalls – implies higher spending on disaster prevention. A recent finance ministry analysis (Ministry of Finance, 2014b) suggests that Japan has reached saturation with respect to some major infrastructures. The national network of trunk roads, for example, nearly tripled in length between 1986 and 2014, whereas the number of passenger kilometres driven rose only 3.17% – and in fact has largely been unchanged since 1999. Much the same is true of airports and wastewater treatment infrastructures.

Historically, the Japanese state has had a reputation as a "construction state", owing to its traditionally high levels of public investment in physical infrastructure. Indeed, public investment as a share of GDP has long been well above OECD averages, though it has fallen substantially in recent years: in 1996, total public investment reached 8.4% of GDP, but it has since fallen sharply. The largest part of that was spent on public works (Figure 2.9). This spending reflected factors that were fundamentally exogenous to the policy process, including population density; the difficult geography of the country, much of which faces accessibility challenges; and the need for resilience in a country subject to multiple natural hazards. It was also motivated by a deep belief in the growth-promoting role of

infrastructure investment, which was seen by many as the regional development tool of choice, and was the most frequent spending option when fiscal stimulus was required. Political economy factors also played an important role, as public works projects were frequently allocated and financed for political reasons (Kondoh, 2008; OECD, 2009; Yoshino and Mizoguchi, 2010).

Some of the specific estimates of Japan's infrastructure stock are striking. McKinsey reckons that roughly half of this infrastructure stock is in roads (versus 34.7% on the MLIT estimate). Japan's road network of 1.27 million km is sixth largest in the world, exceeding Canada's 1.04 million km and only slightly smaller than Russia's 1.28 million, even though those 2 countries are well over 20 times the size of Japan. In terms of road density per square kilometre, Japan ranked third in the OECD in 2012, behind Belgium and the Netherlands – two other small but densely inhabited and highly urbanised countries. By contrast, it ranked 19th in terms of road density per capita. Roughly 80% of Japan's roads are managed by the prefectures (21%) and municipalities (60%). The country also has 98 civil airports, many of them very close to one another. Japan probably needs more airports than most countries its size, owing to the fact that it is an archipelago; for remote islands, air transport infrastructure is a necessity. However, many are clearly redundant – almost every prefecture in Japan has at least one airport, in some cases located as little as 60 or 70km from one another. The majority are run by SNGs and operate at a loss, well below capacity (Aoki, 2012; Janowski and Kaneko, 2013), as do some run by the central government. That is one reason why the government in 2014 put in place a legislative framework for the privatisation of airports.

Figure 2.9. **Public works expenditure, 1978-2014**



Source: Ministry of Finance (2014a), Ministry of Finance (2014a), "Current situation and issues surrounding social infrastructure", Treasury Budget Bureau, Tokyo, 4 April, available (in Japanese) at: *https://www.mof.go.jp/about_mof/councils/fiscal_system_council/sub-of_fiscal_system/proceedings/material/zaiseia260404/05.pdf*.

StatLink *http://dx.doi.org/10.1787/888933324702*

National-level infrastructure policy is set out in the National Infrastructure plan (Box 2.8), which covers roads, traffic safety facilities, railways, airports, ports, sea route signs, parks and green fields, sewers and sewage works, rivers, erosion and sediment control, and the management of steep slopes and coasts.[33] In practice, however, the management of most forms of infrastructure is shared between national and

subnational governments. For example, the central government is responsible only for major roads; the vast majority of the road network is looked after by prefectures or local governments. Similarly, Japan has over 144 000 km of rivers, of which only about 10 600 km are class A rivers directly under the authority of MLIT. Over 77 000 km of Japan's class A rivers are under the administration of the prefectures, together with 35 800 km of class B rivers.

Box 2.8. **The national framework for infrastructure policy**

The current (fourth) National Infrastructure Plan, approved by Cabinet Decision in September 2015, was drawn up mainly in response to rapid changes including 1) an acceleration of the deterioration of existing infrastructure; 2) vulnerability of the national land, particularly to natural disasters; 3) population decline; and 4) intensifying international competition. The major points of the Plan include:

- The **effective use** of existing facilities. The plan envisages steps to maximise their functions (e.g. reviewing flight routes to and from Haneda Airport with a view to increasing the number of departure and arrival slots), to strengthen and upgrade the functions of existing facilities (e.g. establishing welfare facilities upon the aggregation of public housing), and to promote the multifunctionality of existing facilities (e.g. developing a power-generation facility that leverages the space above a sewage-treatment plant).
- The efficient **maintenance** of infrastructure assets. Much of Japan's infrastructure was built during the high-growth decades of the mid-20th century and is now deteriorating rapidly. Efficient maintenance is required to ensure safety and to reduce and level off medium and long-term infrastructure costs, in part by developing a maintenance cycle (systematic repair and upgrading based on checks and diagnosis).
- The need for a solid outlook for **stable and continuous public investment**. This means not only ensuring that infrastructure development is managed in a systematic and steady way but also securing the necessary skills and workforce, so as to avoid the kind of problems that have in the past been associated with fluctuations in public investment (e.g. entry of disqualified operators, frequent dumping incidents, and a high personnel turnover rate).

A further priority for infrastructure policy is to facilitate mobility for the elderly and disabled. Under current legislation, there are mandatory "Accessibility Standards" for certain categories of newly built facilities (such as passenger facilities, various vehicles, roads, off-street parking facilities, city parks and buildings). There are also requirements for upgrading some existing facilities. In accordance with the local accessibility plans created by municipalities, focused and integrated promotion of accessibility is carried out in priority development districts to increase "caring for accessibility." In addition, "accessibility workshops" teach people how to provide assistance and to provide virtual experience of being elderly or disabled.

The National Infrastructure Plan is implemented in co-ordination with the National Spatial Plan and the Basic Plan on Transport Policy. Implementation is monitored by the Council for National Infrastructure, and administrative evaluation is conducted in light of the priority goals defined in the plan.

Source: Ministry of Land, Infrastructure, Transport and Tourism (2015b), "National Infrastructure Plan", Ministry of Land, Infrastructure, Transport and Tourism, September, available (in Japanese) at: *http://www.mlit.go.jp/common/001104256.pdf*.

The emphasis of infrastructure policy is now shifting to effective use and maintenance

The ageing and decline of Japan's population pose particular issues for infrastructure policy. The population is shrinking fast, and the existing infrastructure is ageing. Maintenance and renewal are fast becoming the most important part of infrastructure investment (Ministry of Finance, 2014a; Ministry of Internal Affairs and Communications, 2014), and MLIT has made this a central priority, even designating 2013 a "maintenance year". This is a welcome shift of focus, but there is still a great deal of pressure from sectoral and local lobbies for new construction. Ministries, prefectures and local authorities continue to advance numerous proposals for more and better infrastructure, when the priority now is (and should be) to use infrastructure more effectively and maintain it more efficiently, which will include downsizing it where necessary – a challenge made all the greater by high levels of uncertainty about future settlement patterns and infrastructure needs. These priorities are at the heart of the new National Infrastructure Plan approved by the cabinet in September 2015 (Box 2.8). To be sure, some new infrastructure will be required, but its type and quantity will be profoundly reshaped by demographic trends.

Shifting the focus of policy from a growth-oriented model to one focused on meeting the infrastructure needs of a shrinking, fiscally constrained Japan will be difficult, as other countries facing demographic decline have also discovered.[34] In part, this reflects the fact that the institutions in place have been oriented to infrastructure growth for decades – it is, indeed, why many of them were created. Engineers and public works professionals are trained to maintain and expand infrastructure networks; the idea of shrinking or decommissioning them is totally contrary to business as usual and can be extremely expensive. However, the real problem is that central policies regarding service and infrastructure provision will clearly influence the location choices made by households and firms. Such policies will also need to respond to what household and firms are doing, of course – infrastructure investment will not determine the settlement pattern on its own, nor should it. But it will be an important factor in shaping how settlement pattern change, which means that the political stakes will be very high when it comes to making difficult choices about where to maintain, renew or upgrade key infrastructures and where to downsize or even decommission them.

Maintenance and replacement costs are a growing burden on SNG budgets

Shared responsibility for infrastructure means that the ageing of this infrastructure stock thus presents yet another serious fiscal challenge for Japan's SNGs (Table 2.4). Most of Japan's infrastructure stock was built in a relatively short period in the 1950s-1970s. There will thus be a huge need to renovate or replace this stock in the coming 40 years, as many infrastructure assets will reach the end of their expected lifespans. The most recent MLIT estimates for replacement and maintenance costs, completed at the end of 2013, are sobering, particularly given that they are exclusive of any new infrastructure investment: annual expenditure for FY 2013 is estimated at JPY 3.6 trillion, rising to JPY 4.3-5.1 trillion in 2023 and an estimated JPY 4.6-5.5 trillion in 2033. In some instances, the infrastructure may indeed need to be downsized as the population declines, and this, too, can be costly. Approaches to the management of infrastructure shrinkage are considered below.

Table 2.4. **Indicators of infrastructure ageing**

	SNG share of sector assets	Percentage of assets over 50 years old		
		2013	2023	2033
Roads and bridges (length > 2 km)	90	18	43	67
Tunnels	72	20	34	50
River management facilities	92.6	25	43	64
Sewerages	100	2	9	24
Port quays (water depth > 4.5 m)	100	8	32	58

Source: Ministry of Land, Infrastructure, Transport and Tourism (2013), "Report on the maintenance and updating of the future of social capital: Overall enhancement of infrastructure policy towards full-fledged maintenance era", Ministry of Land, Infrastructure, Transport and Tourism, Tokyo, December, available (in Japanese) at: *http://www.mlit.go.jp/common/001023146.pdf*.

As the second column of Table 2.4 above suggests, much of the burden of maintaining or replacing these ageing assets will fall on SNG budgets. Moreover, it will fall most heavily on those least able to afford it. In 2012, the Ministry of Internal Affairs and Communications (MIC) conducted a survey of 111 municipalities, representing 14.2% of Japan's population and 7% of its area on the costs of renovation/replacement of five major categories of infrastructure (public buildings, roads, bridges, water facilities and sewage facilities) over the next 40 years. The total estimate is JPY 63 950 per capita per year, equivalent to 262.6% of current expenditure on renovation/replacement. Even if the surveyed municipalities were to stop all new infrastructure investment and use those resources for renovation/replacement, the future costs would be 113.1% higher than the current available budget. However, the really striking numbers concern the cost estimates, both per capita and relative to total budgetary spending, broken down by size category of municipality (Table 2.5). The burden on the budgets of small municipalities will be dramatically greater.

Table 2.5. **Burden of roads and public buildings by size of municipality**

	Square metres of roadway per capita	Square metres of public building space per capita	Future replacement costs/current expenditure (roads)	Future replacement costs/current expenditure (public buildings)
National average	31.99	3.22	194.5	243.6
Designated cities	21.56	3.44	73.8	201.1
Cities (pop. 50-100 000)	62.42	3.56	417.2	222.3
Towns (pop. < 10 000)	242.06	10.61	860.0	295.6

Note: Estimates are based on a Ministry of Internal Affairs and Communications survey of 111 SNGs.

Source: Ministry of Internal Affairs and Communications (2012), "Survey results for the comparative analysis of future updates cost of public facilities and infrastructure assets", Ministry of Internal Affairs and Communications, March, available (in Japanese) at: *http://www.soumu.go.jp/main_content/000153119.pdf*.

One of the legacies of the past tendency to use infrastructure investment to promote regional equality (OECD, 2008) is that public investment has long been negatively correlated with income levels, and per capita public investment was also in many instances negatively correlated with population. Indeed, prefectural-level data for 1990-2010 reveal that the change in the density of the road network relative to both area and population was negatively correlated with population change. In other words, road construction and population movements tended in opposite directions. Going forward, that means that many declining areas have even larger infrastructure burdens.

Managing infrastructure in shrinking places will be a particular challenge

As noted above, population decline creates significant problems with respect to the operation, maintenance and development of infrastructure. In the first place, declining population means that the fixed costs of the infrastructure must be shared among fewer people; cost calculations for infrastructure projects generally assume that it will be used at full capacity (Schiller, 2007). Secondly, some infrastructures degrade faster when not used at sufficient capacity: for example, some water lines and older pipes degrade faster without flowing water. Thirdly, decisions about where to upgrade, extend, maintain or decommission infrastructure assets can have huge impact on property values and settlement patterns. In any case, much grid-bound infrastructure can be very expensive to downsize, because the integrity of the grid must be maintained. Even where this is not the case, decommissioning can be costly and those costs need to be set against 1) the cost of maintaining excess capacity and 2) the probability that the infrastructure might be needed in future and the consequent cost of reinstallation if that is the case.

Hoornbeek and Schwarz (2009) provide perhaps the most extensive review of responses to different kinds of infrastructure challenge in shrinking US cities. A synthesis of their findings, based on case studies, interviews and the academic literature on the subject, points to a number of different responses that Japanese cities will need to consider:

- Shrinking cities need to adopt a "triage" approach to infrastructure management, particularly to roads and bridges. Transport is one area where decommissioning infrastructures may be easiest, even if it can be costly, because a good deal of intentional redundancy has been built into many road networks. There is usually more than one way to move from one place to another.
- Asset management is critical. Cities everywhere need to know their assets, but that need is even greater in shrinking cities because of the financial pressure on them. Cities need more detailed understanding of, e.g. sewer materials, power generation and transmission assets and transport infrastructure. Better and more granular data on infrastructure assets can serve to improve both operational efficiency and decision making about investment and maintenance. For example, older pipes may turn out to last longer than newer ones in conditions of low usage, depending on the materials involved. IT has a key role to play in this approach. Smart technologies employed to optimise the operation of infrastructure can also contribute to better asset management.
- Given the high cost of wholly or partially decommissioning many infrastructures, cities need to ask whether excess infrastructure capacities have alternative uses. For example, excess capacity in a sewer district might be used to treat wastewater from nearby communities via line extensions or interceptor sewers or to take septage from private haulers. Much depends on whether and to what extent water and wastewater services are, or could be, regionalised. The potential to export surplus electric power is likewise obvious, though much depends on the state of the grid and demand trends nearby.
- Where infrastructure is to be downsized, recycling of some materials may offer an opportunity to offset decommissioning costs. In the United States, for example, some cities have been exploring the potential for recycling pavement from decommissioned roads. The main challenge is local demand: since concrete is heavy and has a relatively low value-to-weight ratio, the investment is hard to justify if the inputs or outputs have far to travel. But this option could prove viable for small towns in relatively close proximity to larger cities.

- Uncertainty about the future settlement patterns and population levels/composition means that flexible solutions are likely to be preferred. Choices that involve a high degree of lock-in are even riskier than when cities are growing. So public transport policies, for example, may better favour buses over rail-based solutions, unless there is an explicit effort to use the fixed rail network to reshape the settlement pattern. Buses allow greater flexibility as population and commuting patterns change. When it comes to power generation, distributed solutions may come to look increasingly attractive for the same reason, while bringing an added benefit in terms of resilience.

The future of local public corporations

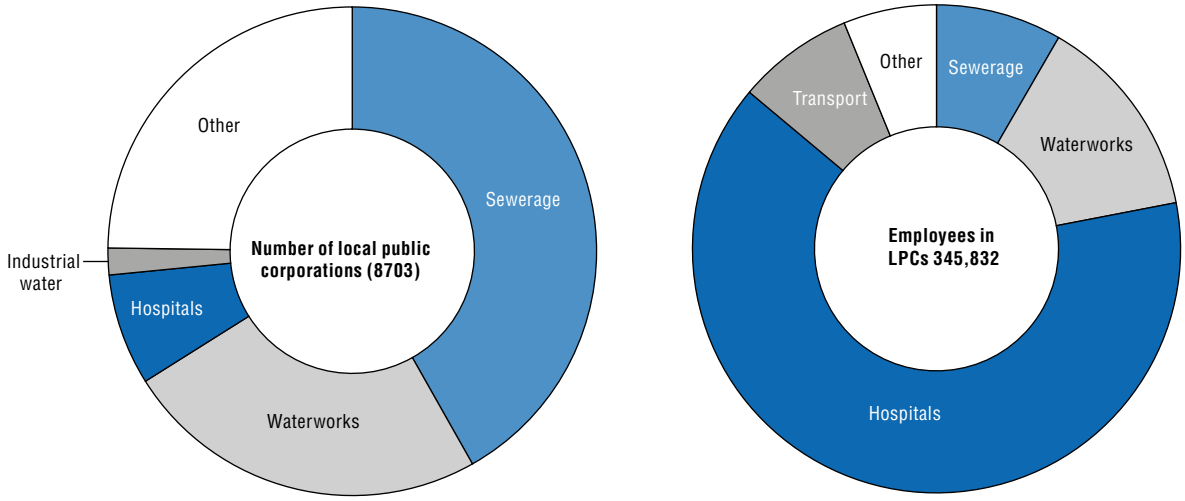
Much of the responsibility for managing Japan's infrastructure rests with local public corporations (LPCs) in such sectors as sewerage, water works, public transport and other areas of service delivery. In part, this has been because Japan has traditionally made little use of public-private partnerships (PPPs) or private finance initiative (PFI) mechanisms. Their overall scale as businesses is equivalent to roughly 20% of Japanese local governments' general budget spending. Japanese local governments have long used LPCs to provide such amenities as water. There were only 45 of them in 1953, but the number reached 3 000 in the wake of the high-growth 1960s (Samuels, 1983: 38) and peaked at 12 612 in 2002. Their roles and numbers increased in waves, as the need arose, swelling during the post-war high-growth period, which saw the rapid diffusion of such basic infrastructures as waterworks and sewerage in cities. Later on, in the late 1960s and early 1970s, their welfare-provision role grew, and later still, in the late eighties and early nineties, their role in industrial promotion (Sakamoto, 1996: 139). The years since that peak have seen significant downsizing and other reforms. By the late 2000s, the number of local public corporations had declined significantly, reaching 8 703 in 2013. These falling numbers reflected efforts to cull deficit-ridden local public enterprises and be able to cope with ageing infrastructure and other challenges.[35]

In 2013, 41.8% of local public corporations were in the sewerage businesses and 24.3% in water supply. The rest were divided among healthcare, industrial water businesses and other activities (Figure 2.10). These proportions remained fairly stable as the number of such corporations fell during 2009-13. The local public corporations also provide significant employment. Total employment in such enterprises in 2013 was 345 832, with hospitals accounting for 64.1% of this total. This underscores the contrast between capital-intensive infrastructure sectors and more labour-intensive service sectors: LPCs are active in both. In FY 2012, LPC hospitals accounted for 12.4% of all hospital beds nationwide, or 196 000 out of just under 1.58 million. In short, the local public corporations are significant local public service business operations that contribute to the economic activity of local areas as well as to the revenue base of local governments.

Local public corporations' turnover reached JPY 17.6 trillion in FY 2013 (3.7% of GDP), with their financial settlement calculated by subtracting total costs from depreciation and capital expenditures. Sewerage works represented 32.7% of their activity and waterworks 23.2%. While the number of hospitals totalled 642 (7.4% of all public corporations), their operations amounted to JPY 4.6 trillion (27.0% of the total), highlighting again the gap between capital-intensive enterprises, such as sewerage and water infrastructures, and hospitals, where capital costs can substantial but recurrent labour costs are far higher. The corporations are largely financed through fees and managed through special accounts

that are separate from Japan's local government general budgets. Local public corporations overall operate in surplus. In 2013, they earned local authorities a total of JPY 508 billion, with 88.3% of such corporations operating in the black.

Figure 2.10. **Local public corporations and LPC employment by sector of activity, 2013**



Source: Adapted from Uda, N. (2015), "Japan: Fiscal Discipline of Local Governments," paper given to IMF, ADB, PRI Conference on "Fiscal Policy for Long-Term Growth and Sustainability in Ageing Societies," 10-11 June 2015, Tokyo, *www.mof.go.jp/english/pri/research/conference/tff2015e.htm* (accessed 15 July 2015).

StatLink *http://dx.doi.org/10.1787/888933324713*

LPCs confront numerous challenges due to demographic change

As the population declines, fees to support local services decline as well. In tandem with that, the corporations themselves have ageing workforces and face increasing challenges due to the rising wave of retirements. The infrastructure that they manage is also ageing and the fiscal situation imposes further constraints on investment. Pressures for consolidation in the sector are likely to continue growing, particularly in areas experiencing population decline. This could create new opportunities to streamline service provision in many areas: further municipal mergers need not take place for there to be consolidation of LPCs, with multiple local governments owning stakes in them. This could allow some rationalisation of services and the achievement of scale economies without sacrificing local autonomy.

As part of local revitalisation, the national government has been studying how to revise the management of LPCs in the face of these challenges. The reforms currently being undertaken include shifting LPC accounting systems to corporate accounting. This reform is thought likely to add to pressures on smaller and more remote SNGs, because it would compel them to finance more of their operations from fees and other levies on customers. This would probably lead to significant differentiation of fees across local governments, with smaller ones experiencing greater increases because the unit cost of service was higher. One recent study of likely fee increases was undertaken by the Water Security Council of Japan in co-operation with Ernst & Young ShinNihon LLC (ShinNihon, 2015). The study concludes that 98% of the 1 242 water businesses studied would have to raise their water fees by 2040, nearly half of them by 30% or more. A large number of these firms were in areas experiencing rapid depopulation.

Capital intensive enterprises in sewerage, for example, manage a nationwide total of more than 470 000 km of pipes and related infrastructure. Much of this infrastructure is now ageing and requiring increasing investment in maintenance and replacement. Kazunari and Tatsuya (2015) estimate that the cost of maintaining this infrastructure will soon rise to JPY 3 trillion per year or more. Investments in maintenance will have to be recouped, in principle, from fees for service, particularly if the proposed accounting changes are adopted. They add that much of the JPY 120 trillion invested hitherto has been from national budgetary sources – sewerage long benefited from significant support through national subsidy programmes. Yet in the future, the national subsidies will be insufficient to cover these costs. While the government has made a priority of financing measures to address the ageing of national infrastructures, strengthening and maintaining transport infrastructures has been a bigger spending priority. In some places, prefectures and municipalities are therefore moving towards solutions based on public-private partnerships, such as Hiroshima's 2012 collaboration with the water-treatment firm Swing, which now operates prefectural water treatment plants as a concession. Even so, the scale of the infrastructure management and maintenance costs is such that fee increases will in many places be unavoidable.

Rationalising LPCs can bring better services and job opportunities, not just lower costs

On the basis of two years of research initiatives examining options for local public corporations, Kamio (2015) concludes that there are in fact two kinds of reform under way at present. One is essentially passive, allowing population decline to shape the number and scale of local public corporations. The more active approach seeks to use LPCs to enhance local employment prospects and thus to help stem the flow of young people from local areas to the big cities. This approach is already visible in some LPCs. For example, some transport-related businesses are using big-data initiatives to research customers' behavioural characteristics. In local communities with high levels of elderly residents, these firms are exploring methods of creating increased demand via a restructuring of transport services so as to encourage local residents to get out more. In addition, some firms in the water business are using the "insourcing" of expertise pertaining to the maintenance and management of assets.

Kamio argues that this approach fosters the development of human resources and employment in the local area and seeks to build networks across the larger region's water businesses. The regional approach is critical here and linked to the issue of streamlining and mergers mentioned above. That is because population decline will mean that a significant degree of rationalisation and downsizing will be required. Some local governments are already revising the specifications applied to the water business in order to cope with steep declines in demand for water. At the same time, active approaches to restructuring, such as those Kamio considers, offer an opportunity to make LPCs more efficient and financially viable, as well as to offer better services and create attractive employment opportunities. They also create opportunities for innovation: some LPCs in the water sector are using automated sensors and wearable gear to innovate new approaches in maintenance and operations. Low-cost approaches to maintenance and management of key infrastructures like water offer the possibility of developing technologies and methods that can be exported.

Kamio also notes that such pro-active approaches to restructuring LPC business models often require collaboration with other actors, such as private firms and specialists from other sectors; the LPCs are often ill-equipped to pursue them alone. This suggests that what is critical to reform is a focus on bringing together the most appropriate know-how to solve local challenges. This suggests that Japan's local utilities will move gradually towards a model involving greater diversity of agency, using not just the LPCs specified by the existing legal frameworks, but also limited corporations, firms developed through privatisation and PPPs, limited liability partnerships, and other legal forms. As will be seen in Chapter 4, such changes may help LPCs drive forward important changes in energy, an area where demographic change and environmental challenges could open up new and promising opportunities for them to strengthen resilience and improve environmental outcomes.

Notes

1. The Grand Design presents a comprehensive long-term vision to address six major challenges confronting Japan, including: i) low fertility and demographic decline; ii) rapid population ageing; iii) intensifying competition among major cities around the world in an age of globalisation; iv) ageing infrastructure and the risk of large-scale natural or technogenic disasters; v) environmental problems and threats to food, water and energy supplies; and vi) technological change.
2. The Grand Design did not go through such a process and was approved by MLIT but not the entire cabinet.
3. These include, among other things, the Regional Revitalisation Law, the National Land-Use Plan Law, the Wide Area Regional Revitalisation and Development Law, the Metropolitan Areas Development Law, the Kinki Areas Development Law, the Chubu Areas Development Law, the Urban Planning Law, the Housing and Living Basic Law, the Land Scape Law, the Rural Areas (Mountain and Villages) Promotion Law, the Agricultural-Promotion Areas Development Law, the Hamlet Region Development Law, the Peninsula Area Law, the Rural Area Industry Introduction Promotion Law, the Natural Disaster Measures Basic Law, the River Law, the Tourism Areas Development and Tourists Visiting Promoting Law, the Regional Core Urban Area Development and Industrial Functions Re-Allocation Promotion Law, the Logistic Urban Areas Development Law, the Industrial Agglomeration Forming and Revitalisation Law; the Law on the Cabinet Office and the Law on the Ministry of Internal Affairs and Communications.
4. These issues are addressed in detail in Chapter 3.
5. When the Great East Japan Earthquake struck in March 2011, relief supplies were transported mainly via roads, railways and ports on the Sea of Japan side of Honshū.
6. This is a substantial benefit, given that for a doubling of the population size within the urban agglomeration, productivity increases by 2-5%.
7. The explosion of suburbs around major cities in the last century was about cities spreading out as urban dwellers sought to consume more private space, not a reversal of urbanisation.
8. These are, from north to south: the Tōhoku area, a cluster of seven prefectures in northern Honshū; the Tokyo Metropolitan Area; the Hokuriku area on the Pacific side of central Honshū; the Chūbu area, around Nagoya; the Kinki area, around Osaka and Kyoto; the Chūgoku area of south-west Honshū; the Shikoku area, which combines the eponymous island and the south-east Honshū; and the Kyūshū area, which encompasses all of that island.
9. The importance of environmental priorities and encouraging endogenous local development has risen dramatically in Japan and elsewhere in recent decades, part of a broader shift away from top-down developmentalist approaches (Koresawa and Konvitz, 2001).
10. The 1987 plan, which covered the period from 1989, was somewhat different, in that it gave greater attention to the development of Greater Tokyo.
11. Though sometimes treated as synonyms, these are distinct concepts. "Effectiveness" is concerned with performance in respect of the objectives set, without regard to cost. Effectiveness reforms may be cost-increasing, cost-neutral or cost-decreasing. "Efficiency" refers to the relationship between cost and outcome. Efficiency reforms aim at better outcomes for any given level of expenditure.

12. The PDCA (plan–do–check–adjust) cycle is an iterative management method used by firms for the control and continuous improvement of processes and products.
13. The office should not be confused with the Headquarters, though the two are to work closely together and the office provides implementation support for some Headquarters initiatives. The office was in fact created in the early 2000s as part of an earlier revitalisation drive; at that time it supported the Headquarters for Regional Revitalisation.
14. Despite its name, the Cabinet Office is a substantial ministry in its own right, employing over 14 000 people in FY 2014. Its purview extends over, among other things, the Consumer Affairs Agency, the National Public Safety Commission, the Fair Trade Commission and the Financial Services Agency.
15. Both these projects are considered in detail in Chapter 2.
16. Hooghe, Marks and Schakel (2010) do find that Japan's prefectures have relatively limited autonomy compared to the regional tiers of government in other major democracies, but they do not address the local level.
17. In 2014, the country ranked fourth in the OECD area in terms of the average number of inhabitants per municipality, with almost 8 times the OECD average of 9 440.
18. Exclusive of social security accounts.
19. The fiscal year in Japan runs from 1 April through 31 March. The fiscal year designation is that of the calendar year in which it begins (e.g. FY 2015 began on 1 April 2015).
20. The Japanese constitution stipulates that all citizens will receive a basic minimum of public services.
21. Including expenses required for contributions or subsidies for the construction of public facilities for entities specified by Cabinet Order that are funded by public organisations or the national or local governments.
22. One of the first high-level warnings about specific subsidies came from the Deliberation Committee for the Rationalisation of Subsidies in 1962-63.
23. Some JPY 3.2 trillion was to be implemented over 2005-06 and the rest during 2007-09.
24. The term *hakomono* literally translates as "empty box" but often refers to facilities built in Japan's boom years that were under-used and considered a drain on public finances.
25. This is in fact the position expressed in Article 9 of the European Charter of Local Self-Government: "As far as possible, grants to local authorities shall not be earmarked for the financing of specific projects. The provision of grants shall not remove the basic freedom of local authorities to exercise policy discretion within their own jurisdiction."
26. Tompson (2009) highlights the difficulty of engineering policy change where the supporters of the *status quo* are organised and easy to identify, whereas the beneficiaries of change are not – often because it is the policy change itself that will create the opening for the emergence of new firms, sectors or other social interests.
27. A Pigouvian subsidy is a subsidy applied to an activity that generates positive externalities – i.e. where the social benefits of an activity exceed those reaped by the agent who incurs its cost. In the absence of some measure to address the externality, the activity is likely to be under-supplied. In the presence of negative externalities (i.e. where the social costs of an activity exceed those incurred by the agent), a Pigouvian tax may be needed to prevent over-provision of the activity.
28. In fact, the evidence suggests that such spillovers are likely to be modest in most cases; see Blöchliger and Petzold (2009), but in an environment of consolidation, central governments may still wish to use them to protect spending that they believe to be particularly important for growth.
29. See OECD (2011a and 2012b) for examples of the problem in Slovenia and Sweden. Small municipalities may thus be rightly afraid of losing, for example, their own secondary schools or healthcare facilities, even if the burden of maintaining them may be a problem.
30. This, indeed, has been a challenge in countries where a shift towards greater use of earmarking by line ministries has been poorly co-ordinated (see, e.g. OECD, 2013a).
31. The fiscal impact of this measure could be significant: in 2012, some JPY 403 billion was spent on hospital construction.
32. By contrast, the emphasis on attracting more people overall may not be appropriate in a country where the population as a whole is shrinking.

33. It does not cover telecommunications or the power sector, as these are private industries in Japan; though regulated, they do not fall under the purview of the infrastructure plan.
34. Germany's population stopped growing in 2003, but IASS-Berlin Institute (2013) reports that a decade later the country was still sealing 77 hectares of land per day for new roads and buildings.
35. Their numbers were also affected by the "Heisei mergers", which reduced the number of local governments from more than 3 000 at the end of the 1990s to around 1 700 today. However, the impact was not instantaneous or dramatic.

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Chapter 3

Building competitive and liveable metropolitan areas in Japan

This chapter looks at policies aimed at strengthening the competitiveness and liveability of Japan's major cities, particularly the three great metropolitan areas centred on Tokyo, Osaka and Nagoya. It begins with a description of Japan's urban system and an analysis of recent trends in urban settlement patterns and in economic and environmental performance. This is followed by a discussion of Tokyo's global competitiveness and its future. The future of Tokyo is intimately connected with plans to forge Tokyo, Osaka and Nagoya into an urban mega-region, united by super-high-speed magnetic levitating trains. The chapter reviews the prospects for this effort, looking at international experience with such mega-projects and at the "soft" policies that should accompany this infrastructure effort. Finally, it examines ways in which Japan can make the most of its investment in hosting the 2020 Olympic Games in Tokyo and at social policy for cities.

Since 2012, the government has emphasised the need to ensure the international competitiveness of Japan's major cities. It also emphasises the need to revitalise smaller cities and towns by stimulating private and business investment. There are two distinct strategies by types of cities; for major cities, international competitiveness is clearly the priority, while for local cities, liveability and sustainability are prioritised. This chapter is primarily focused on the former: it explores the challenges facing Japan's large metropolitan areas, with a particular focus on the Tokyo metropolitan area, which in 2012 was home to more than one-quarter of Japan's population and was slightly larger than the next nine Japanese metropolitan areas. However, some of the findings presented here have implications for second- and third-tier cities as well. Chapter 4, by contrast, concentrates on the challenges of "non-metropolitan Japan", but some of its conclusions are relevant to the metropolitan areas. The chapter begins with an overview of Japan's urban system and a discussion of trends in economic performance, the evolution of the urban system and environmental outcomes. This is followed by a focus on the global competitiveness of the largest cities, above all Tokyo, and a look at some of the ways in which urban policies in the major cities can help address such cross-cutting challenges as fertility, ageing and poverty.

Japan's urban system

Japan is overwhelmingly urbanised and has a highly concentrated urban system

On the official data, Japan's urbanisation rate now exceeds 93% (UNDESA, 2014), making it one of the most urbanised countries in the world, second only to Belgium in the OECD area. This figure is, however, somewhat misleading, inasmuch as the Japanese data are based on the proportion of the population living in municipalities defined as *shi* (cities). To qualify as a *shi*, a municipality must satisfy the following conditions: a population of at least 50 000, with at least 60% of dwellings located in the main built-up areas and at least 60% of employment in "urban activities" (manufacturing, retail or wholesale trade, etc.). This means, first, that the urbanisation rate does include some people who are *de facto* rural dwellers and, secondly, that adjustments to municipal boundaries can affect the urbanisation rate substantially, even in the absence of any change in the settlement pattern. As seen in Chapter 2, the *Heisei* municipal mergers of the early 2000s reduced the number of municipalities by almost half. This was the major factor underlying the 16.7-point jump in Japan's urbanisation rate between 2000 and 2015. A more meaningful, if restrictive, measure is the share of population living in so-called "densely inhabited districts", defined as clusters of adjacent census blocks with total populations of at least 5 000 and population densities of at least 4 000/km^2. In the 2010 census, some 67.3% of the population lived in such districts. That means that over two-thirds of Japan's population lived in places with population densities higher than those found in such western cities as Naples, Berlin and Manchester.[1]

Because differences in statistical methods across countries make such global comparisons rather problematic, most of the comparative analysis in this chapter will rely, to the extent possible, on the method for calculating functional urban areas (FUAs)

described in OECD (2012a), which is outlined in Box 3.1 below. This method aims to define cities as functional economies, in terms of actual settlement patterns and labour market flows, instead of on the basis of administrative boundaries. The FUAs so defined exclude urban dwellers in small towns and cities, while including rural dwellers living within the commuter belts of large urban areas. For this reason, they do not provide an alternative measure for the urbanisation rate in Japan or anywhere else – that it not their purpose. However, they do provide a basis for comparisons within and across countries, and they confirm that Japan is highly urbanised and has a concentrated urban system.

Japan has 76 FUAs with populations of at least 50 000 (Figure 3.1); these were home to 77% of the population in 2012. Six FUAs have populations in excess of 1.5 million; collectively, these 6 account for 51% of the population. Greater Tokyo is by far the largest FUA in Japan – and on some measures, the largest urban area in the world – with a population of over 35.4 million in 2012, up from 32.8 million at the turn of the century. Near it on the western (Pacific Ocean) side of the island of Honshū are the second and third metropolitan areas of Japan, Osaka and Nagoya, with 17.3 million and 6.5 million people, respectively, in 2012. Taken together, the Tokyo, Osaka and Nagoya FUAs constitute a massive urbanised region with a population of almost 59.2 million (2012). Among OECD countries, only Korea has a larger share of population living in metropolitan areas of 1.5 million or more (Figure 3.2).

Box 3.1. **Defining functional urban areas**

This review relies, where possible, on the OECD Metropolitan Database, using the method for defining functional urban areas set out in OECD (2012a). This is similar to the calculation of statistical metropolitan areas in the United States and some other countries, but the method is somewhat simpler, in order to allow its application across OECD countries, many of which do not generate the data that would be needed to apply the US method. FUAs are defined in terms of human settlement and economic activity rather than administrative borders. This matters, because, even within countries, the relationship between the city as an administrative unit and the city as a socio-economic entity can vary widely. In Italy, for example, a city like Bologna largely corresponds to its administrative definition, whereas the "functional" city of Venice is far larger than the *Comune di Venezia* itself and comprises more than 120 municipalities (OECD, 2015a).

The FUA method, constructed in collaboration with the European Commission's Directorate-General for Regional and Urban Policy, involves a three-step approach that can be summarised as follows:

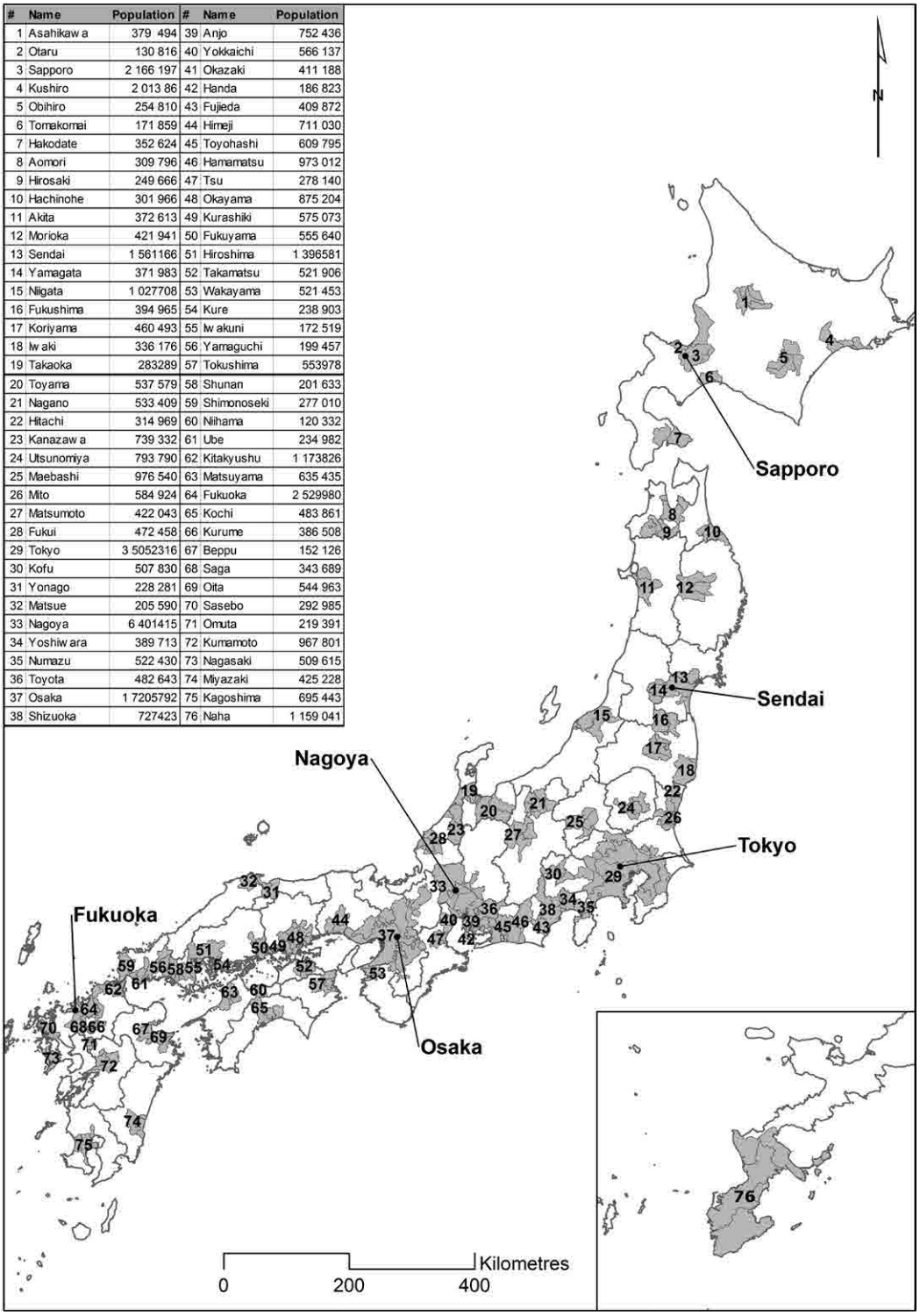
- **Defining urban cores through gridded population data.** Urban cores are constituted by aggregations of contiguous municipalities that have more than 50% of their population living in high-density clusters. The latter are made of contiguous 1 km^2 grid cells with a population density of at least 1 500 inhabitants per km^2 (1 000 inhabitants per km^2 in and Canada and the United States) and a total population of at least 50 000 people (100 000 in Japan, Korea, Mexico).
- **Connecting non-contiguous cores belonging to the same functional area on the basis of commuting data.** Two urban cores are considered integrated, and thus part of the same metropolitan system, if more than 15% of the working population of any of the cores commutes to work in the other core (taking polycentricity into account).
- **Identifying the urban hinterlands.** The worker catchment area of the urban labour markets, outside the cores is composed of municipalities which send to the cores 15% or more of their employed residents. Municipalities surrounded by a single functional area are included and non-contiguous municipalities are dropped.

This common FUA definition allows for meaningful comparisons within and across countries (comparing like with like) and also makes it possible to identify levels of mono- or polycentricity of FUAs, as well as the extent of concentration.

Source: OECD (2012a), *Redefining "Urban": A New Way to Measure Metropolitan Areas*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264174108-en*.

Figure 3.1. **Functional urban areas in Japan with populations above 50 000**

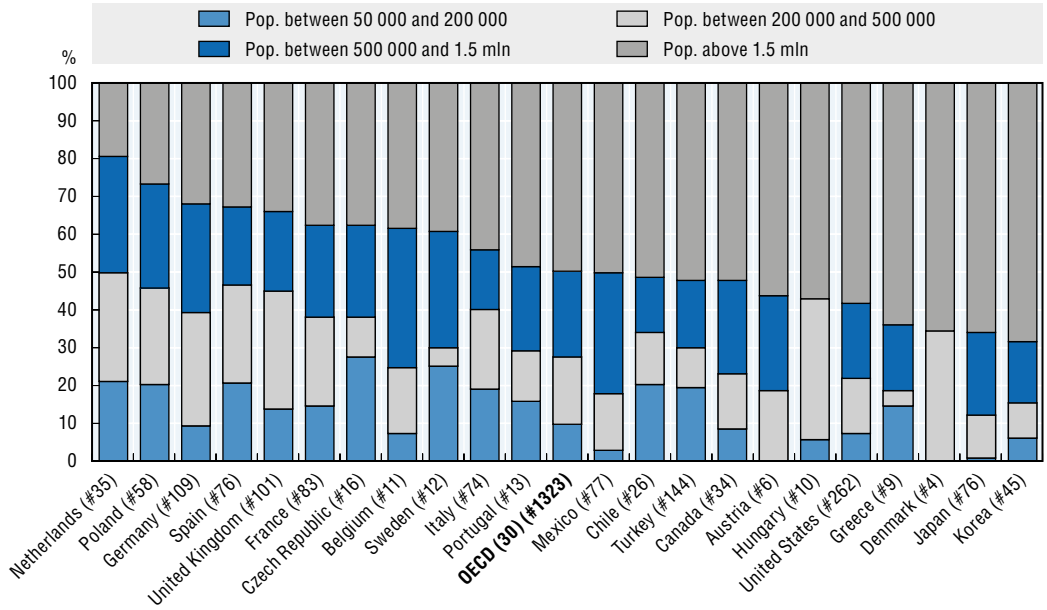
#	Name	Population	#	Name	Population
1	Asahikawa	379 494	39	Anjo	752 436
2	Otaru	130 816	40	Yokkaichi	566 137
3	Sapporo	2 166 197	41	Okazaki	411 188
4	Kushiro	2 013 86	42	Handa	186 823
5	Obihiro	254 810	43	Fujieda	409 872
6	Tomakomai	171 859	44	Himeji	711 030
7	Hakodate	352 624	45	Toyohashi	609 795
8	Aomori	309 796	46	Hamamatsu	973 012
9	Hirosaki	249 666	47	Tsu	278 140
10	Hachinohe	301 966	48	Okayama	875 204
11	Akita	372 613	49	Kurashiki	575 073
12	Morioka	421 941	50	Fukuyama	555 640
13	Sendai	1 561166	51	Hiroshima	1 396581
14	Yamagata	371 983	52	Takamatsu	521 906
15	Niigata	1 027708	53	Wakayama	521 453
16	Fukushima	394 965	54	Kure	238 903
17	Koriyama	460 493	55	Iwakuni	172 519
18	Iwaki	336 176	56	Yamaguchi	199 457
19	Takaoka	283289	57	Tokushima	553978
20	Toyama	537 579	58	Shunan	201 633
21	Nagano	533 409	59	Shimonoseki	277 010
22	Hitachi	314 969	60	Niihama	120 332
23	Kanazawa	739 332	61	Ube	234 982
24	Utsunomiya	793 790	62	Kitakyushu	1 173826
25	Maebashi	976 540	63	Matsuyama	635 435
26	Mito	584 924	64	Fukuoka	2 529980
27	Matsumoto	422 043	65	Kochi	483 861
28	Fukui	472 458	66	Kurume	386 508
29	Tokyo	3 5052316	67	Beppu	152 126
30	Kofu	507 830	68	Saga	343 689
31	Yonago	228 281	69	Oita	544 963
32	Matsue	205 590	70	Sasebo	292 985
33	Nagoya	6 401415	71	Omuta	219 391
34	Yoshiwara	389 713	72	Kumamoto	967 801
35	Numazu	522 430	73	Nagasaki	509 615
36	Toyota	482 643	74	Miyazaki	425 228
37	Osaka	1 7205792	75	Kagoshima	695 443
38	Shizuoka	727423	76	Naha	1 159 041



Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

Figure 3.2. **Distribution of population by size of FUA, selected OECD countries, 2012**

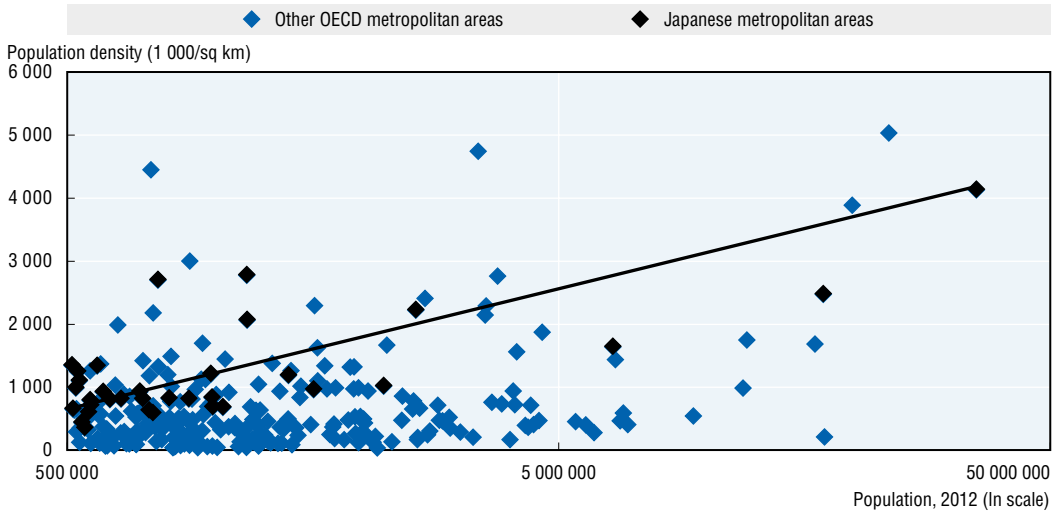


Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

StatLink *http://dx.doi.org/10.1787/888933324720*

Japanese FUAs are comparatively dense by OECD standards. As can be seen in Figure 3.3, this holds good even when allowing for the well-known fact that larger cities tend to be denser: across the size spectrum, Japanese FUAs tend to be denser than most FUAs of similar sizes elsewhere in the OECD. Greater Tokyo is the fourth-densest large metropolitan area in the OECD (the top three are all in Korea). The density of Japanese cities is even more apparent further down the urban hierarchy.

Figure 3.3. **Population densities in OECD metropolitan areas**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

StatLink *http://dx.doi.org/10.1787/888933324739*

When the nearly 1 200 FUAs in OECD countries that have populations in excess of 50 000 are ranked according to density, only 7 of Japan's 76 FUAs are in the bottom half of the distribution.

Urbanisation in Japan is continuing

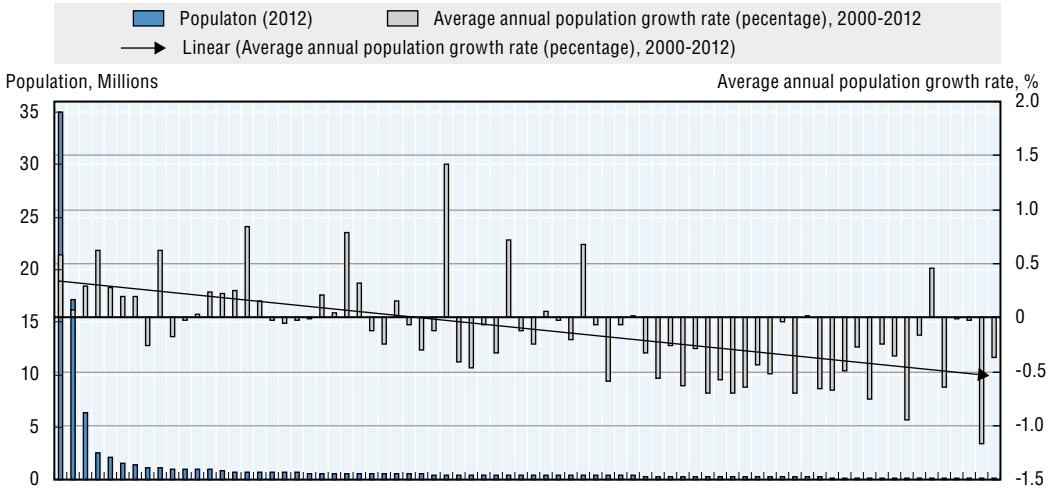
While the very high urbanisation rate cited above is largely the product of a jump caused by the *heisei* mergers, both the administratively-defined urbanisation rate and the share of population living in "densely inhabited districts" continues to rise. The UNDESA projections see Japan's urbanisation rate rising to more than 97% by mid-century as a result of increasing migration to *shi*. These projections should probably be viewed with some caution, not least in view of the problems with the definition of urbanisation based on population in *shi*.

- While the methods employed for estimating further rural-to-urban migration are well known, there has been some concern that they tend to over-predict urbanisation rates, particularly in Asia, and are thus subject to regular downward revisions (Kundu, 2014).
- No large country has such a high share of population already living in such high-density areas, nor is any other country experiencing the kind of dramatic demographic change that is unfolding in Japan. It is possible that an increasing elderly population will concentrate in cities but, as noted in Chapter 1, it may also be that the "third age" elderly (65-75) will move to less dense places and the "fourth age" elderly (75+) will tend to move back to the cities.

Much will depend on the pace of development of information and communications technologies and of other technologies that will have a disproportionate effect on older people – not only in healthcare but in such areas as transport (e.g. driverless cars). In other words, Japan's urban and demographic situations are without precedent, so UNDESA's long-term projections should be taken with some scepticism. While there is no obvious reason to expect de-urbanisation, it may be that the urbanisation rate will stabilise sooner than the projections suggest.

Yet even if the projections should prove high of the mark, the FUA data suggest that the urban system continues to grow more concentrated: there has been a clear relationship between FUA size and population growth since the turn of the century (Figure 3.4).

Figure 3.4. **FUA size and population growth**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

StatLink *http://dx.doi.org/10.1787/888933324749*

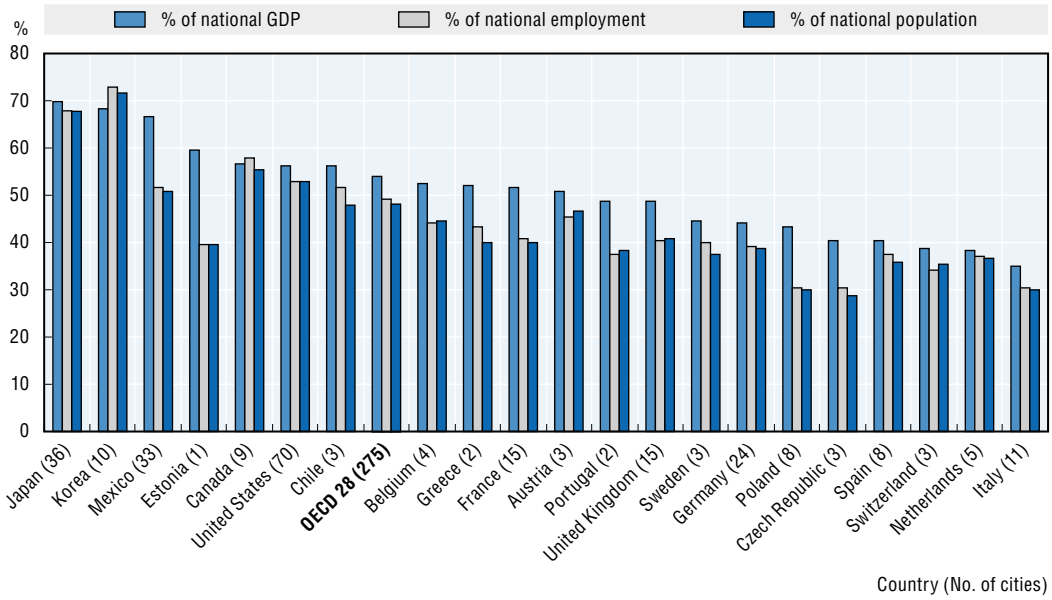
During 2000-12, the 6 FUAs with populations in excess of 1.5 million recorded average annual population growth of 0.4%, while the 30 FUAs with 500 000 to 1.5 million inhabitants shrank by an average of 0.2% per year and the remainder (with under 500 000 inhabitants) shrank by 0.3% per annum. This result is in line with the prefectural-level trends seen in Chapter 1, which showed that people were, on the whole, tending to move from less populous, less dense places to prefectures with higher populations and population densities. There were exceptions, however, and it is noteworthy that the highest growth rates were recorded in relatively small FUAs – notably Anjō (0.84% per year), Toyota (0.72%) and Okazaki (0.67%).

Trends in economic performance

Like its settlement pattern, Japan's economy is overwhelmingly urban

Concentration of population is largely matched by concentration on other dimensions. Japan has the highest share of GDP generated in cities of 500 000 or more in the OECD and is second only to Korea in the concentration of population and employment. The 36 FUAs with populations of at least 500 000 (hereafter simply "metropolitan areas") accounted for 69.8% of total output in 2010 (Figure 3.5). Moreover, such metropolitan areas generated roughly 75% of Japanese growth over 2000-10, the second-highest metropolitan growth contribution after Greece, where Athens alone accounted for 79% of GDP growth over the decade. The 75% figure recorded for Japanese FUAs' growth contribution stands somewhat above their population share (68% in 2012), as well as their share in GDP in 2001 (69.5%). This confirms that they remain the major sources of dynamism in the economy. A close look at the data reveals a slow but steady increase in the concentration of activity during the years leading up to the global crisis, followed by a partial reversal in 2009-10, as the major metropolitan areas bore the brunt of the downturn.

Figure 3.5. **Concentration of population, GDP and employment in OECD metropolitan areas, 2010**



Note: Countries with only one metropolitan area above 500 000 population are not shown.

Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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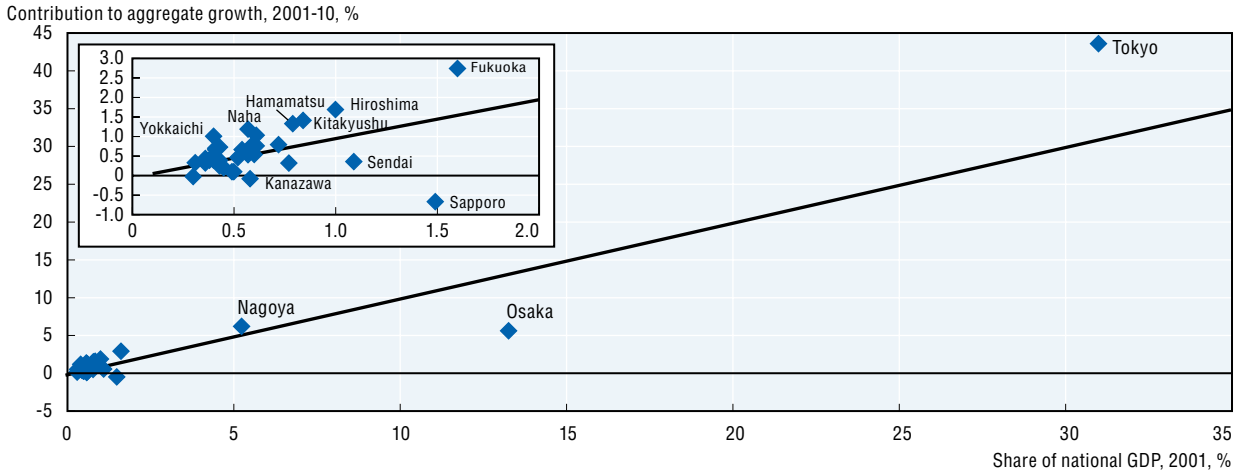
Tokyo's contribution to growth, at more than 43% over 2000-12, was far in excess of its share of Japan's GDP (Figure 3.6) and was exceptionally large for the leading city of a large country. Though lower than the contributions recorded by Greater Paris and Seoul-Inchon in their respective countries, it was larger even than the contribution to national growth of London in the United Kingdom or of any metropolitan area in the United States, Germany or Mexico. In contrast to Tokyo, Osaka – Japan's second-largest FUA – seriously under-performed relative to its size over the decade. Its contribution to aggregate growth was far smaller than its relative weight in the economy. Nagoya, with a population not much more than one-third that of Osaka, made a larger contribution to national growth. A significant proportion of Japan's other metropolitan areas likewise performed relatively well compared to their size. However, because this was a decade of relatively weak overall growth, the change in the spatial distribution of activity resulting from this very concentrated growth pattern was quite limited. Tokyo's share of aggregate GDP rose just under 0.9 percentage points over a decade, while the share of non-metropolitan Japan fell by less than 0.4 percentage points. Given faster growth overall, a similar concentration dynamic would have resulted in a far larger structural shift.

Figure 3.6. **Initial GDP share and contribution to growth, 2001-10**

Japanese FUAs



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

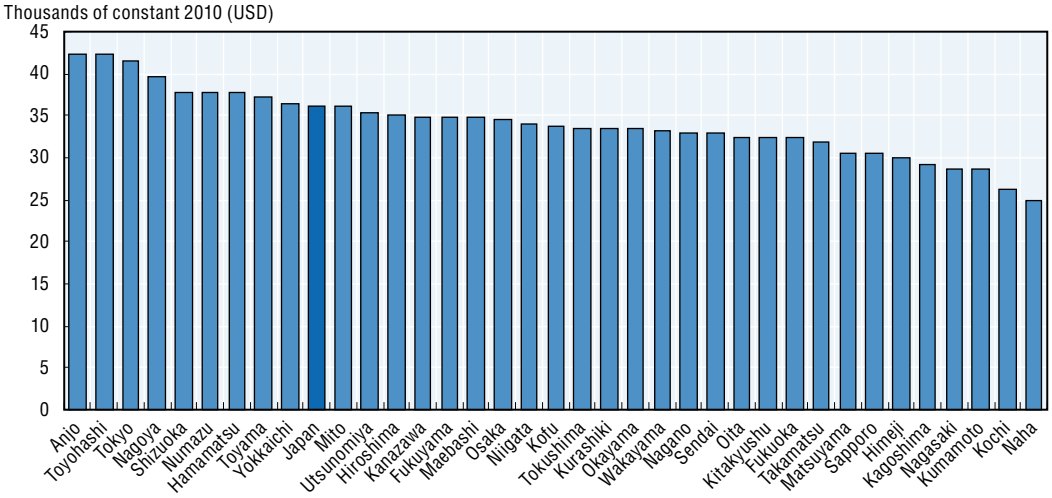
StatLink *http://dx.doi.org/10.1787/888933324766*

Disparities among major metropolitan areas and between large cities and other areas are limited

Viewed in per capita rather than aggregate terms, Japan's urban economy differs from those of most other OECD countries. In particular, the per capita GDP gap between metropolitan areas and the national average is exceptionally small, and many Japanese metropolitan areas in 2010 reported levels of GDP per capita that were below the national average (Figure 3.7) – though in an economy as urban and as concentrated as Japan's, this average was itself heavily influenced by the very largest cities. On average, metropolitan

areas in OECD countries with populations in excess of 500 000 generate GDP per capita that is about 40% higher than elsewhere. In Japan, this gap stood at just 10.1% in 2010. This is a further confirmation of the small urban-rural income gap described in Chapter 1. Moreover, non-metropolitan Japan experienced substantially faster growth of GDP per capita during 2001-10 than did the metropolitan areas: the former grew at an annual average rate of almost 1.1% and the latter at a rate of just under 0.6%. The crisis, of course, played a role here: its impact was far greater in metropolitan areas, with the result that the metropolitan/non-metropolitan gap in GDP per capita shrank somewhat over the course of the decade (Figure 3.8). The other key factor was movement of labour: areas that made outsize contributions to aggregate growth sometimes saw slower growth in per capita or per worker terms. Even among the metropolitan areas themselves, the contrast between aggregate and per capita growth is striking. Larger metropolitan areas, which have been attracting population, tended to record larger gaps between aggregate and per capita growth (Figure 3.9).

Figure 3.7. **GDP per capita, 2012**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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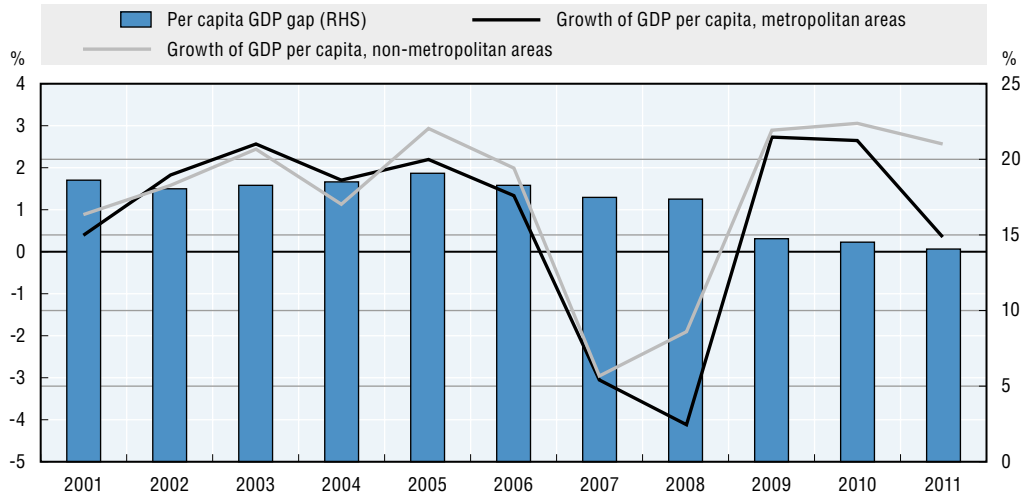
The labour market seems to play a critical role in limiting disparities

The contrast between aggregate and per capita dynamics implies that migration and labour market flows serve to limit the growth of inter-regional or urban-rural wage disparities. Some other labour market indicators reinforce this conclusion. Unemployment rates have remained comparatively low across Japan even during the worst period of the crisis (generally below 5% and never above 5.5%), and the gap between the unemployment rates in metropolitan areas and non-metropolitan Japan did not exceed 0.4 percentage points during the period for which data are available (2000-11). The unemployment rates in the two labour markets moved more or less in lock-step (Figure 3.10). Moreover, Japan had the second-smallest variance in unemployment rates across its metropolitan areas in the OECD in 2012 (Figure 3.11).

Figure 3.8. **Trends in GDP per capita: Metropolitan and non-metropolitan Japan**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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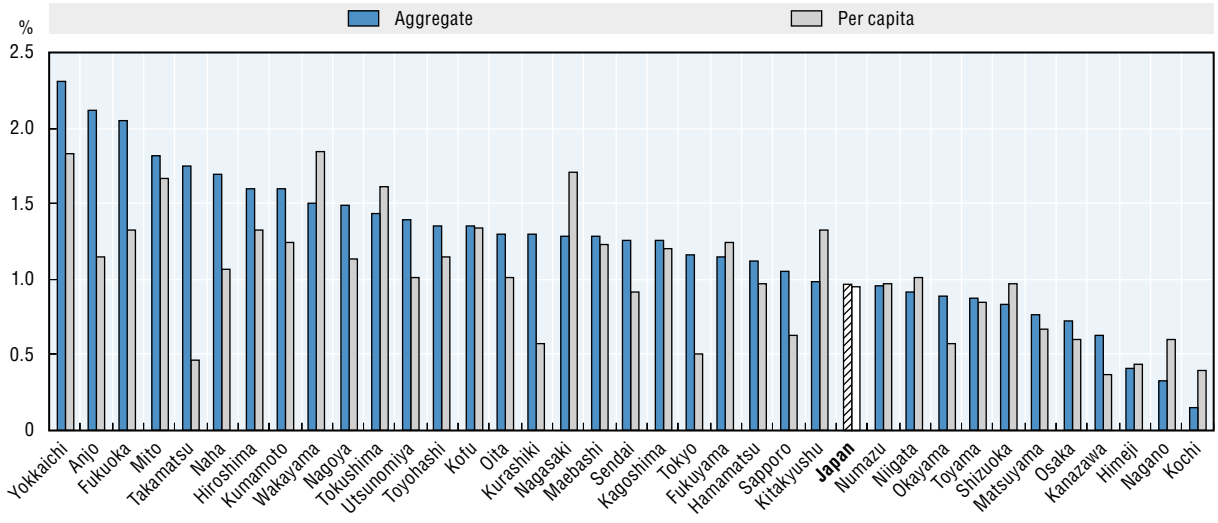
Figure 3.9. **GDP growth, aggregate and per capita rates, 2001-10**

Annual average real growth rate, %



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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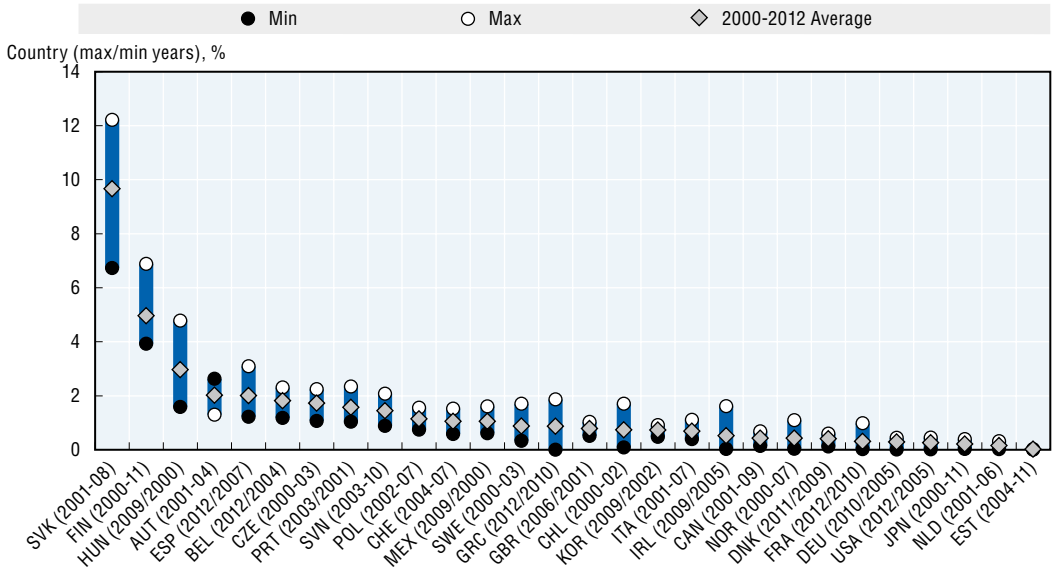
The data on employment creation and destruction make clear that this result did not reflect broadly uniform labour market conditions. Rather, it stemmed in large part from internal mobility in response to very different labour market circumstances in different places: employment creation (and, during the downturn, employment destruction) was concentrated in Tokyo. Over the decade, the capital region came close to matching the reduction in jobs that occurred outside the 36 major metropolitan areas (Figure 3.12). Only ten metropolitan areas recorded increased employment, while 26 recorded declines, in addition to the roughly 1.3 million jobs that disappeared in non-metropolitan Japan. The result was an overall decline in employment, but one that would have been far more dramatic absent Tokyo's role as a centre of job creation.

Figure 3.10. **FUA/non-FUA unemployment gaps, 2000-12**

Difference between FUA and non-FUA unemployment rates, in percentage points



Note: The years indicated for each country are the years in which it recorded the maximum/minimum unemployment gaps.

Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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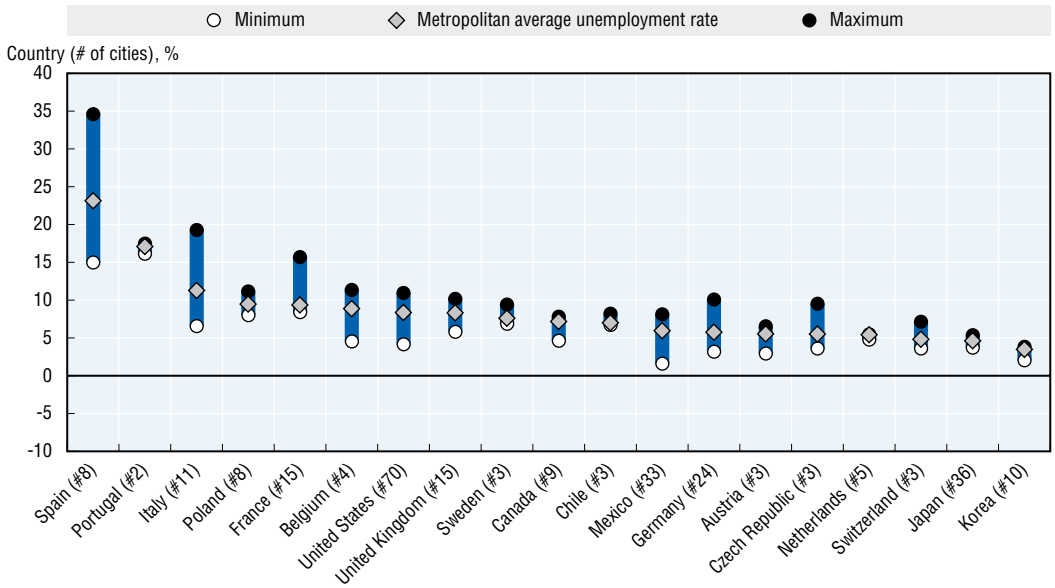
Figure 3.11. **Countries ranked by variation in unemployment rates across metropolitan areas**



Note: Only countries with at least five metropolitan areas (FUAs with 500 000 people or more) are included.

Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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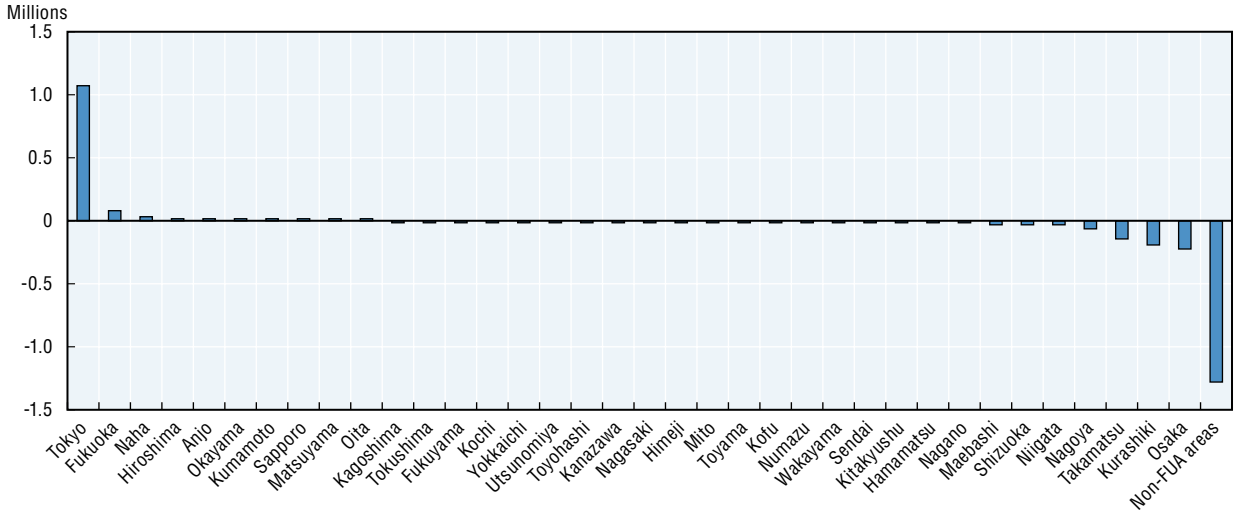
Figure 3.12. **Contributions to employment growth, 2001-12**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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The foregoing suggests that internal migration has led to increased spatial concentration of activity in aggregate but has also served to limit spatial disparities. The growth of Tokyo, in particular, has aroused some concern among policy makers, but it appears to have been critical in ensuring that decades of slow growth did not lead to high unemployment in the regions and a sharp increase in inter-regional income disparities. The problem, in that sense, lies not in Tokyo but in the lack of dynamism observed elsewhere.[2] This is an issue to be borne in mind when contemplating policies to check the inflow of labour to the largest metropolitan areas. It suggests, in particular, that policies that stimulate business entry and job creation outside the large cities would be the most important way to offset the centripetal forces now at work in the labour market.

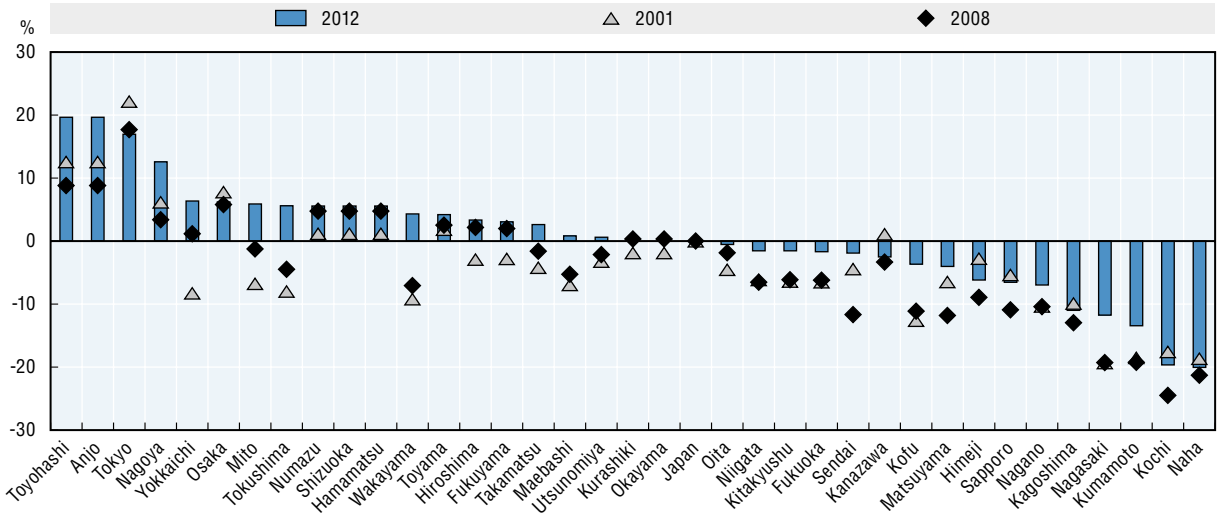
Changes in the size and composition of population mean that the relationship between labour productivity and GDP varies somewhat across FUAs, as it does across regions. GDP per worker has grown faster than GDP per capita, in 28 of Japan's 36 metropolitan areas – a reflection of population ageing in urban areas, which accelerated over the course of the decade (OECD, 2015c). In only 2 Japanese FUAs did either figure rise at an annual average rate of 2% or more, and in the great majority, GDP per capita growth was below 1% per annum. Far more sobering, though, is the evolution of the productivity gap between FUAs and the national average (Figure 3.13). Many Japanese FUAs show productivity levels that are below the national average. To be sure, this is in part because that average is heavily skewed by the large relative weight of Greater Tokyo in the economy. As can be seen from the figure, the crisis appears to have arrested the growth of productivity differentials in many places, which widened somewhat between 2001 and 2008 before shrinking in the 2008-12 period.

Japanese cities do still generate strong agglomeration benefits

A growing body of evidence and analysis confirms that, other things being equal, larger cities make their residents more productive (OECD, 2015d). In part, this can be explained by the characteristics of the workforce and the firm population in cities. Larger cities tend to attract highly educated and experienced residents, who would have

high levels of productivity wherever they choose to work and live, and they also attract more productive firms. However, the evidence is now clear that cities themselves can contribute significantly to their residents' productivity. Residents of larger cities are more productive than if they were living in smaller cities due to "agglomeration benefits", the positive productivity spillovers that arise when highly productive firms and people are brought closer together. Typically these benefits are created through shared inputs, better "matching" between firms and employees, and mutual learning among firms and residents (Box 3.2). "Knowledge spillovers", in particular, are considered critical in explaining the benefits of cities in modern service-oriented economies.

Figure 3.13. **Evolution of the productivity gap: Japanese FUAs relative to the national average, 2001-12**



Note: The productivity gap is here defined as the difference between FUA, GDP per worker and national GDP per worker.

Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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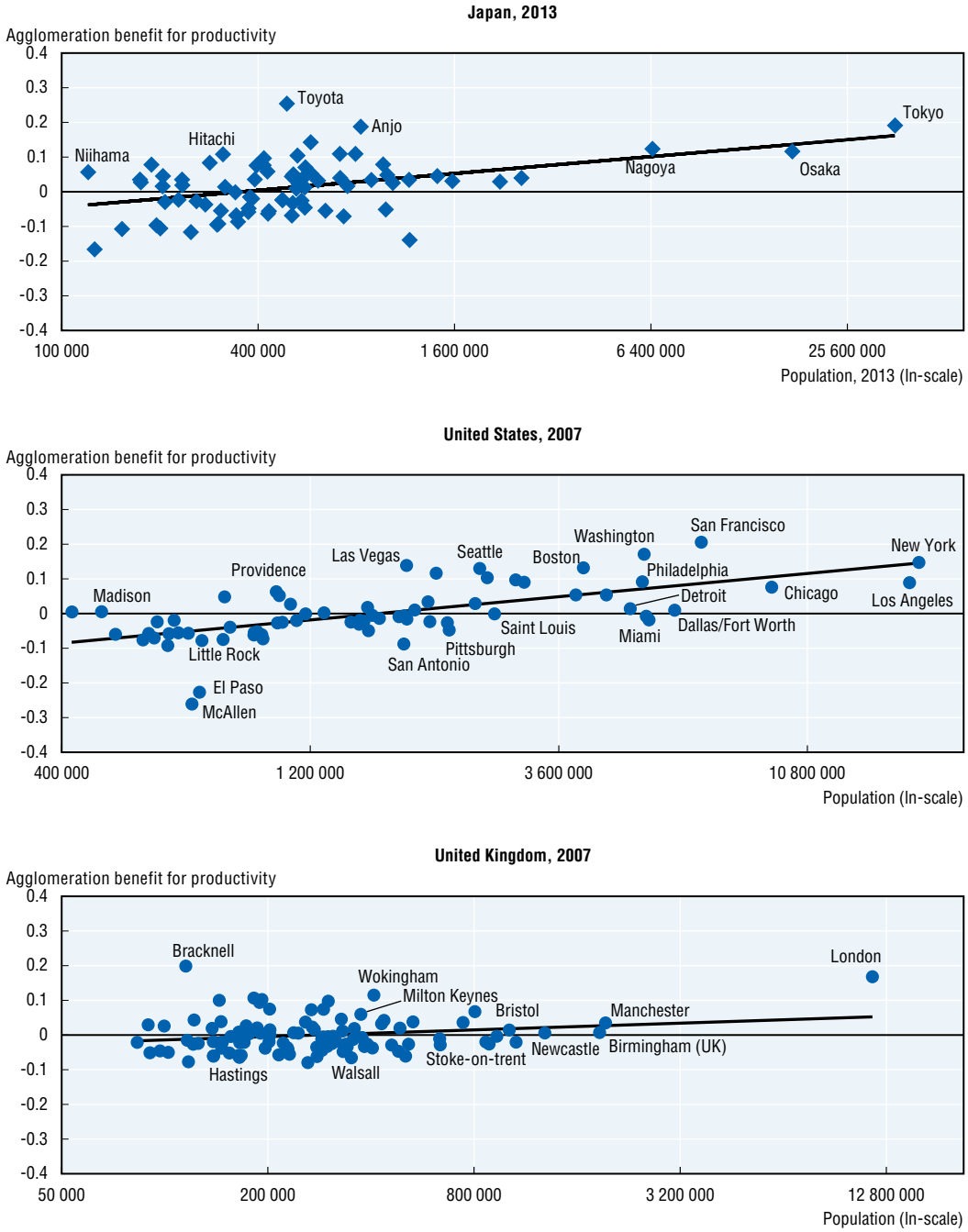
To disentangle the contribution of employees' characteristics from the contribution of the urban environment to local productivity, the OECD uses individual earnings as a proxy for productivity.[3] The analysis uses the wages and characteristics of employees from the "Basic Survey on Wage Structure", a large-scale linked employer-employee survey that covers active firms with at least ten employees in mining, manufacturing or the service sector (excluding government officials and the military). To calculate the differential productivity benefits across cities, workers' wages are decomposed into a part that can be explained by their personal characteristics and their jobs' characteristics, on one side, and a remainder that is attributed to the city in which they work, on the other. The characteristics that are taken into account include education, experience, occupation and gender. Because the analysis relies on microdata, it extends to all 76 Japanese FUAs with at least 50 000 residents. The results of this analysis show that Japanese cities generate relatively strong agglomeration benefits, comparable to those observed in the United States (Figure 3.14). The contrast with the United Kingdom is striking, since London's dominance of the UK economy is often compared to Tokyo's. Proximity to London seems to matter more than size in explaining the extent of such benefits.

Figure 3.14. **Estimated agglomeration benefits across cities in three OECD countries**



Note: City productivity is defined as a wage premium associated with each city once the characteristics of the city workforce are taken into account. Individual level wage regressions are estimated with controls for the characteristics of the workers, in order to account for sorting of individuals to cities.

Sources: OECD calculations based on national sources: "UK Annual Survey of Hours and Earnings" (ASHE) for 2003-10; US Census from 1990 and 2000 with the "American Community Survey" for the years 2005 to 2007; for Japan calculations are based on Ministry of Health, Labour and Welfare (n.d.), "Basic Survey on Wage Structure", *http://www.mhlw.go.jp/english/database/db-l/wage-structure.html* (accessed 15 July 2015) and Ahrend, R. et al. (2014), "What Makes Cities More Productive? Evidence on the Role of Urban Governance from five OECD Countries", *OECD Regional Development Working Papers*, No. 2014/05, OECD Publishing, Paris, *http://dx.doi.org/10.1787/5jz432cf2d8p-en*.

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Box 3.2. **Agglomeration economies**

Three main mechanisms work to produce agglomeration economies:

1. Mechanisms that deal with sharing of:

- **Indivisible facilities** such as local public goods or facilities that serve several individuals or firms. Some examples, other than public goods, are facilities such as laboratories, universities and other large goods that do not belong to a particular agent but where some exclusion is implicit in providing them.
- The **gains from the wider variety of input suppliers** that can be sustained by a larger final goods industry. In other words, the presence of increasing returns to scale along with forward and backward linkages allow firms to purchase intermediate inputs at lower costs.
- The **gains from the narrower specialisation** that can be sustained with higher production levels. Several firms specialise in producing complementary products, reducing overall production costs.
- **Risks**. This refers to the idea that an industry gains from having a constant market for skills. If there are market shocks, firms can adjust to changes in demand if they have access to a deep and broad labour market that allows them to expand or contract their demand for labour.

2. Matching mechanisms by which:

- Agglomeration improves the **expected quality of matches between firms and workers**, so both are better able to find a good match for their needs.
- An increase in the number of agents trying to match in the labour market also **improves the probability of matching**.
- **Delays are alleviated**. There is a possibility that contractual problems arising from renegotiation among buyers and suppliers will result in one of the parties losing out to the other party in a renegotiation. However, if the agglomeration is extensive enough, agents can find an alternative partner.

3. Learning mechanisms based on the generation, diffusion and accumulation of knowledge. This refers not only to the learning of technologies, but also the acquisition of skills.

OECD metropolitan regions benefit from agglomeration effects and thus tend to display higher levels of productivity, higher rates of employment and higher levels of GDP per capita than other regions. These benefits, however, are limited by congestion costs, diseconomies of scale and oversupply of labour, among other potential negative elements, and many metropolitan regions have in recent decades tended to underperform national economies.

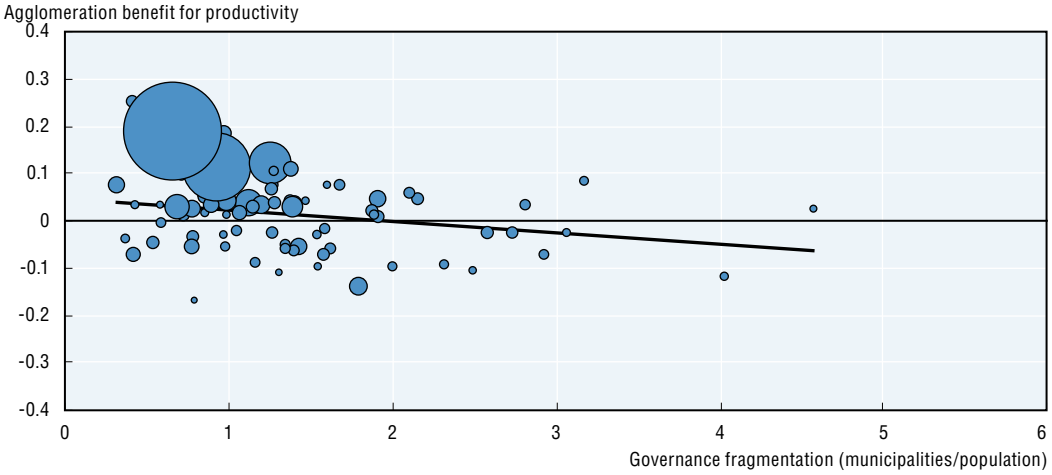
Sources: Duranton, G. and D. Puga (2004), "Micro-foundations of Urban Agglomeration Economies", *Handbook of Regional and Urban Economics*, Vol. 4/4, February; OECD (2009a), *OECD Economic Outlook*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_outlook-v2008-sup2-en*.

Urban governance challenges remain to be addressed

The second stage of the analysis looks at whether and to what extent Japan conforms to the findings reported in OECD (2015d, 2015e) concerning the impact of metropolitan fragmentation on performance. The governance fragmentation indicator used is that discussed in Chapter 2 – municipalities relative to population. Two things are striking about the results (Figure 3.15). First, the negative relationship between fragmentation and

productivity across the 76 FUAs is remarkably tight – a much closer fit than similar analyses have yielded in other countries. Secondly, the result is not driven by the largest cities, which have lower fragmentation indexes, but by a large number of small and medium-sized cities that spread over municipal boundaries. As observed in Chapter 2, such a result should not necessarily be seen as grounds for another wave of mergers but it does suggest a need for greater co-ordination among localities at the scale of effective functional urban economies. This reinforces the emphasis of the Grand Design on linking up cities and it also provides evidence in support of the Ministry of Internal Affairs and Communications' (MIC) efforts to enhance horizontal co-operation at local level. It is important not to neglect the governance dimension in seeking to strengthen cities outside the biggest metropolitan areas. Connective infrastructure may also help but a growing body of evidence suggests that governance co-operation is essential, particularly in areas like land use, transport planning and urban development, where co-ordination is particularly critical (OECD, 2015d, 2015e).

Figure 3.15. **Governance fragmentation and performance**



Note: Size of the bubble corresponds to the population of the FUA.

Source: Author's elaboration based on the data in Figure 3.14.

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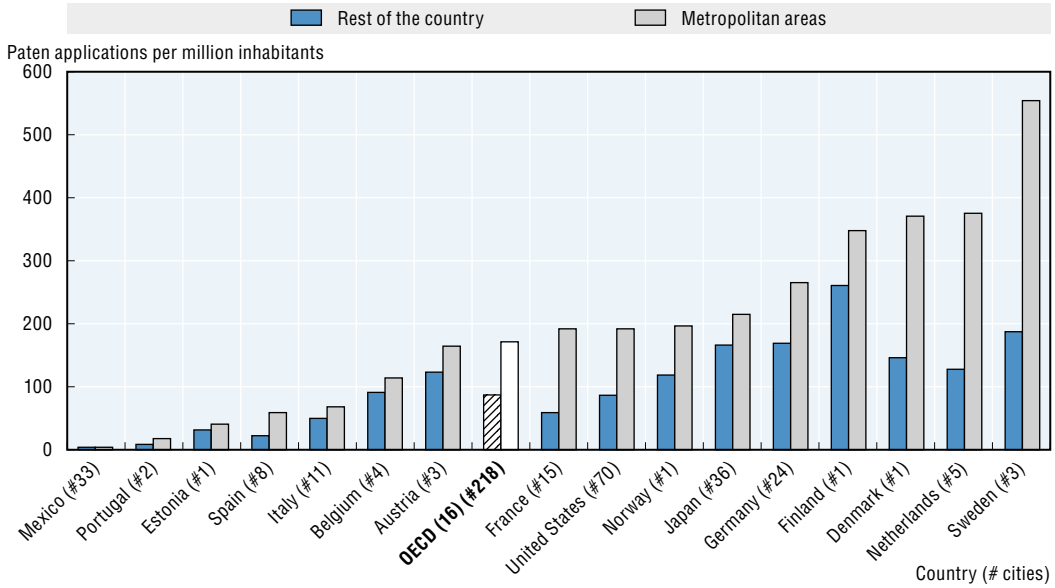
Japanese metropolitan areas are failing to fulfil their potential as drivers of innovation-led growth

These productivity outcomes are likely to be linked, at least in part, to weaknesses in the innovation system. As noted in Chapter 1, there is a striking imbalance between the resources devoted to knowledge creation in Japan and the observed outputs in terms of productivity. The problem is not primarily one of knowledge creation *per se*: Japan compares relatively well to other OECD countries in terms of patent intensity (Figure 3.16), for example, even if it lags behind some of the advanced economies of Northern Europe. In aggregate terms, Tokyo and Osaka rank first and third among OECD metropolitan areas in terms of patents filed. However, no Japanese metropolitan area ranks even in the top 20 for patent intensity (i.e. patents relative to population) – Osaka and Tokyo rank 30th and 31st, respectively on this measure. On the other hand, all Japanese metropolitan areas rank in the top half of OECD metropolitan areas for which data are available (Kumamoto ranks 103rd of 218). Japan is also active in pursuing demand-side policies for innovation, in an effort to stimulate, among other things, green innovation and innovation in support of an ageing society (OECD, 2011).

Figure 3.16. **Patent intensity, selected OECD countries and their metropolitan areas, 2008**



Sources: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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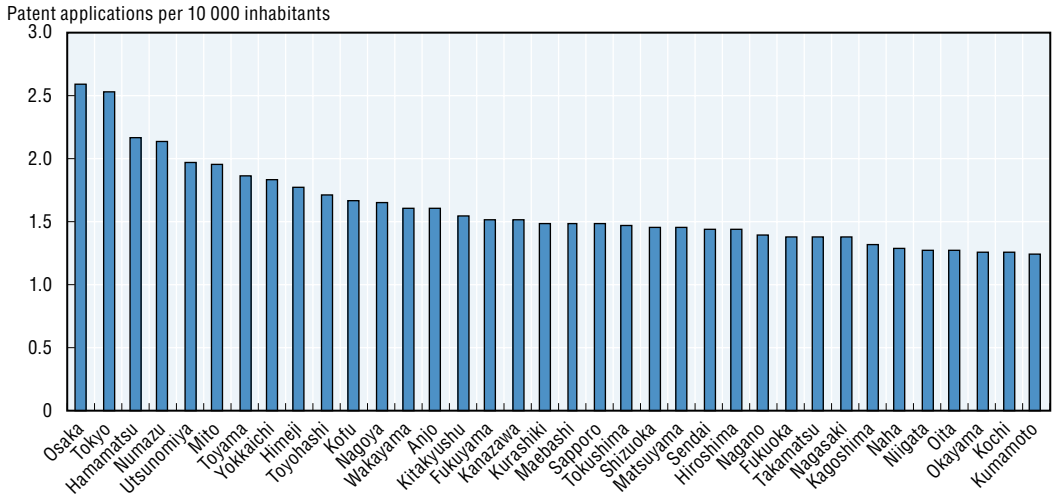
The striking thing about Japan's urban innovation systems is how little dispersion in performance is observed, at least in terms of patents (Figure 3.17). The most patent-intensive Japanese metropolitan area (Osaka) generates just over twice as many patents per head of population as the least (Kumamoto). This is the second-lowest figure among the ten OECD countries for which data are available.[4] For larger OECD countries, this differential typically falls in the range of 8-20, rising close to 100 for the United States. Overall, the concentration of knowledge creation thus reflects but does not appear to exceed that of the urban system.

Figure 3.17. **Patent intensity of Japanese metropolitan areas, 2008**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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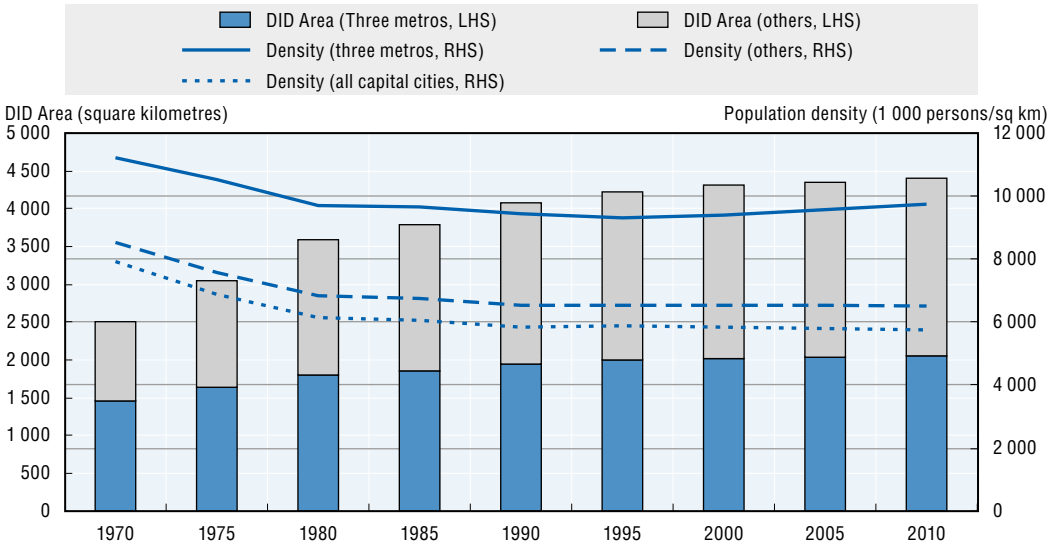
This is a striking result, given that science- and technology-intensive innovation processes benefit greatly from agglomeration economies and thus tend to concentrate within countries. It suggests that there is potential for innovation-driven growth across much of Japan. The key will be commercialising and diffusing the results of such research.

The evolution of the urban system

Population densities continue to decline in most metropolitan areas

Trends in urban density in Japan have shifted over time. In the 1970s and 1980s, most Japanese cities lost density steadily and rapidly, due to expansive development on their peripheries – generally car-oriented low-density suburbs. Between 1970 and 2010, the average density of the densely inhabited districts (DIDs) in 47 prefectural capital cities fell by 23.8%, from 8 546 to 6 512/km^2 – though it should be noted that the latter are still very high densities by OECD standards. The population of DIDs rose by 44% over the period, while the spatial extent of such districts expanded by 76% (Figure 3.18). Second-tier cities saw a far sharper drop in densities than the largest ones: the high-density urban areas in the 38 capital cities outside the 3 metropolitan areas defined by Statistics Japan[5] expanded by 123%, compared to a figure of 41% for the 7 capital cities in the 3 metropolitan areas. The decline in urban densities has been more or less continuous throughout the period in most cities, due to continued urban expansion and, in more and more places, population decline in recent decades. However, the rate of decline has slowed with each successive decade, and densities have actually risen since 1995 in the three major metropolitan areas. Even so, some places continued to spread out rather quickly. Between 2000 and 2006, the built-up areas in several Japanese urban areas grew by more than 1% per year, although the population stagnated or even declined (Figure 3.19). By contrast, densities have increased in the three metropolitan areas (as defined by Statistics Japan), particularly in Tokyo. The average urban density in these areas recovered from 10 339/km^2 in 1995 to 11 017/km^2 in 2010.

Figure 3.18. **Size and density of densely inhabited districts of prefectural capitals**
1970-2010



Source: OECD calculations based on the Census data for 1970-2010 provided directly by Official Statistics Japan (Government of Japan).

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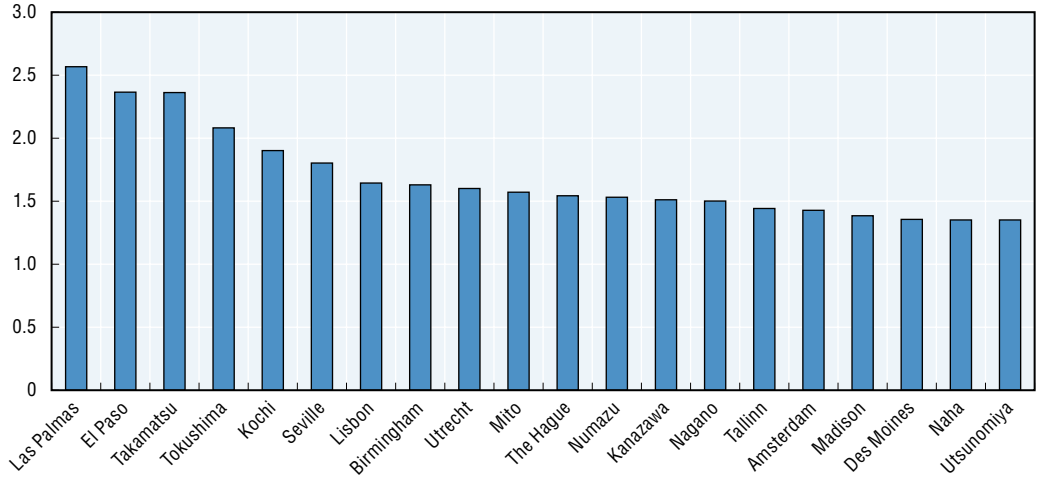
Figure 3.19. **Fastest spatial expansion observed among OECD metropolitan areas with population growth under 1% per annum (2000-06)**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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This two-way trend seems set to continue. On one hand, given the national trend of population decline, most Japanese cities are going to be less dense. By 2040, Japan's population is expected to return roughly to the level of 1970. Most cities will lose density, as their built-up areas, which have nearly doubled in extent since 1970, will not shrink nearly as fast as population. On the other hand, densities in the three metropolitan areas may continue to increase or at least stabilise.

Falling densities should not be seen as bad news, always and everywhere. Changes in density imply important trade-offs (Table 3.1), but if well managed, lower densities might allow for lower house prices, some reduction in congestion and local environmental problems, and the expansion of public green space. Moreover, given Japan's demographic situation, some degree of de-densification could be beneficial and efforts to maintain, let alone increase, urban densities in the major cities should be approached with great caution. Lower densities might in fact contribute to increased fertility rates. Historically, rising incomes are associated with increasing demand for private space more or less everywhere in the world, even when cities have remained relatively compact, dense and focused on public transit. When the supply of private space is inelastic, the easiest way for households to enjoy more private space per person as they grow wealthier is to opt for smaller families. That is one reason why places like Hong Kong, China; Macau, China; Singapore and Tokyo have among the lowest levels of fertility in the world. It is also one of the reasons why Manhattan has a lower population density today than it did a century ago (Yglesias 2014).

A significant body of empirical research from the 1960s to the 2000s confirms that density is negatively correlated with fertility. This holds true in a variety of settings, including rural and urban, and at a range of different scales from national to local.[6] Using fixed effects models on time series data covering 145 countries and controlling for key socio-economic variables, Lutz et al. (2006) find a consistent and significant negative relationship between fertility and population density. Their findings also suggest that individual fertility preferences decline as population density rises – i.e., that people prefer to have fewer children when living in denser environments. Using time series data for

187 countries over the period 1960-2000, Lutz and Ren (2002) find that when explaining the level of fertility, population density is far more important than such traditionally studied factors as female labour force participation, income or food security, though it is far less important than female literacy.[7]

Table 3.1. **Advantages and disadvantages of high urban densities**

	Potential advantages of high urban densities	Potential disadvantages of high urban densities
Mobility	• Reduce fossil fuel emissions/carbon footprint by decreasing the total number of vehicle trips and the number of kilometres travelled per trip. • Enhance accessibility, as people live closer to where they work, shop and play. • Make transit more economically viable and efficient. • Enable public health benefits from more walkable and bike-friendly environments. • Create efficiencies in mixed-use developments through shared parking.	• Exacerbate traffic congestion, parking problems; increased traffic accidents. • Create pedestrian congestion and congestion in public transport. • In compact, monocentric cities may only have significant positive environmental effects when a greater share of commuters use mass transit.
Land/resource use	• Make better use of existing resources and infrastructure. • Reduce development pressure on green spaces, agriculture and industrial land. • Create a greater mix of land uses.	• Limit recreational opportunities and reduce the availability of green/open space. • Reduce an area's capacity to absorb rainfall because of open space/recreational loss. • Exacerbate pollution, possibly because of reduced area for trees/vegetation.
Social equity	• Reduce segregation and social exclusion. • Add diversity, safety, vitality, and opportunities for creative and social Interaction. • Provide access to facilities (e.g. schools, employment, shops), without the need for a (costly) private vehicle. • Reduce crime by increasing pedestrian activity and fostering a 24-hour community (more 'eyes on the street').	• Lead to loss of privacy and increased noise, nuisance, etc. • Reinforce social inequality and social segregation. • Increase crime. • Generate cramped living environments.
Economic development	• Enable investments in community amenities as well as better quality and more attractive building materials. • Promote a critical mass necessary to support local retail and service areas.	• Additional cost to build and maintain high-density projects and city-centre infrastructure. • Higher relative prices for land, housing, and many other goods and services.
Environmental sustainability and energy	• Preserve green open spaces, clean air and water, fauna and flora systems (when higher-density development occurs elsewhere). • Facilitate innovative green design and district energy; reduce water and energy consumption. • Facilitate the technological and economic viability of certain energy technologies and transport systems.	• Higher energy consumption during the construction of high-density buildings. • Higher exposure to particulate matter and other pollutants subject to local concentration. • Limit some forms of ambient energy systems. • Increased noise.

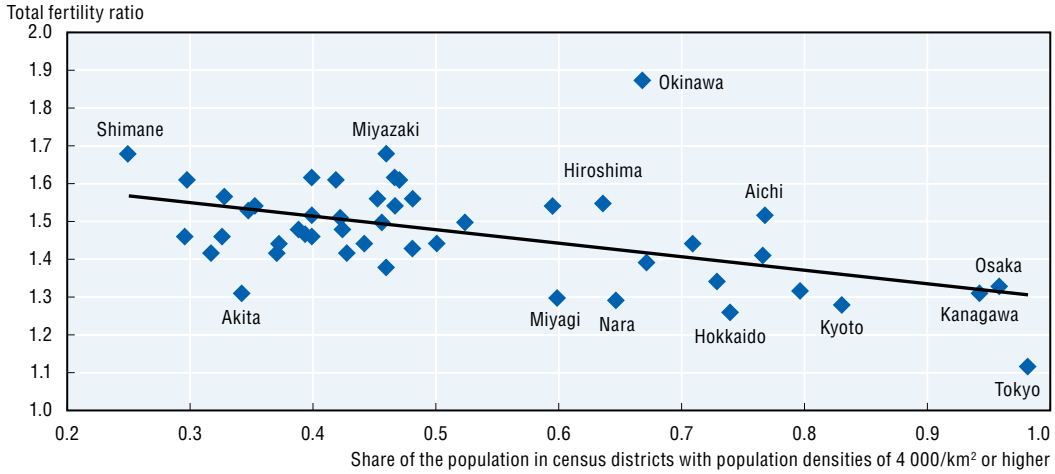
Sources: Adapted from Boyko, C. and R. Cooper (2011), "Clarifying and re-conceptualising density", *Progress in Planning*, Vol. 76, No. 1, pp. 1-61, July, *http://dx.doi.org/10.1016/j.progress.2011.07.001*; Fundación Idea/Cámara de Senadores/SIMO Consulting (2014), "México compacto: Las condiciones para la densificación urbana inteligente en México", Fundación Idea, Cámara de Senadores and SIMO Consulting, Federal District, Mexico, available at: *http://fundacionidea.org.mx/assets/files/MexicoCompacto_Senado_IDEA_SIMO.pdf*; Gaigné, C., S. Riou and J.-F. Thisse (2012), "Are compact cities environmentally friendly?", *Journal of Urban Economics*, Vol. 72, No. 2-3, pp. 123-136, September-November, *http://dx.doi.org/10.1016/j.jue.2012.04.001*.

Prefectural-level data for Japan suggest something similar at work (Figure 3.20). To be sure, other factors do matter, but the close fit for the high-density variable is striking.[8] Moreover, in a Japan with a rapidly growing population of over-65s, some reduction in densities may make it easier and more attractive for some families to return to a more traditional three-generation model of the household, which could help address both fertility and ageing challenges. The prefectural-level data suggest that the greater incidence

of three-generation households is associated with higher fertility and higher female labour force participation.

Figure 3.20. **Fertility and concentration of population in high-density areas**

Japanese prefectures, 2010



Source: OECD calculations based on data provided directly by Official Statistics Japan (Government of Japan).

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The decline in urban densities must be managed

To recognise that lower densities may have certain advantages is not to suggest that concerns about compact development should simply be set aside.

- Any reduction in density will need to be managed. Japan has no interest in allowing uncontrolled urban sprawl, nor does it want declining densities to destroy the cohesion of its major urban areas. This would risk leaving them as "perforated cities", patchworks of density and abandonment that would be economically inefficient and environmentally problematic.
- There is far more to compact urban development than density (OECD, 2012a). On the contrary, many of the principles underlying compact development policies (mixed use, transit-oriented development, careful planning of green spaces, avoidance of leapfrog development) can be employed to allow some reduction in densities while mitigating many of the problems that lower densities might bring. The emphasis on compactness will also underscore the need to maintain the cohesion and coherence of the urban space.
- This is certainly not an argument against density as an option for those who want it – many will doubtless prefer high-density living in lively urban cores. It is rather an argument against seeing de-densification always and everywhere as bad news.
- Density is related to size. Other things being equal, larger cities will tend to be denser than smaller places, and this is economically and environmentally appropriate.

This is in keeping with one of the themes of this report, which is that the evolution of Japan's settlement pattern will need to vary from place to place, creating a variety of location options for households and firms. Too much standardisation will reduce the attractiveness of most places, as it will undermine their ability to differentiate themselves according to their own assets.

Locally tailored approaches are needed when implementing "compact city" policies

As seen in Chapter 2, Japan is promoting a compact and networked urban structure to address its population decline and ageing challenges. The 2014 revisions to the Urban Renaissance Act and Local Public Transport Revitalisation Act aim to maintain population density, to promote the use of public transportation and to guide the location of urban services in designated urban areas, with various instruments (Box 3.3).

Box 3.3. **Policy initiatives for promoting "compact and networked" urban structure**

As Japanese cities have expanded, traditional urban centres in Japan have suffered from depopulation and a hollowing-out of urban functions. Since the 1990s, the national government introduced various initiatives to revitalize urban centres. **The 1998 City Centre Revitalisation Act** introduced comprehensive measures to revive urban centres, including extended national grants for public investment and housing projects and a funding mechanism to stimulate private investment in designated areas. The 2008 revision of **City Planning Act** and City Centre Revitalisation Act introduced stringent land-use regulations to control the location of large-scale retail stores in suburban areas. Such efforts to protect city centres have come at a price, however: as OECD (2008) observes, they are among the reasons why Japan's productivity performance in the retail sector has been among the worst in the OECD since the 1980s.

Most recently, the **2014 revision of Urban Renaissance Act** introduced comprehensive measures to achieve compact and networked urban structure. It encourages municipalities to develop comprehensive master plans to guide private and public investment in the target areas supported by public transport networks. Various incentives and disincentives will be provided in order for the relevant actors to follow the plan. Each plan will specify:

1. Districts to guide the location of urban functions. The location of urban functions such as welfare, medical, commercial and other vital facilities is to be promoted in this district. Tax incentives, subsidies and financial assistance are provided for the facilities to locate in the district. Floor area ratio bonuses may be awarded for the reconstruction of these facilities. The plan should specify instruments to promote the effective use of under- or unused land. Planning regulation is also used to promote walkable environments. Moderate control over the deployment of urban functions outside of the designated area is possible.
2. Districts to guide the location of residential functions. The location of housing developments is promoted in this district to maintain population density. Moderate control on residential development outside of the designated area is possible.
3. Public transport. Public transport networks should be maintained in keeping with the above designations of districts, so that private developers and individuals are aware of them when making location choices.
4. Management and effective use of demolished-building sites. The plan also describes how to better manage and use effectively demolished-building sites. Agreement system for the maintenance of demolished-building sites by NPO etc. is introduced. Urban farming, including direct sales store, in demolished-building sites will be encouraged.

In order to support implementation of these provisions, an inter-ministerial support team was established in March 2015 to discuss possible support tools.

From the public transport network perspective, the **2014 revision of Local Public Transport Revitalisation Act** encourages municipalities to develop local public transport network development plan, which facilitates coordination between public transport policies and land use policies to promote a compact city (Ministry of Land, Infrastructure, Transport and Tourism, 2015).

Source: Ministry of Land, Infrastructure, Transport and Tourism (2015), Brochure of the revised Regional Public Transport Revitalisation Act, 8th edition, July 2015, available at: *www.mlit.go.jp/common/001061400.pdf*.

Although it is relevant to all types of cities, the initiative is mainly understood as a spatial strategy for local cities, and is so listed in the Revitalisation Headquarters' Comprehensive Strategy in December 2014. The Strategy envisages that master plans for the location of urban functions and local public transport network development plans based on the two Acts should be developed in 150 and 100 municipalities, respectively by 2020.

The desire to avoid too much decay in the spatial integrity of cities that are losing population is surely correct, but it will require locally tailored approaches. In Tokyo, and perhaps also Osaka and Nagoya, urban density is going to increase, at least for some years yet, as they still have strong development pressure.[9] High urban density can enhance quality of life and economic competitiveness, but only if certain other challenges are addressed, particularly ensuring quality public transport, promoting mixed-use development and, especially in Japanese conditions, developing age- and family-friendly urban spaces. Traditional planning instruments are still important in these cities, so proposed new urban expansion (green-field development) needs to be carefully compared with infill development alternatives, particularly in terms of environmental impact. It is important to understand compact city policies not just as densification, but as a comprehensive strategy to promote efficient land use in existing built-up areas and to minimise the disadvantages of high densities, such as congestion and pollution.

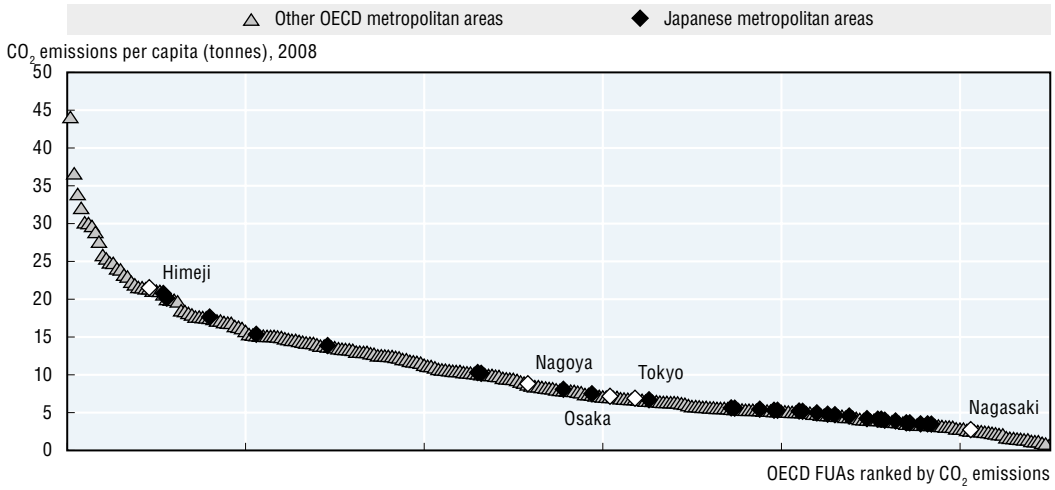
Most other cities in Japan will experience population decline and hence lower urban densities. Indeed, by 2012, 16 of Japan's 36 FUAs with populations above 500 000 were losing population. While lower urban density can bring some benefits (less congestion, more affordable housing, more public space per capita, etc.), it also implies a number of potential challenges. In terms of mobility, lower urban density will make it harder to sustain the efficiency of public transport networks. Unless other solutions are found, this is likely to lead to greater reliance on private automobiles. In Japan, public bus and railway networks are already shrinking; since 2007, more than 10 200 km of bus routes and 186 km of railway networks has been abolished (Ministry of Land, Infrastructure, Transport and Tourism, 2015). In terms of the local economy, it will be difficult under lower urban density to maintain the critical mass necessary to support local retail and service areas, especially in medium-sized cities. As noted in Chapter 2, population decline will also make it harder for them to maintain their infrastructure. In this context, managing and limiting the loss of density would be an important objective for sustainable urban management. Some decline in urban densities can be accepted, and may even be beneficial, but cities will want to maintain sufficient density to sustain good public services and quality of life.

Environmental performance of Japanese metropolitan areas

CO_2 emissions from most Japanese metropolitan areas are relatively low by OECD standards…

Most Japanese metropolitan areas have comparatively low CO_2 emissions per capita by OECD standards (Figure 3.21), with only two falling in the top 10%. The highest per capita emissions in Japan are in small FUAs with strong energy sectors. Indeed, there is relatively little variation in emissions across Japanese metropolitan areas, apart from those generated by the energy sector (Figure 3.22).

Figure 3.21. **CO_2 emissions per capita, OECD metropolitan areas**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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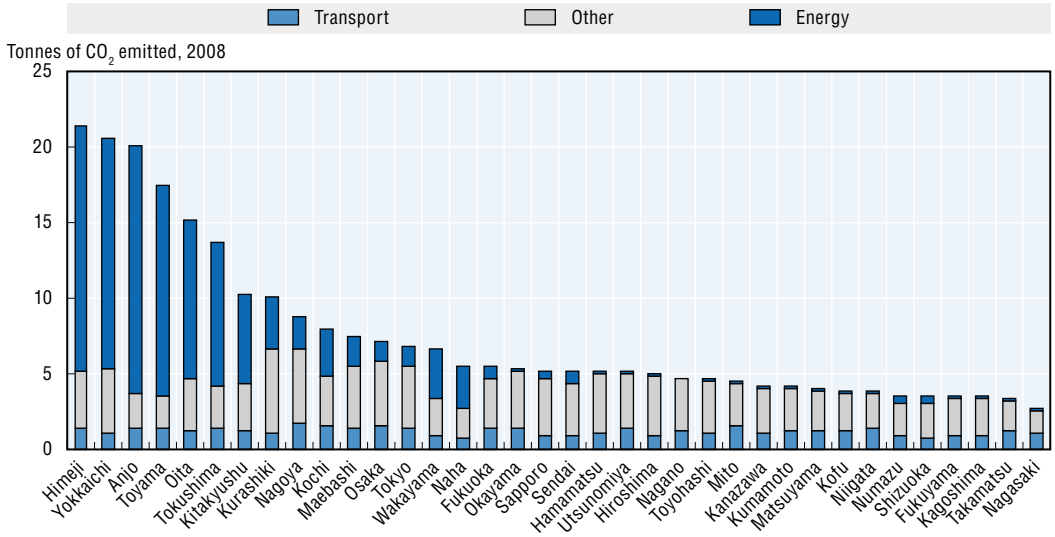
Figure 3.22. **Major sources of per capita CO_2 emissions in Japanese metropolitan areas, 2008**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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...but important environmental challenges remain

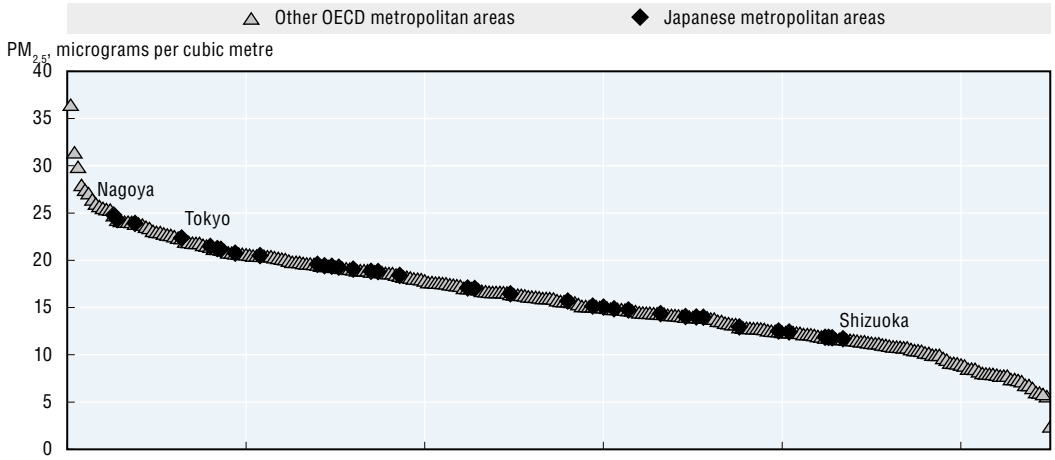
On two other environmental indicators, Japanese metropolitan areas perform rather less well compared to OECD peers.

- **Particulate matter.** As noted in Chapter 1, fine particulate matter (PM) is in some ways the air pollutant that poses the most immediate and direct threat to human health and it is much more local in impact than carbon, which is in essence a global externality. Most of Japan's major cities fall in the mid-to-upper range of the distribution for exposure to

$PM_{2.5}$ (Figure 3.23), though there is a good deal of variance among Japanese metropolitan areas on this indicator. All Japanese metropolitan areas – like the vast majority of OECD metropolitan areas – score above the WHO standard for average exposure to $PM_{2.5}$ (10 μg/m3 annual mean). In part, this is likely to be related to urban density, since PM exposure tends to be positively correlated with population and traffic density (Hixson et al., 2012; Brezzi and Sanchez-Serra, 2014; Demographia, 2015).

- **Green space.** Green areas such as parks and natural vegetation contribute to reducing pollution, improving health and quality of life, and making metropolitan areas more attractive. Not surprisingly, given the density of Japanese cities, the country's metropolitan areas offer far less green space per capita than most OECD metros (Figure 3.24). While the numbers derived from satellite-based measures of land cover do not reflect the quality or placement of green space, such low provision is a concern. Indeed, Nagoya, Fukuoka, Tokyo and Anjō are among the 22 OECD metropolitan areas with estimated green areas below the minimum level of 9 m2 recommended by the WHO.

Figure 3.23. **Exposure to particulate matter, OECD metropolitan areas**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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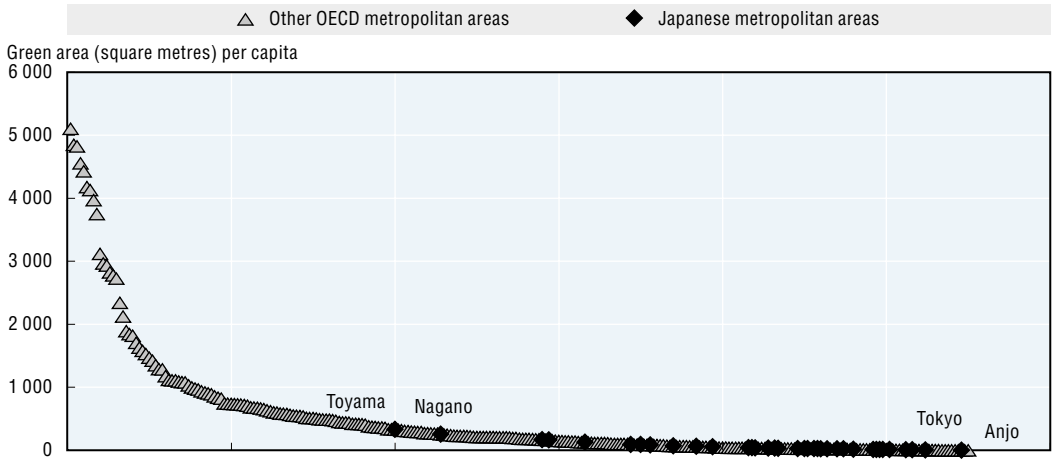
While the Japanese authorities are keen to ensure that population decline does not lead to the hollowing out of the cities, it does represent an opportunity to rectify the problem of lack of green space. The key will be careful planning of where and how much green space to restore. In a recent cross-country study of urban land use, Stott et al. (2015) conclude that, when it comes to urban parks, size matters: high-density neighbourhoods seem to generate better environmental outcomes than low-density areas characterised by small residential gardens and limited public space. On the basis of nine case studies across urbanisation gradients, the authors argue that "land sparing" – intensive and relatively compact urban development alongside separate, large, contiguous green space – is better at sustaining a majority of ecosystem services, including carbon storage (both above and below ground), water infiltration, pollination, pest control, noise reduction, air purification and temperature regulation. However, they also find that some "land sharing" – lower-density development, where built land and natural space are interspersed – may also be necessary to ensure that people benefit from urban green space: the positive effects of nearby green space on physical and mental health make an excellent case for incorporating

smaller parks too. Indeed, human health was a category where land sparing was found to perform less well. A certain balance will thus be needed in managing development intensity across Japanese cities.

Figure 3.24. **Availability of green space in OECD metropolitan areas**



Source: OECD (2015b), "Metropolitan areas", *OECD Regional Statistics* (database), *http://dx.doi.org/10.1787/data-00531-en* (accessed 10 September 2015).

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Efforts are under way at multiple levels to make Japanese cities greener…

The government continues to promote the development of greener cities in conjunction with the concentration of urban functions and improvements to public transport and the efficiency of urban energy systems, as well as countermeasures against the heat island phenomenon. In keeping with the place-based character of many urban greening policies, which must be designed so as to reflect local conditions, the 2012 Low Carbon City Promotion Act requires local governments to develop Low-Carbon Development Plans and to facilitate actions to integrate various urban functions, to promote the use of public transportation, to enhance efficiency of energy use, to preserve urban green areas, and to promote urban greening. The Act offers tax breaks for certified energy efficient buildings (exceeding an energy efficiency standard, with other low-carbon measures, water saving measures, use of sustainable building materials, and heat island prevention measures). The Urban Green Space Conservation Act also addresses such issues as the improvement of urban parks, greening of roads and public facilities such as ports, and securing of private green space using green facility development plans based on the Urban Green Space Conservation Act.

Tokyo and other major cities have also been active on their own in addressing local and global environmental concerns (Okata and Murayama, 2011). Since 2000, Tokyo, for example, has been taking measures to mitigate the impacts of the urban heat island effect, including covering roofs and walls with greenery in order to lower the surface temperature of buildings. To further these efforts, the Tokyo Metropolitan Government (TMG) passed a Nature Conservation Ordinance in 2001, requiring the greening of building roofs and walls in addition to ground-level greenings for all new construction, as well as existing buildings undergoing renovations or being extended to an area larger than 1 000 m^2 for private facilities or 250 m^2 for public facilities. Plans must be also submitted to include rooftop greenery for new construction with a total floor area exceeding 10 000 m^2.

Tokyo's goal is to install 1 000 ha (10 million m^2) of greenery by 2016, both on rooftops and at the ground level. By 2015, TMG reported that about 180 green ha had been added on rooftops alone under the ordinance. Tokyo is also piloting more specifications of the type of greening required, looking at cooling and other biodiversity benefits of various species, and looking at additional ways to put large scale, long-term urban heat island mitigation projects in place.

In 2005, TMG introduced an emissions-reduction programme that required large-scale factories, offices, commercial facilities and public institutions to develop five-year greenhouse gas reduction plans. In addition, Tokyo launched a carbon cap-and-trade system in 2010 and it co-leads the C40 Private Building Efficiency Network, a group of cities committed not only to tackling energy efficiency in their own buildings, but also to collaborating with others so they can take faster action, and have more impact.

Many other Japanese cities overcame serious environmental degradation in the 1960-70s, and developed advanced environmental technologies. The city of Kitakyūshū is among the pioneers. Once a heavily polluted industrial zone, Kitakyūshū is now a modern industrial city pursuing green growth. Under sustained pressure from its citizens, the city made a concerted effort to reduce industrial pollution and clean up accumulated environmental degradation, dramatically improving water and air quality. Remarkably, this transformation was achieved even as industrial output increased. The city's recent green growth initiatives include an "Eco-Town" recycling cluster and ongoing investments in green city demonstration projects, such as the "smart community" trial in the Higashida area (OECD, 2013a). In 1996, the city of Kyoto launched a biodiesel fuel project that collects used cooking oil from the residents for making fuel. The city's 92 buses and 136 garbage collection trucks now run on this biodiesel fuel. The city also boasts the lowest amount of garbage per person among Japan's 20 largest cities, with 445g per person per day in 2013. This was down 42% from the peak year (2000). The number of garbage incineration facilities in operation was cut from 5 to 3 and the annual cost of waste collection fell by 42.5%, to JPY 5.4 billion (City of Kyoto, 2015). Both cities have also implemented international city-to-city co-operation for sustainable development in Asia and have built reputations among cities aiming for green growth.

...and more resilient

In many cases, efforts to make Japanese cities greener go hand in hand with initiatives to strengthen urban resilience. The government is anxious to prepare cities for major disasters, such as a major inland earthquake near Tokyo or an earthquake in the Great Nankai Trough, both of which are regarded as very high risks in the coming decades. Projections suggest that a major quake around Tokyo could leave 23 000 dead and cost the economy up to JPY 95 trillion (Cabinet Office, 2015b). A large quake in the Nankai Trough, where the risk of Tsunami is very high, could be far worse, killing as many as 320 000. To this end, the government has set about:

- making improvements in urban blocks where houses and other buildings are densely concentrated and therefore at high risk of fires and building collapse in the event of a quake
- securing the refuge sites and evacuation routes needed for quick and smooth evacuation from tsunamis
- taking measures to support people stranded by disaster, e.g. those in major railway stations unable to return home in the immediate aftermath of a disaster
- securing urban parks, which may serve as disaster management centres and refuge sites.

Local authorities, too, are part of this effort, engaging in training, disaster drills and the storage of provisions. Governments at all levels are also working to inform the public better about disaster risks and responses. Prior to 2011, many municipalities were reluctant to publish hazard maps, for fear of the impact on property prices. That is now changing.

Promoting earthquake-resistant buildings is among the most important urban resilience strategies. In Japan, structures built before 1981, when stricter building codes were introduced, may lack adequate earthquake-resistant structure. The government thus promotes: i) assessment of earthquake-resistant structure of buildings which were built before 1981, and ii) retrofitting the buildings whose earthquake-resistant level is assessed insufficient. Structures built after 1981 are considered as earthquake-resistant. The Basic Plan for the Tokyo Inland Earthquake, adopted in March 2015, sets a number of nation-wide targets, including that of making 95% of Japan's housing stock earthquake-resistant by 2020 (Table 3.2). The Basic Plan stipulates that Tokyo could continue to function and the damage would be significantly reduced by preparedness for the disaster and by emergency response plans. It is crucial that such preparatory measures are implemented.

Table 3.2. **Targets for earthquake-resistant buildings**

	Houses (Japan)	Public schools (Japan)	Police buildings
Number of building stock	60 628 600 (2013)	118 504 (2015)	1 815 (Japan, 2013)
Current ratio	79%	92.5%	84% (average of Tokyo, Kanagawa, Chiba and Saitama)
Year	2008	2014	FY 2014
Target	95%	100%	95%
Year	By 2020	Earliest possible by FY 2015	FY 2018 (average of Tokyo, Kanagawa, Chiba and Saitama)

Sources: Cabinet Office (2015a), "Basic Plan for Urgent Implementation of Measures for the Tokyo Inland Earthquake", available (in Japanese) at: *www.bousai.go.jp/jishin/syuto/pdf/syuto_keikaku_20150331.pdf*; Fire and Disaster Management Agency (2015), "Result of the Survey on Earthquake-Resistant Public Facilities for Disaster Management", press release, 18 February 2015, available (in Japanese) at: *www.fdma.go.jp/neuter/topics/houdou/h27/02/270218_houdou_1.pdf*; Official Statistics of Japan (2015), 2013 Housing and Land Survey, *http://www.e-stat.go.jp/SG1/estat/ListE.do?bid=000001051892&cycode=0* (accessed 15 July 2015); Ministry of Education, Culture, Sports, Science and Technology (2015), "Result of the Survey on Earthquake-Resistant Renovation of Public School Buildings", press release, Ministry of Education, Culture, Sports, Science and Technology, 2 June 2015, available (in Japanese) at: *www.mext.go.jp/b_menu/houdou/27/06/1358364.htm*.

The global competitiveness of Japan's metropolitan areas

At an international level, the largest cities increasingly compete with one another

In the age of globalisation, it is no longer possible to think of cities or urban systems in a purely national context. The emergence of global value chains has entailed the development of new forms of financial and producer services to manage them, in many cases highly complex and skill-intensive services. Increasingly, therefore, the largest cities in many developed countries have increasingly specialised according to function rather than sector, developing as important nodes in these global networks rather than as producers of a certain range of goods, such as cars or electronics (Duranton and Puga, 2002). Since many of these activities benefit from cluster economies and agglomeration dynamics, they have tended to concentrate in a limited number of cities – those defined by Sassen (2001, 2005) as "global cities". Strikingly, despite their broadly similar specialisations,

these cities do not necessarily compete directly with one another: there are competitive dynamics, to be sure, but also complementarities insofar as they form part of a network of cities offering the specialised financial and producer services that make the globalised economy run (Renn, 2012).

That said, it is important to stress that many other cities around the world have benefited spectacularly from globalisation. Cities need not enter the ranks of the major global centres in order to offer prosperity and opportunity to citizens. For one thing, cities do not exist in isolation: the existence of urban hierarchies and divisions of labour within countries has long been studied – certain functions tend to be concentrated in specific cities, and there are observable patterns with respect to city size and specialisation (Duranton and Puga, 2002). In a sense, the emergence of the "global city" reflects the degree to which globalisation has given rise to a global urban system. The cities dominating the "global city ratings" are those that concentrate some of the most globalised functions of the system, but there are other niches to fill. Not all cities can or will specialise in such activities – nor should they. That does not mean they are not deeply integrated into the world economy: the manufacturing centres of China, for example, have been built on exports and are deeply embedded in global production chains.

For Japan, then, the question of global competitiveness therefore needs to be addressed on two levels: the first concerns the continued role of Tokyo – or, in future, a Tokyo-Nagoya-Osaka urban mega-region – as one of the most important global cities. The second concerns the competitiveness and integration into the world economy of the other Japanese metropolitan areas, and in particular the potential for gaining greater benefit from their location in what is, and is expected to remain for some time, the most economically dynamic region on the planet.

What makes "global cities" competitive and what does this mean for Tokyo?

There is a paradox to consider when confronting the question of what makes a global city successful. While the methods employed by different institutions and researchers vary, global city rankings converge to a surprising extent. Leff and Petersen (2015) present an overview of the top-ten lists emerging from nine internationally recognised city ranking exercises.[10] A small number of cities in developed countries dominate the rankings,[11] despite the fact that developing countries in recent years have exhibited far more economic dynamism and are now home to many of the largest and fastest-growing cities on the planet. Beijing makes the top ten on two ratings, with Dubai and Shanghai each listed once, but emerging Asia, the Middle East, the former Soviet Union, Latin America and Africa are all otherwise absent. While Tokyo is among the most highly rated cities, appearing on five of the major rankings, it is the only Japanese city represented. By contrast, eight US cities are in the rankings, and a number of other OECD countries have two or three.

This might simply imply that the ratings are backward-looking and fail to reflect recent changes in the world economy. Alternatively, it might be a result of bias, since most of the ratings are produced in North America or Western Europe.[12] A closer look, however, suggests that there is more at work:

- Size is not all that matters. While mega-cities like London, New York and Tokyo turn up again and again, some, like Stockholm and Zurich, are relatively small by global standards, and many of the world's largest cities are absent.
- The various ratings are almost all dominated by cities that combine size, strong international connectivity and specialisation in high-value business services like finance,

trade and logistics, innovation and knowledge creation. These are all highly globalised activities, and yet many of them have strong place-based characteristics, either because they benefit from cluster effects and/or because they are fields in which global standards and firms dominate and yet must function in a wide range of institutional and legal settings (e.g. finance and accounting).

- To attract such services, cities require not only the "hard" infrastructure and institutions needed to support them but also a certain quality of life. This is because success in these spheres requires attracting highly skilled (and highly mobile) people. Urban amenities, environmental quality and other non-pecuniary dimensions of well-being are thus important components of their competitiveness – far more important than they would be, for example, in a mining "boom town".

The foregoing suggests that the developed countries may retain a comparative advantage in high-order urban functions. The developed countries' quality of infrastructure, human capital and institutions thus gives them an edge in the core "global city functions" of commerce, finance and knowledge creation. So does the quality of life they offer. Well-functioning, liveable cities are not easy to build, and they are even harder to manage when cities are growing very fast, as they are in many developing countries. Emerging-market cities often struggle to compete in this arena, as city growth often continues to outstrip the ability of local or national authorities to provide infrastructure and services or to manage such challenges as congestion, pollution or waste disposal. As a result, the developed countries retain an advantage in providing cities that offer a high quality of life and good environmental quality to residents. It worth noting, too, that they tend to be highly internationalised places, in which it is relatively easy to settle and enter high-skilled employment without being fluent in the local language.

For Japan, this points to a number of priorities for the urban mega-region at the heart of Honshū:

- National-level legal, regulatory and fiscal regimes must be conducive to the attraction and retention of global players in fields like logistics, finance and knowledge-creation.
- The gateway role of global cities requires that external connectivity be strong.
- Liveability matters, so steps to ensure adequate internal connectivity, as well as environmental quality, urban cultural and recreational amenities, etc. are also critical.
- The international character of the city matters: it must be attractive to high-skilled expatriates from outside Japan and, given falling labour supply, it is likely to require immigrant labour even in less-skilled occupations.

In 2013, more than one-third of London's population was foreign-born, according to the UK Labour Force Survey, and the list of metropolitan areas with the largest foreign-born population shares overlaps significantly with the major global cities rankings – along with London, it includes Hong Kong, China; Los Angeles, New York, Paris, Singapore, Sydney and Toronto, among others. This suggests that resistance to immigration, population decline and population ageing must be added to the list of issues Japan's major metropolitan areas, particularly Tokyo, must address in order to sustain their competitive positions in Asia.

A number of these competitiveness priorities are being addressed in the creation of the government's new "National Strategic Special Zones" (NSSZs), particularly the zone organised in Tokyo, which is discussed below.[13] One might also add the risk of major earthquakes and tsunamis to the list of competitiveness challenges – a number of cities

are at high risk of a major quake and/or tsunami in the coming decades, and both national and local authorities are actively preparing for this.[14] However, while such risks pose major issues for policy, they may matter less in the competition for people and capital in Asia, simply because so many of Asia's most dynamic cities face similar hazards.

The future of Tokyo

Greater Tokyo occupies a somewhat paradoxical position with respect to Japan's demographic and economic challenges. On the one hand, it is on many measures the world's largest metropolitan area and the country's main driver of growth. It accounts for almost one-third of GDP and is the country's capital, main financial centre and principal international gateway. Its dynamism and global competitiveness are central to any hope of reviving Japan's productivity and growth performance. At the same time, in a context of population decline and ageing, Tokyo's dynamism can seem threatening to other parts of the country, as it acts as a magnet for money and talent. Such concerns underlie much of the emphasis on promoting regional revitalisation. Yet regional revival cannot come at the expense of Tokyo: Japan needs its existing growth engine to grow stronger even as it seeks to ignite other centres of growth and employment creation around the country. Tokyo's position in the global competition to attract financial and human resources and companies from around the world is critical to Japan's prosperity.

Tokyo's demographic problems are unique in Japan

Lützeler (2011) observes that the Tokyo Metropolitan Area (TMA) is about the only place in Japan not yet worried about population decline – projections show the population of Tokyo Prefecture rising to 2020 and then gently declining to a level in 2035 that would still be above that of 2005 (12.5 million). The rest of the agglomeration is projected to experience a sharper decline but should still retain population better than the national average. That said, there are many areas of the TMA that are already experiencing rapid demographic decline amidst continuing TMA growth. Growing areas include waterfront areas (Chūō, Kōtō and Minato wards), residential areas within the other wards and some suburban residential areas. Okata and Murayama (2011) report that many outer suburbs have been experiencing population decline since the turn of the century. Of course, population decline is not a simple matter to interpret in central parts of the agglomeration. At the neighbourhood level, demographic decline can reflect either economic vitality (residential use changes to commercial use) or economic decline (rising vacancies, departing populations). On the periphery, however, it is far more likely to reflect decline.

Tokyo's population is also ageing less rapidly than the average but the growing population of elderly – and especially of the elderly poor – represents a challenge. Old-age dependency ratios in Saitama and Chiba prefectures are likely to approach the national average by 2030, but Tokyo and Kanagawa are projected to be 3-4 percentage points lower. Ageing in Tokyo does, however, tend to be concentrated in specific places. The fastest-ageing areas are of two types: inner area districts often adjacent to railway lines or other urban disamenities (noise, etc.); and (far more numerous) neighbourhoods dominated by public rental housing,[15] often with high unemployment and poverty rates (Lützeler, 2011). The former tend to be quite central and so may be redeveloped in time, to draw back the young, or they may be transitioned to non-residential use. This pattern is consistent with Sassen's theory of "global cities", which anticipates growing gaps between city centres, where the new service class elite concentrates, and the rest of the agglomeration (Sassen, 2001:260-2).[16]

In some ways, though, the more serious concern for the authorities is the impact of Tokyo on fertility. In terms of economic opportunity, Tokyo has enormous attractive power, and in recent years. The government estimates that in 2014, the net inflow of people into Tokyo was over 109 000, a figure that is not out of line with trends since 2000, apart from a sharp downturn for a few years immediately following the onset of the global crisis in 2008.[17] The great bulk of new arrivals are young – more than 90% were in the 15-29 age bracket in 2014. Young Japanese come to the capital to study or find work and then stay. The problem for Japanese policy makers is that Tokyo Prefecture also has, by a fair margin, the lowest fertility rates in the country (1.13 in 2013), and the other prefectures around it, such as Saitama, Chiba and Kanagawa were also far below the national average, at 1.31-1.33 in 2013. This problem is present, albeit in less acute form, in the other major conurbations: the prefectures at the heart of the large metropolitan area centred on Osaka also had fertility rates of 1.26-1.32 in 2013.

High living costs and the difficulties in balancing parenthood and career together mean that young people in Tokyo and other large cities work more, marry later and have fewer children. While some officials see redirecting migration flows away from Tokyo as critical to raising the birth rate, there is no evidence that this will occur on any scale that would make a difference nationally. Measures to make Tokyo more "child-friendly" – particularly as regards childcare provision and affordable housing – are therefore critical to addressing Japan's demographic challenges.

Policies for Tokyo focus on connective infrastructure and redevelopment of the urban fabric

The City Bureau of the Ministry of Land, Infrastructure, Transport and Tourism views connectivity and the urban redevelopment of Tokyo as the main priorities when trying to increase the global competitiveness of the capital, emphasising the need to improve the environment for doing international business, including external access points and the number of international convention centres and other facilities. The Tokyo Metropolitan Government likewise emphasises transport infrastructure. Both point to the need for better connections from the two airports, Haneda and Narita, to the city centre and to one another (via the development of a new railway line between them), as well as an increase in airport capacity, which is expected to reach saturation level by 2020. The city authorities would also like to see the construction of a new port outside the Rainbow Bridge. The bridge is 52m high, which means that big cruise ships cannot enter the port. In addition to these priorities, the TMG lays great stress on internal connectivity, seeing the city centre's increasingly acute congestion as a primary handicap. The average traffic speed in Tokyo is around 16 km/h (as against a national average of 35). Three major ring roads are under construction.[18] These are meant to improve accessibility to airports and seaports and to ease chronic congestion traffic in central Tokyo. The TMG estimates that 60% of the traffic inside Tokyo's inner loop is through traffic, so the construction of second and third rings could allow more traffic to bypass the centre. This will require central government support, as ring roads and national airports are national priorities – though that does not mean that they will be wholly funded from the national budget. Usually, the government, the TMG and Tokyo's wards would share the costs.

The emphasis on internal connectivity is a priority that Tokyo shares with many other global metropolitan areas, including Paris, where the French authorities have recently launched a 15-year project to strengthen internal transport connectivity and institutional cohesion within the metropolitan area (Box 3.4). The aim is not only to improve quality of

Box 3.4. **France's Grand Paris project**

The *Grand Paris* project in France reflects a new approach in spatial planning in France. It places great emphasis on the Paris region as a global asset for the country rather than viewing it as a danger for the development of other regions and cities. This change can be explained in part by the rapid development of other important cities such as Bordeaux, Lyon or Toulouse, which have eased fears concerning the concentration of people and activity in and around the capital, but it also reflects the awareness that countries' economic performance relies in large measure on the performance of world-class cities such as Paris, London, New York or Tokyo. It is all the more so important in the French case that Paris is tightly connected, via both transport networks and economic ties, to the other major French cities, enabling important spillover effects all across the country (see also Box 3.6 on the French experience with high-speed rail).

The origin of this project lies in the widespread perception that the Paris region does not live up to its economic potential because of the low visibility of its main assets (such as the diversity of its economic activities or the high concentration of researchers) and an under-optimal agglomeration effect that limits efficient matching on the labour market and cross-fertilisation of ideas and activities. Such difficulties are reinforced by institutional fragmentation and a star-shaped transport system that works well inside the city of Paris itself (*intra muros*) and connects the surrounding communities to Paris, while hindering mobility between cities and towns that surround Paris itself. This explains why the Grand Paris is a two-level project, including **spatial planning** and **institutional dimensions**.

The most visible part of the spatial planning dimension consists in the construction of new metro networks (comprising both new lines and extensions to some existing ones) to enable easier and faster connections around Paris. The aim of this network is not only to make the transport system more efficient and coherent with the reality of the urban area and the needs of the inhabitants. It is also conceived as an incentive for renewed urban planning and economic development projects around the new stations. These stations – for which a particular emphasis has been laid on architectural quality and the amenities offered (shops and common services but also co-working places, business incubators, etc.) – are envisaged as a way to facilitate the emergence of new centres of activity capable of reinforcing the general dynamics of the agglomeration. Moreover, this network will carry not only people but also data with high-speed connections and data centres in order to reinforce potential development and strengthen the attractions of the Paris region. Finally, this transport network is also meant to encourage the development of economic clusters (e.g. creative industries around Saint-Denis, aerospace in Le Bourget, health and medical research around Villejuif, etc.) or academic concentration (e.g. in Saclay) around these stations, in order to reinforce cross-fertilisation and critical mass, while making the assets and specificities of the Paris region more visible at an international scale.

The aim, in short, is not only to help mobility but also to reduce discrepancies in economic development inside a metropolitan area that combines extremes of both wealth and poverty, by creating new development centres and enabling people to find jobs more easily. It is also meant to curb urban sprawl and reduce the use of cars, making the development of the Paris region more sustainable. After a period of preliminary studies, the construction of the new lines, supervised by the *Société du Grand Paris* started in 2015 and should be completed by 2030.

The institutional dimension mainly consists in the creation of a new *Métropole du Grand Paris*, a metropolitan governance body that will come into being in January 2016. It will bring together Paris and 130 surrounding cities. The new entity will be in charge of economic development, town planning, environmental policies and, to a certain extent, housing. The creation of this *métropole* is part of a global policy set out in new legislation adopted in 2014, which has created 14 *métropoles* in France. This process of achieving metropolitan governance has been especially difficult in the case of Paris, because of its global size and such local specificities as high wealth differences among cities and a long tradition of political and institutional fragmentation. This is why federative projects, such as the 2024 Olympic Games or 2025 universal exhibition candidacies, though not directly linked to the *Grand Paris* project, are also regarded as powerful drivers to move collectively along in that direction, as well as a booster for public works.

Source: Information provided directly by the Commissariat Général à l'Égalité des Territoires.

life by reducing pollution and facilitating mobility but also to stimulate new agglomeration dynamics, innovation and the emergence of new centres of economic activity in the Greater Paris metropolitan area. This, in turn, should make the specific assets of the Paris region more visible at metropolitan scale. In Japan, plans for the development of Tokyo and for the creation of an urban mega-region encompassing the Tokyo, Osaka and Nagoya metropolitan areas are intended to achieve many of the same objectives.

In addition to the above, Tokyo is at the centre of two megaprojects which will be discussed below:

- In 2020, Tokyo will host the Summer Games of the XXXII Olympiad. The authorities' aim is to use the Games not only to raise the city's international profile and enhance its image but also to put in place a set of infrastructure and other investments that will support its future competitiveness.
- In May 2011, the government authorised the construction of a JPY 9 trillion magnetic levitation (maglev) train, the *Chūō Shinkansen*, which will ultimately connect Tokyo, Nagoya, and Osaka. When completed, it will cut the journey time between Tokyo and Nagoya from the current 95-100 minutes to just 40, and the time between Tokyo and Osaka from around 140 minutes to 67. Its maximum running speed will be about 505 km/hour.[19]

The City Bureau has also been actively supporting urban redevelopment with a view to enhancing the investment attractiveness of Japan's major cities. The 2002 Urban Renaissance Law was one of the first comprehensive efforts to enhance Japanese cities' competitiveness, by stimulating private investment in urban development. Deregulation of land use controls and financial incentives for private investors were the main instruments. A total of 2 806 ha in Tokyo/Yokohama was designated for urgent and focused government support in private urban development projects. Urban renewal was accelerated in downtown Tokyo and the waterfront area. Between 1990 and 2010, the total floor area in large offices increased by 82%, from 20.5 million to 37.2 million m^2 (Ministry of Land, Infrastructure, Transport and Tourism, 2015). The land and rent value increased in most of the designated districts relative to other areas in these cities. Urban Renaissance initiatives were also undertaken with City Bureau support in such cities as Fukuoka, Nagoya, Osaka, and Sapporo. By August 2015, 79 such urban renaissance projects had been registered with the Ministry of Land, Infrastructure, Transport and Tourism.

Flagship projects in Tokyo have included developments along the waterfront, around Shinjuku, Shibuya and Shinagawa stations, the Maronouchi Park Building and Toranomon Hills. Altogether, the floor area in large office buildings rose by 16.7 m metres^2 (+82%) between 1990 and 2010.[20] Support for such projects includes government guarantees to facilitate borrowing, accelerated amortisation, the relaxation of floor-area ratios and height restrictions and a provision for lower tax rates on fixed assets in cases where buildings are built with public spaces. Partial exemption from the real estate acquisition tax is also possible, as are reduced rates for registration and licence taxes. According to City Bureau figures, around JPY 25.8 billion in guarantees and other assistance with financing was extended to end-October 2013, as well as JPY 27.5 billion in assistance via tax breaks.

Regulatory and other policies are also changing but more needs to be done

It is striking that the priorities of both the TMG and the Ministry are so strongly focused on the new construction, mainly of infrastructure but also for the Olympics. There is certainly a need to address congestion problems and scope to improve the connections

to and from Tokyo's major airports. These are both weak points identified in international assessments, such as the Mori Memorial Foundation's Global Power Cities Index. However, the emphasis on infrastructure solutions is open to question given the stress on public finances, population ageing and the fact that Greater Tokyo's population is expected to begin declining. Demand-side solutions, such as road-pricing or congestion charges, might merit consideration, given the risk that there will be insufficient demand to justify some of the new infrastructure in coming decades. A balance of supply- and demand-side solutions is needed. In any case, international assessments identify a number of other weaknesses Tokyo needs to address, including regulatory burdens, English proficiency, cost of living and the natural environment.[21] Complex and lengthy procedures to start a business remain one of Japan's competitive weaknesses. According to the World Bank's "doing business" indicator, it takes an average of 11 days to set up a business in Tokyo, compared with only 3 days in Hong Kong or Singapore. Physical urban development projects will be far more effective, if they are linked to promote start-ups and attract foreign investment, to facilitate innovation, or to attract skilled and talented workforce.

In this connection, the National Strategic Special Zones scheme launched in 2014 is critical for Tokyo, as it aims to create "the world's most business-friendly environment", and also for other major Japanese cities. There are a range of menus for deregulation, including one-stop services for legal procedures for business start-ups and visa conditions for foreigners wishing to run businesses. In December 2014, Greater Tokyo (Chiyoda, Chuo, Minato, Shinjuku, Bunkyo, Koto, Shinagawa, Ota and Shibuya wards, Kanagawa Prefecture and Narita City) was designated as the first NSSZ. As of July 2015, there are nine NSSZs approved by the Cabinet Office. The Tokyo NSSZ plan includes various deregulation measures, including support for business start-ups. In April 2015, the Tokyo Metropolitan Government and four ministries opened a "Tokyo One-Stop Business Establishment Centre". By making the office a one-stop window, it expects to speed up the process for starting companies. A "Centre for Employment and Labour" will also be established by the central government to support global enterprises and start-ups by providing expert consultation on employment conditions and labour regulations in Japan. The TMG already operates a "Business Development Centre", as a part of "the Special Zone for Asian Headquarters", another national deregulation initiative started in 2011. Such existing initiatives will be linked and co-ordinated with the new NSSZ measure to generate synergetic effects.

The latest NSSZ plan for Tokyo, approved in June 2015, includes the following provisions which aim to stimulate innovation and attract high-skilled workforce from all over the world:

- Regulation of the use of medical drugs/methods that are not yet approved in Japan is to be relaxed at six medical facilities in order to provide high-level service more promptly.
- Regulation of the number of beds is relaxed at six medical facilities in order to provide high-level medical service.
- In order to attract doctors with high medical skills from abroad, foreign doctors are allowed to work in three medical facilities without obtaining a Japanese licence, based on bilateral agreements with France, the United Kingdom and the United States.
- Simplified planning procedures are applied to five urban development projects that concern facilities for international business promotion.
- Regulation of streets is eased at four locations in the zone in order to enhance the attractiveness of the zone and promote tourism.

It will also be crucial for the Tokyo NSSZ to keep revising its deregulation menus in response to the needs of the business community. Ambitious reforms will be needed to make the new scheme more successful than previous ones. For example, the Special Zone for Asian Headquarters launched in 2011 in an effort to make Japan a centre for international business aimed to attract more than 50 corporate headquarters for Asia by 2016. As of early 2015, it had attracted only two (OECD, 2015f). The central government also has an important role in examining the effectiveness of the experimental deregulation and expanding it to other areas of Tokyo and major cities.

In addition to all these efforts, long-term social and institutional investment is indispensable if Tokyo is to be more competitive in an increasingly globalised economy. Tokyo could help skilled foreign workers to find firms in Japan in search of their skills. In Victoria, Australia, the Overseas Qualified Professionals Programme (OQPP) provides recently arrived professionals who acquired their skills abroad with a work-experience placement to enhance their opportunities for employment in their field of study (Quintini, 2011). Many OECD countries and regions have implemented specific measures to address the needs of and demand for high-skilled immigrants. Transforming Tokyo into a foreigner-friendly city not only for visitors but also foreign residents is an essential element of such an effort. Newly arrived foreign workers and their families face various challenges, such as finding housing, education for their children, hospitals for medical service, cultural activities, etc.

A key step is to provide support to newly arrived workers and their families at the community level. For example, multi-language support should be expanded for newly arrived workers in order to provide them with information on education and medical services in the community. Language programmes to support integration are also important. In Sweden, a non-profit organisation called *Folkuniversitetet* offers a wide range of adult education courses throughout Sweden, and it is especially committed to strengthening the position of immigrants on the labour market. For instance, a special Swedish language programme for immigrant medical and healthcare staff focuses on enabling them to use their professional skills in Sweden (OECD, 2012b).

The maglev project and the formation of a Tokyo-Osaka-Nagoya mega-region

The Chūō Shinkansen is to create an urban mega-region of more than 60 million people

The *Chūō Shinkansen* maglev project now under way is set to reshape the future of the great urban cluster on the Pacific side of Honshū. The magnetic levitation trains will float about 10 cm above a U-shaped guideway, held aloft and propelled forward by superconducting magnets. This allows for frictionless movement. It should also result in lower greenhouse gas emissions than most other transport. With no moving parts, the maglev has low maintenance costs, and some maglev designs, including JR Tōkai's, are self-stabilising, which reduces the risk of crashes. The technology has already been used to build short demonstration lines, but Tokyo-Nagoya will be the first functioning intercity route.[22] In the first phase, the line will run from Tokyo's Shinagawa Station to Nagoya, stations in Sagamihara, Kanagawa, Kofu, Yamanashi, Iida, Nagano, Nakatsugawa and Gifu. Operations should begin in 2027. According to documents released by the Central Japan Railway Company (JR Tōkai), the line's route will not go through water resources, natural parks or communities, and waste soil will be used for farmland or public works projects (Minami and Yagi, 2013). Over 85% of the 286 km line between Tokyo and Nagoya is to be built underground or through tunnels.

JR Tōkai is to fund the project entirely through cash generated by the operation of its current bullet train lines. Under the law on the development of the Shinkansen lines, JR Tōkai would be able to rely on government subsidies, but because Shinkansen lines to be constructed in other parts of Japan require government support, the company plans to finance the *Chūō Shinkansen* itself. However, the government and the affected municipalities are making significant contributions in other ways. While budgetary funds are not being spent on the project, the government passed legislation stipulating that tunnels more than 40 metres underground (the planned depth of the maglev lines) do not need to compensate landowners (Lippert, 2013). This will greatly reduce costs in building the line through some of the most expensive real estate in the world – indeed, the value of land in the area is a major reason for JR Tōkai's decision to build as much as possible underground. The stations along the maglev line are to be financed by the municipalities where they are located.

JR Tōkai acknowledges that the project will break even only after decades of operation, and much of its commercial benefit will depend on Japan's success in exporting its maglev technology.[23] However, the company argues that it needs an alternative route to current Shinkansen line, which will have to be renovated extensively by mid-century, and which is in any case close to saturation – schedules are so tight that there is little room to add more trains. In addition, JR Tōkai insists the additional route will also enhance the resilience of the transport network in the event of a major earthquake. In 2013, a subcommittee of the Land, Infrastructure, Transport and Tourism Ministry estimated the economic effect of the Linear *Chūō Shinkansen* at JPY 870 billion a year once the second phase is completed. About 45% of this is expected to accrue to Greater Tokyo, with a slightly larger share to the Nagoya and Osaka metropolitan areas and just under 7% to the rest of the country (Minami and Yagi, 2013). The spread effect of this development across space will depend to a great extent on how well other transport investments are aligned with it. In Nagoya, for example, the authorities are already planning not only to co-ordinate timetables but also to reconfigure the central station so as to facilitate fast, easy transfers to and from regional services.

The authorities' expectation is that construction of the line will contribute to the creation of a globally competitive urban mega-region, generating powerful agglomeration economies and attracting investment as a result of its massive market potential. With a population of 60 million people, the region will boast 4 international airports and 2 international container hubs, which should make it one of the world's largest trading regions. In an early analysis of the proposed maglev, Morichi and Shimuzu (2002) argued on the basis of the historical development of earlier Shinkansen lines that the 60-minute travel radius around Tokyo was a crucial threshold. As faster transport expanded this circle around the capital, the regions drawn into Tokyo's "orbit" experienced faster growth. They anticipate that the *Chūō Shinkansen* will have a similar effect.

The government also expects that competitive synergies will emerge as the international functions of the Tokyo area are linked more closely to the manufacturing excellence of the Nagoya metropolitan area, in addition to the cultural, historical and commercial functions of the Osaka metropolitan area. This ambition is not unique: other countries, too, have in recent years grown interested in the potential for transport investments to bring people and businesses closer together, in terms of travel times if not distances, so as to create larger agglomerations of economic activity (Gibbons, 2015). For example, Overman et al. (2009) find that a 20-minute reduction in rail journey times between Manchester and Leeds would yield benefits to Manchester alone of around GBP 4.3 billion. This, moreover, is without

factoring in the possibility that a more prosperous Manchester-Leeds agglomeration would attract more high-skilled workers.

This last point, of course, underscores one of the distributional consequences of agglomeration-oriented policies: the attraction of more highly skilled individuals to the big city would be likely, other things being equal, to enhance their productivity and thus improve national performance (OECD, 2015d), but it would come at the expense of other places in the country. The issue of displacement as opposed to new activity is one that needs consideration in the assessment of any proposed infrastructure investment. It is particularly relevant in respect of the *Chūō Shinkansen*, given the authorities' concern about over-concentration in Tokyo. If avoiding over-concentration is a policy priority, then it is hard not to question the expedience of a project that is highly likely to strengthen centripetal forces in the labour market. The demographic situation also raises questions about the need for the line: with Japan's population falling rapidly and even Tokyo's population expected to begin declining within a decade, it is not clear that there will be sufficient demand for the service.

Ex-ante assessment of the impact of infrastructure mega-projects is notoriously difficult

The degree to which transport infrastructure can serve as a driver of growth remains open to question. OECD work suggests that investment in network infrastructure does indeed have a positive effect over and above the addition to the capital stock but that the effect is non-linear and tends to be stronger at lower levels of provision (Sutherland et al., 2009). This is precisely what one would expect if such investment were subject to diminishing returns (Demetriades and Mamuneas, 2000).[24] Where infrastructure gaps are large, the returns to filling them are, too, but when infrastructure is well-supplied, the marginal benefits of additional investment tend to be low or even non-existent (OECD, 2013b). Much depends on how infrastructure investments interact with other elements of the policy package: OECD (2009b) finds that the impact of infrastructure provision on regional performance depends to a significant extent on policies relating to human capital development, innovation and the business environment. On its own, infrastructure may deliver little but in tandem with other policies it can make an important contribution.

Even more difficult than estimating the impact of transport investment in aggregate is *ex-ante* evaluation of large individual projects. It is important to distinguish here between the methods appropriate for routine infrastructure investments and those required for mega-projects that are conceived to be "game-changers", involving long-term dynamic feedback that may affect economic structure and competitiveness (OECD, 2014a). For example, fairly standard cost-benefit analysis methods may provide a basis for assessing an investment that will ease a constraint on a well-travelled route, but they are ill-suited to gauging the impact of something like the Öresund Bridge that connects southern Sweden with Denmark's capital region. The bridge altered existing flows of people, goods and services, gave rise to substantial new flows, and altered the settlement pattern substantially. Even at smaller scales, such things can be hard to predict: the addition of new commuter rail lines in Greater Paris is meant to reduce inefficiencies (direct impact) but will also change land-use patterns and possibly restructure the housing markets and local economies around the new routes. There is a growing body of evidence on the pitfalls involved in evaluating such projects (and the possible solutions), but as yet no standardised method that is accepted as best practice. Recent OECD work does, however, point to some basic steps that should be followed (Box 3.5).

Box 3.5. **Ex-ante assessments of infrastructure mega-projects**

The literature on assessing the economic impact of large transport infrastructure investment focuses on the most effective ways to estimate the benefits of infrastructure investment compared to other scenarios, the usual counter-factual being the lack of any investment (i.e. the *status quo*) or, less frequently, investment in an alternative solution. The measures used to assess the projects vary, but tend to include one or more of the following:

- the potential for increased productivity through agglomeration economies
- the benefits of easing transport bottlenecks
- the benefits of greater network reliability and predictability
- the benefits of expanding capacity for transport, housing, and job creation (and by extension individual choice)
- the impact on human capital/skill formation.

Recent assessments have emphasised broader measures of benefits that go beyond direct benefits to users (those directly connected with or affected by the project), paying greater attention to indirect (those that supply or benefit from those connected to the project), and induced economic impact (benefits that accrue to the wider economy, up to the national scale). Some estimates seek to identify dynamic induced effects. The ratio of all cumulative effects to the direct effect is usually the multiplier effect used to estimate the overall benefits of large projects. In addition, there is an increasing effort to measure spillover effects spatially as an important factor affecting the nature and distribution of benefits.

Because of the complexity of assessing these broader impacts, OECD (2014a) points to the need for a number of essential steps.

- The assessment needs to include sensitivity and robustness analyses, because there is less confidence in any modelling results.
- There needs to be a clear counterfactual. In most such cases, this is just as challenging as estimating the outcomes under the investment scenario. Overman (2011), points out that, in the case of very large infrastructure projects, the baseline (not building anything) is difficult enough to estimate, but that policy makers must also consider the opportunity cost of using the public funds involved for the project rather than in some other way.
- The assessment should start by establishing a baseline to estimate the marginal return to additional transport infrastructure given the structure of the economy. Efforts to link the impact of transport investment to agglomeration benefits face a number of obstacles in both measurement and identification. However, combining land-use and transport models can make it possible to arrive at better estimates of productivity effects.
- When the nature of the project means that the ex-ante assessment will necessarily lack precision and confidence, it can help to draw on ***ex-post* studies of other projects**.

When it comes to high-speed rail (HSR), in particular, OECD (2014b) proposes a four-stage test. The first concerns commercial viability. The trouble is that such investments rarely appear to be commercially sustainable on their own, as the time horizons and scales involved typically necessitate some degree of public support.[25] Japan is something of an exception here, in view of the success of its Shinkansen network. However, the commercial case for the maglev is finely balanced and depends on public resources to a significant

extent. The social returns to the investment are therefore critical, and the other stages of the OECD test focus on them. The second stage concerns social returns that come from transport alone. This benchmark, usually assessed in terms of travel times, anticipated passenger numbers and modal shift (from dirtier to clean transport modes and/or from more to less congested ones), is often achieved. However, the threshold set by the implementing agency can vary substantially depending on its goals, so there is a real risk of bias, depending on who does the assessment. The third stage focuses on the benefits to the entire transport network, which inevitably involves much greater complexity in assessment. Finally, the fourth stage looks at the broader economic and social benefits, which are not always tangible.

Some recent work casts light on the issue of dynamic induced benefits, in particular. Chen and Haynes (2013) present a new method to estimate the macro-economic impact of large investments in public transport infrastructure, combining spatial econometrics and comprehensive general equilibrium estimation.[26] Their model estimates both demand- and supply-side effects and it looks at the entire transport system – i.e. it looks at the interactions between different modes of transport. They find that the magnitude of the impact of transport infrastructure investment is typically much smaller than previously believed. In part, this may simply reflect the use of more recent data from countries with well-developed transport networks: this would be consistent with the findings of Sutherland et al. (2009). The high level of aggregation of the model (at the national level) also means that the estimates are based on broad definitions of each sector (e.g. all roads and highways), which limits its utility in assessing the benefits of a single large localised project (such as a new HSR line).

Perhaps of greater direct utility for assessing specific large-scale projects is the model presented in Australian Department of Transport (2012). It examines four major infrastructure investments *ex-post* and argues for a broad measure of benefits, using a dynamic general equilibrium approach that includes feedback loops and land-use outcomes, while remaining cognisant of the cost and difficulty involved in identifying costs and benefits beyond the first-round effects. The main variable the authors use is "effective job density", a composite variable that measures accessibility based on the density of employment and the time it takes to reach employment centres.

The economic impacts of the maglev are difficult to foresee

The authorities expect that the new maglev line will drive the formation of an urban mega-region at the heart of Japan. While international experience with such mega-projects is too limited to generalise with confidence about their impact, a review of international experience suggests that the speed and extent of this integration should not be taken for granted. Other policies must be supportive of integration, particularly those that favour innovation and entrepreneurship (OECD, 2009b), and the cities involved must take steps to ensure that the regions around the new line are integrated with it (e.g. the efforts by Nagoya to ensure speedy connections). A large number of recent and not-so-recent examples of economic development strategies founded on the introduction of new transport infrastructure confirm that the effects of such investments are likely to be substantial but are difficult to predict and far from automatic (Box 3.6). They depend on the degree to which entrepreneurs see opportunities to use the new transport option to exploit opportunities previously unavailable to them – to cut transport times and costs, to penetrate new markets or to establish new links with partners.

Box 3.6. **International evidence on the spatial impact of large transport infrastructure projects**

Japan

After the Tōkaidō Shinkansen came into service, traffic growth exceeded all forecasts, rising from 10.7 billion passenger-kilometres in 1965 to almost 46.1 billion in 2008; passenger traffic density[27] rose fivefold. It did result in some reallocation of roles among the cities it connected. Prior to the introduction of the Tōkaidō, Nagoya played the role of an "intermediary capital" between Tokyo and Osaka (ECMT, 1992). Advanced service activities were located there. After the Tōkaidō came into service, it seems that Nagoya began to lose this role. The number of jobs in such activities fell in Nagoya, while rising in Tokyo and even more so in Osaka. Nagoya did not decline, however; rather, it became more specialised in high-value manufacturing.

France

The introduction of high-speed rail (*train à grande vitesse*, TGV) in France between Paris and the country's second city Lyon (a distance of about 464 km – comparable to that between Tokyo and Osaka) led to a steep increase in both directions.[28] This reflected both a shift of about one-third of passengers from air to rail and an increase in the average number of journeys per passenger each year of about 30%. The Lyon region, far from being absorbed by the Paris region as some had feared, actually extended its markets. Some firms from the Lyon area had advantages over Parisian competitors that they had previously been unable to exploit (it took too long to get there; transport costs were too high, etc.). Chen and Hall (2012) examine the effect of increased connectivity, in the form of reduced travel time, and the degree to which it facilitates economic restructuring in de-industrialising regions in a comparison of Nord-Pas-de-Calais (France) and Lancashire (United Kingdom). They find that the roll-out of HSR in France has a more pronounced and broader regional impact than the mere upgrading of existing infrastructure, such as occurred in the United Kingdom, but that the benefits still tend to go to the dominating region (in this case, Paris).

Germany

Ahlfeldt and Feddersen (2015) examine the impact of the construction of an HSR link between Frankfurt and Cologne. They argue that the location of intermediate stations was effectively exogenous to local economies,[29] which allows them to isolate the impact of rail connection on different places, as well as the agglomeration effect in surrounding areas and the spread of those effects in space. They find that the intermediate stops benefited substantially from the HSR as locations of economic activity but that they benefited far more as potential places to live, creating new commuting possibilities to the main centres. These benefits were highly localised, decaying rapidly with distance from the stations.[30] This suggests that the maglev might have a similar effect, leading to greater concentration of economic activity along the line, and especially in the three major cities, with far greater impacts on housing markets in the intermediate places and those located near the line but lacking stops. Even Nagoya, the smallest of the three main cities involved, may lose activity to Tokyo, something officials there acknowledge as a real risk.

Eurostar

The Eurostar connecting London to Paris provides a salient case study with potential impacts at various geographic scales. Though services began in 1994, the project did not reach its full potential until 2007, when the HSR was fully extended to London. The benefits of HSR to the English County of Kent are, to date, ambiguous. The construction of intermediate stations (especially Ebbsfleet) connected to local rail network did lead to important investment in housing and commercial property, but these investments remain limited in scope and scale. Looking at the period when the Eurostar's HSR stopped at the tunnel and continued on conventional lines to London Waterloo, Hay, Meredith and Vickerman (2004) find only limited impact on Kent and little potential for further development. This is consistent with other research suggesting that a region's economic potential prior to large infrastructure investment is a critical determinant of the investment's impact. Thus, Kveiborg's (2014) comparative case study of Eurostar and the proposed Fehmarn Belt fixed link emphasises that the impact on the intermediate regions is likely to be limited and will accrue

Box 3.6. **International evidence on the spatial impact of large transport infrastructure projects** *(Cont.)*

only over the long-term, except where those intermediate regions have pent-up potential that could be exploited through increased connectivity. The main exceptions are places where intermediate stops are located. In the case of the Eurostar, Lille and Ashford (before the re-routing of Eurostar via Ebbsfleet) enjoyed better economic performance than their respective regions in the first decade of Eurostar's operation.

The Öresund

The opening in 2000 of a bridge connecting the southern Swedish region of Skåne to the Danish Capital Region has had profound and sometimes unexpected consequences for the region around the Öresund Strait (OECD, 2012c). Passenger numbers roughly tripled over the course of a decade and the number of daily commuters rose roughly seven-fold to around 20 000 per day. A housing boom ensued on the Swedish side, where property prices were far lower, while employment was concentrated in and around Copenhagen, where salaries are far higher – effectively a degree of integration by specialisation (Decoville et al., 2010). However, Malmö did not simply become part of Copenhagen's commuter belt and some land-intensive activities relocated from Denmark to southern Sweden in search of lower costs. During 2000-09, employment growth in the Malmö region for basic services was 7 percentage points higher and for advanced services it was 14 percentage points higher compared to the Stockholm region. The rate of growth of new jobs in the Malmö region between 2000 and 2009 exceeded both the Stockholm and Gothenburg regions and Sweden as a whole. Cross-border integration stalled for a time following the global financial crisis, and – in contrast to the other cases cited here – the cross-border nature of the integration remains a constraint. Even in the European single market, the persistence of differences in tax legislation, labour codes and other regulatory regimes constitutes a barrier to deeper integration across the Öresund Strait.

Sources: ECMT (1992), *Transport and Spatial Distribution of Activities: Report of the Eighty-Fifth Round Table on Transport Economics Held in Paris on 5-6 April 1990*, ECMT Round Tables, No. 85, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789282105320-en*; Hay, A., K. Meredith and R. Vickerman (2004), "The Impact of the Channel Tunnel on Kent and Relationships with Nord-Pas de Calais", Centre for European Regional and Transport Economics, University of Kent, Canterbury; Chen, C. L. and P. Hall (2012), "The Wider Spatial-Economic Impacts of High-Speed Trains: A Comparative Case study of Manchester and Lille Sub-regions, Journal of Transport Geography, Vol. 24, pp. 89 110; OECD (2012c), *OECD Territorial Reviews: Skåne, Sweden*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264177741-en*; Kveiborg, O. (2013), *Economic Effects of Large-Scale Infrastructure Projects*, BeltTrade, Copenhagen; Ahlfeldt, G. M. and A. Feddersen (2015), "From periphery to core: Measuring Agglomeration Effects Using High-Speed Rail", *SERC Discussion Paper*, No. 172.

Gibbons (2015) provides an overview of some of the issues involved in the decision to invest in large transport infrastructure for purposes of supporting regional development. The evidence for using transport investments as an efficient means to decrease regional disparities remains more than a little ambiguous. First, the superiority of transport over other types of investments to promote regional growth is not clearly established, and, secondly, there is a real risk of displacement going the "wrong" way, triggering the movement of firms and people from periphery to core (what OECD, 2012c, calls "leaking by linking"). That said, fears of a "hollowing out" of intermediate regions are probably exaggerated. Relatively few firms actually relocate in response to new transport connections, though connectivity issues certainly influence the location choices of firms that chose to move for other reasons (ECMT, 1992; Ahlfeldt and Feddersen, 2015). Transport considerations usually come into play only once the decision to move has been taken. Even then, the firm's choice of location is dictated primarily by other things. Thus, while the quality of transport infrastructure is important, it is rarely the decisive factor. Even if firms develop new strategies as a result of the construction of new infrastructure, the spatial pattern of activities may be unaffected or little affected, because the new strategies may entail the movement of persons and goods rather than changes of firm location. It is thus important to take proper measure of the changes taking place in passenger and freight traffic.

The Chūō Shinkansen can stimulate innovation and entrepreneurship

In assessing the potential impact of the *Chūō Shinkansen* and related links, the first thing to bear in mind is that the changes it brings about will probably be marginal in the short term, if only because Japan's transport networks are already so well-developed. The journeys that it will offer are already possible now, even if they take longer. The *Chūō Shinkansen* certainly will provide an important new option on a very well-travelled route, but it will not connect up regions that were previously poorly connected, let alone isolated from each other. This suggests that the economic impact will take time to be felt; the new line's most immediate effect will probably be to intensify intermodal competition (chiefly with air travel) and to increase the number of journeys taken. To be blunt, if the train fares are at all competitive, then few travellers will opt to fly between Tokyo and Osaka unless they have connecting flights to other destinations.

The longer-term impacts depend in large measure on its success in integrating regional investment and innovation systems rather than regional labour markets. Transport costs are at the core of most regional economic development models (Puga, 2012). A reduction in transport costs increases the size of the accessible market for firms, which in turn increases the concentration of firms and production in in attractive locations. The maglev is unlikely to reduce the cost of transporting goods by a significant margin and, as noted above, it will not sustain large-scale commuting flows. Its main attraction for firms is thus likely to lie in providing access to and for highly-skilled employees with a high opportunity cost for their time, such as consultants, researchers and managers. High-speed trains, at least those that are well-integrated into the local transport network, reduce the time spent in transit compared to air travel; compared to car travel, they offer both greater speed and the opportunity to work comfortably during the trip. This is less about labour market integration than new opportunities for business-to-business connections – above all, about learning and investment flows.

First, the *Chūō Shinkansen* should facilitate learning. Researchers and managers are only a small fraction of the workforce, but employees who are engaged in high-value added parts of the production chain have the potential to create significant spillovers both within firms and in their cities and regions. The decisions taken by senior managers affect the productivity of all their workers and ultimately the success of their companies. Empirical evidence shows that high-tech jobs in a metropolitan region create employment opportunities in local service industries for both high-skilled (e.g. teachers or doctors) and low-skilled workers (e.g. cleaners or taxi-drivers) workers. The estimated impact can be substantial: for the United States, estimates suggest a five-fold multiplier effect from employment in tradable high-tech industries. This means that the 12 000 workers employed by Apple in Cupertino generate an additional 60 000 jobs in the wider metropolitan area (Moretti, 2012). The larger accessible area created by the *Chūō Shinkansen* will generate greater potential for knowledge spillovers via the interactions among high-skilled individuals. Employees and firms learn from each other by observation and face-to-face interactions, for which telecommunications solutions are an important complement but a poor substitute (Box 3.7).[31] The new line will offer them more opportunities for such interactions, enabling them to learn about the most efficient production methods and to adapt accordingly.

Secondly, it will also allow for more venture investment, as it will make close monitoring of such investments easier. The evidence on venture capital (VC) markets suggests that distance matters. The number of VC financing rounds a start-up requires increases with the

Box 3.7. **Globalisation, communication and transaction costs**

There is a widespread perception that globalisation in general and the advance of information and telecommunications technology in particular have led to the "death of distance", creating a global economy that is flat and borderless (Cairncross, 2001; Friedman, 2005). If this were the case, then the rationale for the concentration of economic activity in cities would be far weaker than at any time in centuries, and the case for expensive physical connective infrastructure (as opposed to ITC infrastructure) linking relatively proximate places would be hard to sustain. In fact, the evidence to date suggests a much more complex picture of the impact of globalisation on the spatial organisation of economic activity. Spatial transactions costs for routine, standardised and non-knowledge intensive activities have fallen; this drop in transaction costs has formed the basis for much recent outsourcing and the organisation of ever more complex global value chains. However, it would appear that spatial transactions costs for non-routine, non-standardised and knowledge-intensive activities have risen, a fact that is of huge significance in a world in which value creation is increasingly linked to knowledge rather than physical resources. A number of studies find that transactions costs have increased for many knowledge and time-related activities (Bouhol and de Serres 2010; McCann 2007; Duranton and Storper 2008; Disdier and Head 2008). At the same time, McCann (2007) finds that in knowledge-intensive activities, the optimum frequency of face-to-face interaction has increased. It is findings such as these that point to the potential of very fast connections like the *Chūō Shinkansen* to foster the integration not of urban labour markets but of urban and regional innovation systems.

distance between the company and its investors and the amount of capital raised each round decreases with distance (Tian, 2011). The ability to visit their investments on day-to-day basis makes a significant difference for VC investors. Investors bring more than money; especially in early stages of development they can provide expertise, guidance and contacts, as can be observed in the role played by early venture capitalists in choosing the location and business model of the pharmaceutical firm Amgen (Box 3.8). The kind of high-speed connections made possible by the maglev should make it easier and cheaper for VC (and other) investors to engage frequently and face-to-face with the firms they are backing.

The capacity to build well-functioning networks among key local actors can create and sustain economic growth. Starting from very similar fundamental strengths in the 1970s, the metropolitan regions around Los Angeles and San Francisco in California have experienced strongly divergent trends. Both were among the wealthiest US metropolitan regions in the 1970. However, while San Francisco and its Silicon Valley have maintained a leading position, Los Angeles (LA) has slipped from 4th in the country to 25th in 2010. Storper, Kemeny, and Makarem (2015) argue that the greater capacity for organisational change and therefore a greater capacity to adapt to a changing economic environment has been the driver of San Francisco's success. This capacity is largely due to the formation and strengths of interrelated networks of actors and institutions. Storper (2009:49) concludes that "the actor-networks function differently in the two regions – in the Bay Area they are decentralised but criss-crossing, leading to powerful regional identities and the formation of pragmatic coalitions to get things done. In LA, they are decentralised but not criss-crossing, leading to weak regional identities, and a culture of distrust from one locality to another (and especially of the 'big dogs' of LA County and City)."

Box 3.8. **Amgen: Conceived in San Francisco, grown in Los Angeles**

Amgen is a multinational biopharmaceutical company ranked 12th globally in terms of 2014 revenue. Its success is the combination of cutting-edge technology, top researchers and investors experienced in creating marketable products. The company was founded in 1980, on the initiative of several collaborating venture capitalists from the San Francisco Bay area. Initially they tried to find local collaborators, but a saturated market prompted them to look further south, and, as a result, the company in based in Thousand Oaks, California, part of the Los Angeles metropolitan area. This location was chosen, because it was roughly equidistant to the universities of its scientific advisory board and because local housing costs were then relatively cheap and amenities relatively high. Importantly the contribution by the venture capitalists included finding a CEO who could bring together a group of academics for its advisory board, the identification of a law firm that accompanied the incorporation of the company and the introduction of several individuals to the company's board to establish credibility and guide the early stages of development.

Sources: Rathman, G. B. (1999), "'Biotechnology Startups' in Springham", in D.G. and Moses, V. and Cape, R.E. (eds.) *Biotechnology - The Science and the Business*, Taylor & Francis; Bowes (2009); Staton, T. (2015), "The top 15 pharma companies by 2014 revenue", FiercePharma, 18 March, *http://www.fiercepharma.com/special-reports/top-15-pharma-companies-2014-revenue*, (accessed on 1 August 2015).

The contrasting fortunes of Los Angeles and San Francisco underscore the important role played by the cities themselves and their private sectors in fostering the kind of business environment that will enable them to profit fully from the new connections made possible by the maglev. For policy makers in the Tokyo-Nagoya-Osaka mega-region, this will primarily concern enhancing the environment for innovation, entrepreneurship and venture investment. In short, the economic benefits of the new maglev line will depend as much on getting complementary policies right as on the building of the line itself.

The 2020 Olympics

The growth and employment effects of the Olympics are difficult to anticipate…

In September 2013, Tokyo was selected to host the 2020 Olympic and Paralympic Games. Since then, much attention has been focused on the infrastructure development this will entail and on the ways in which these events can enhance the Tokyo area's international competitiveness over the longer term. In keeping with Japanese urban policies, the Tokyo Olympic and Paralympic Games are to feature the principles of compact urban development. For example, most of the venues are to be located within eight kilometres of the Olympic Village. The major infrastructure development projects to support transportation to Olympic venues include the Harumi Line of the Tokyo Metropolitan Expressway, the national road designated as Route 357 and a second ring road. An August 2012 study conducted for the Tokyo 2020 Bid Committee estimated that the Games would generate economic activity in Japan worth JPY 3 trillion (USD 37.9 billion), equivalent to 0.64% of 2013 GDP, and would create more than 150 000 jobs. Spread over many years, that would imply a stimulus of less than 0.1% of GDP per year – far smaller than the estimated effect of the 1964 Games (Kang, 2007). Even so, Mizuho (2014) argues for an even larger impact, of close to 0.3% per year. This, however, is based on simple comparisons of trend growth in countries before the bid was awarded with performance during the run-up to the Games; it leaves out a range of factors found to be relevant in assessing such impacts elsewhere (e.g. Fourie and Santana-Gallego, 2011).

There are in any case good reasons for viewing these impact assessments with great scepticism. There has long been considerable controversy about the economic impact of the Olympic Games on host cities and countries, with critics arguing that bid backers routinely overstate the potential benefits and some assessments finding that the net economic outcomes are negative (see Box 3.9 for an overview of this debate). Even assessments that acknowledge a strong stimulus effect can be critical, as in cases where the environmental and social costs are discounted or where – as has happened for many sporting mega-events – the pattern of public investment was distorted so as to delay or prevent many more economically productive investments (Whiting, 2014). Yet even positive evaluations emphasise that the costs of hosting a major event can rarely be justified in terms of the event alone: it is the success of the event plus the value of the legacy that justify the costs (OECD, 2010a). The Games need to be set in a longer-term strategic vision and plan for building on the Olympic legacy to enhance Metropolitan Tokyo's global competitiveness.

Box 3.9. **Assessing the impact of hosting "mega-events"**

There has long been controversy in many cities about the value of hosting major sporting events like the FIFA World Cup or the Olympic Games. In many cases, the willingness of cities to invest heavily in hosting such events has contrasted with the lack of strong evidence that they yield the kind of tangible long-term benefits that might justify such investment. This contradiction extends to the body of research on the Olympics, in particular, which tends to be divided between studies commissioned by host cities, which tend to identify clear benefits to hosting the Games,[32] and the academic literature, which, for the most part, finds few discernible long-term benefits to hosting the games beyond the satisfaction they provide to residents and officials.[33] In part this may stem from the tendency of the former to rely on input-output models, while academic researchers have increasingly used computable general equilibrium (CGE) models.[34] Collins et al. (2009) emphasise the importance and complexity of assessing the environmental impact of mega events and draw attention to the very difficult methodological issues involved, as well as problems with data availability.[35] Ultimately, of course, there is an additional problem: any assessment is only as good as the implicit counterfactual – the assessment of what would have happened without the games.

However, there are important divergences in the scholarly literature as well. While the consensus as to the elusiveness of an "Olympic dividend" is strong (Madden, 2002; Kasimati and Dawson, 2009; Zimbalist, 2012), estimates of the specific effects and the magnitude of specific costs/benefits vary widely. Some studies find a significant growth effect in the preparation phase but little lasting impact after the games (Kasimati and Dawson, 2009). While many studies acknowledge a significant impact on employment in the run-up to the Games, the employment effects following the games are minimal (Madden, 2006; Kasimati and Dawson, 2009).

Rose and Spiegel (2009) accept the consensus concerning the lack of direct economic benefits of hosting mega-events, but argue that there is a substantial positive impact on trade. They find that trade is around 30% higher for countries that have hosted the Olympics and that this effect is robust and sustained. However, they also find that unsuccessful bids have a similar effect. That, in turn, implies that the Olympic trade effect is a consequence not of the Games themselves, which are signal of something deeper, but of the underlying orientations that prompt a country to bid for the Games in the first place.[36]

Given the importance of tourism in estimating the impact of hosting mega-events, care should be taken to ensure that assessments of the impact consider second-round effects on the tourism sector and not just the number of tourists directly or indirectly attracted

Box 3.9. **Assessing the impact of hosting "mega-events"** *(Cont.)*

to the event. Lee and Taylor (2005) highlight in particular the impact of such factors as diversion of tourism in time (visitors come during the Games who would have come earlier or later[37]) or space (tourism to other parts of the country declines). This is especially relevant for countries that already have a well-developed tourism industry, and it is even more important when much of the habitual flow of tourism is to the city that hosts the event. Fourie and Santana-Gallego (2011:1) conclude that, "in general, results suggest that mega-events promote tourism but the gain is dependent on the type of mega-event, the participating countries, the host country's level of development, and whether the event is held during the peak- or off-season." They find that, other things being equal, non-OECD countries benefit far more from hosting an event than OECD members and that the effects are weaker in countries where tourism demand is already strong. This would suggest that, as an advanced economy with a strong tourism sector, Japan probably has less to gain from the Games now than it did in 1964.

A number of studies point to the importance of idiosyncratic factors in shaping the impact of the Games. Los Angeles (1984), for example, is often cited as a city where the Olympic Games proved to be profitable, but that was the result of the decision to build minimal new infrastructure and to rely almost exclusively on private investment (Appelbaum, 2004). In addition, Los Angeles was the sole bidder that year and was therefore not held to a range of International Olympic Committee requirements. Barcelona (1992) was already on the rise economically, making it difficult to disentangle the magnitude of the Olympic effect, but some assessments certainly suggest that it helped raise the city's global profile, particularly for tourism. Yet even such a re-branding may not last: Zhang and Zhao (2009) show in the case of Beijing how shallow and short-lived the image boost was. In the cases of Tokyo (1964) and Seoul (1988), the benefits appear to be linked to the status of those countries at the time as rapidly emerging trading powers, in line with the findings of Rose and Spiegel (2009). The Games were a clear signal that the countries were open for business and welcoming to investment at a time when their economies were ripe for rapid growth.

Finally, Kavetsos and Szymanski (2009) find evidence that hosting the event, though not necessarily athletic success, does increase the life satisfaction of host-country residents. However, the effect, while strong, is short lived. In sum, there is little evidence that Olympic Games do much beyond what the country/city could achieve otherwise, other than bring residents pride and happiness. This is especially true in cities with high international profiles and strong tourism sectors even before the Games.

One of the major difficulties in assessing the balance of costs and benefits lies in the complexity of assessing costs from bid preparation through the handling of legacy assets and liabilities, and identifying all the relevant expenditure sources, which typically include a complicated mix of public funds, sponsorship, ticket sales, International Olympic Committee funds and other sources (Box 3.10). An even greater one is simply that sporting mega-events are relatively rare and have been conducted in such a wide range of different countries and circumstances that it is difficult to generalise. The specific effects and magnitude of cost/benefits may depend on quite idiosyncratic factors. For example, Oxford (2012) concludes that the London 2012 Games benefited from being a clearly counter-cyclical event. While much of the literature points to the impact of Olympic construction and tourism on wages and costs in those two sectors, the preparation of the Games coincided with a period of weakness in the UK and world economies. Construction workers' wages, in particular, did not increase during the build.

Box 3.10. **Costing the Games: London's experience**

The history of the most recent summer Games, held in London in 2012, illustrates how hard it can be to predict Olympic costs. The Games cost the taxpayer vastly more than expected at the time of the bid in 2005. Indeed, as early as March 2007, the government reported that the public budget for preparation of the Olympics had more than tripled, from an initial estimate of just under GBP 2.4 billion at the time of the bid, to GBP 9.3 billion (USD 14.6 billion). Such overruns are not uncommon: Flyvberg and Stewart (2012) examine the 17 Winter and Summer Games held over the 1960-2012 period for which sufficient data are available and find that the average cost overrun was 179% (median 112%). The respective figures for summer Games were 252% and 118%, respectively.

In the end, the Games did cost the UK taxpayer just about as much as was projected in 2007 – GBP 9.3 billion – though the structure of that spending was very different to what had been anticipated (operational costs were far higher but the construction of the venues was about GBP 1 billion lower than expected). This was in addition to the London 2012 Organising Committee's own GBP 2.2 billion operational budget for the day-to-day running of the Games, which came almost entirely from sponsorship, ticket sales, merchandise and from the International Olympic Committee.

Against this total of GBP 11.5 billion in costs, Oxford Economics (2012) estimates the Games' benefits to the UK economy at around GBP 16.5 billion over 2005-17. That estimate, however, is subject to some of the concerns reviewed in Box 3.5 above – lack of a general equilibrium framework, a lack of clarity with respect to the methods used to derive some estimates and an apparently *ad hoc* handling of deadweight costs, in particular. It is, however, remarkably thorough in considering expenditure, employment and other factors across sectors and across space.

Sources: Berman, G. (2010), "Financing the London 2012 Olympic Games", SN/SG/3790, House of Commons Library, London, 27 July; Oxford Economics (2012), The Economic Impact of the London 2012 Olympic & Paralympic Games: A Report by Oxford Economics Commissioned by Lloyds Banking Group, Oxford, July, available at: *http://www.lloydsbankinggroup.com/globalassets/documents/media/press-releases/lloyds-banking-group/2012/eco_impact_report.pdf*.

...but Japan can do much to hold down costs and maximise the benefits of the Games

Given that Japan is committed to hosting the Games in Tokyo in 2020, the essential question concerns the lessons that can be drawn from the experiences of recent Olympic hosts to make the Games as beneficial as possible. The economic literature surveyed above points to a number of things:

1. To the extent possible, the authorities should aim to **use existing infrastructure and facilities**, upgrading where necessary but limiting the amount of new facilities to be built. Tokyo is undoubtedly fortunate with respect to the first of these points. Its existing infrastructure endowments and its position as a past Olympic host should help to limit the costs that it might otherwise incur.
2. **Location matters**. In some of the world's most expensive cities, perhaps the greatest opportunity cost is the loss of scarce and valuable real estate. This point is more challenging: given land pressure and land costs in Tokyo, there is simply no way to avoid tying up some of the most expensive real estate in Japan for the Olympic sites. The alternative would be inaccessible locations on the fringes of the Tokyo Metropolitan Region, which would hardly be desirable.

3. Precisely because the Olympic venues will occupy some of the most expensive real estate in Japan, it is critical to plan for **the future use/disposal of the Olympic venues** – many past Olympic hosts have been left with "white elephants" – large sports facilities that are expensive to maintain and for which there is little demand. The authorities also might wish to create an Olympic Legacy company or foundation to take forward the infrastructural legacy of the Games. If so, it should be probably created sooner rather than later and should be involved in the preparation of the venues themselves. Tokyo Metropolitan Government has been working on development plans to use the Olympic legacy sites, especially the Athletes Village, which will become a residential area.
4. **Mobilising private finance** is critical, but care must be taken to ensure that this does not result in the Games becoming a rent-seeking opportunity for the architects, construction firms, banks and law firms involved in the process. The pressure to deliver facilities fast in the frenzied run-up to the Games can otherwise lead to spectacular waste and even corruption (Zimbalist, 2012).

London seems to have done rather well so far at managing the post-Games use of many of its Olympic venues: some have been handed over to charitable social enterprises or community groups, some dismantled and relocated, and others adapted to alternative uses. The Olympic Park itself has been redeveloped, renamed and reopened as an important park for East London. However, even London has had difficulties with some sites. The basketball arena was dismantled (it was the largest temporary structure ever erected for an Olympic event) but plans to reuse it in Rio de Janeiro in 2016 came to nothing.[38] Plans to lease or sell the stadium have so far been frustrated and it has been taken into public ownership. Stadiums often pose the largest legacy costs: they are expensive to build and difficult to operate profitably, which is why they tend to be built in most places with taxpayer support.[39] Thus, even the iconic Bird's Nest in Beijing largely stands idle.

OECD (2010a) highlights a number of other issues taken in connection with the London 2012 Games that helped strengthen their orientation towards regeneration, growth management and sustainability. These included:

- Planning public transport investment for the Games with a view to creating a socially and environmentally sustainable Olympics as well as better long-term connectivity for East London.
- The creation of legacy master plans and a strategic regeneration framework for the area.
- The introduction of the "CompeteFor" programme to help local small and medium enterprises (SMEs) improve their competitiveness and respond to the opportunity to get involved in Olympic-related supply chains.

The Games represent an important challenge for multi-level governance

The fourth of the lessons cited above points to the importance of co-ordinated governance in ensuring the success of the Games. The experience of previous hosts suggests that the scope and depth of inter-ministerial involvement and co-ordination across levels of government can be important factors in managing service delivery and infrastructure planning for the Olympics:

- In Sydney, the Olympic Co-ordination Authority (OCA) managed the participation of a wide network of institutions, including the Office of Olympic Co-ordination, in the Department of Premier and Cabinet; the Olympic Construction Authority, housed in the Public Works Department; the Homebush Bay Development Corporation, which

was responsible for providing most Olympic venues; part of the Department of Sport and Recreation, which had responsibility for delivering certain new Olympic facilities; and part of the Department of Planning, which was responsible for securing venues for equestrian and mountain bike events (SOCOG, 2001).

- For the 1988 Seoul Games, each of the government ministries organised special committees to take exclusive charge of projects relating to the Olympic Games. It was incumbent upon all ministries to create a festive mood, encourage public relations for the Games and offer support in manpower and materials. These included the Economic Planning Board and the ministries of finance, justice, sport, agriculture and fisheries, construction, culture and information, and science and technology (SOOC, 1989).
- In preparing for the 2010 Vancouver Winter Olympics, the government of Canada drew up a multiparty agreement that clarified both its financial commitment and its technical support for the city of Vancouver.[40] This agreement addressed such issues as visas and entry procedures, tax and customs relief for the import of goods needed for the Games, financial guarantees equal to the sums allocated by the Province of British Columbia, a federal contribution towards the legacy endowment fund to support the future maintenance and operation of key venues; security for the Games, and allocation and fees for broadcasting. Finally, the government committed to refrain from hosting other important national or international meetings in or near Vancouver in the period immediately before, during or right after the Games (Government of Canada, 2002).

As Olympic planning gathers steam, the Japanese authorities may want to consider the best modalities for organising co-ordination of Olympic efforts across policy sectors and across levels of government from the national to the local.

The Games also offer opportunities to realise important non-monetary benefits

Japan's position as the first super-ageing society to host the Games (Saito, 2013) also merits specific attention at it prepares for 2020 – not least because it will surely not be the last such host country, and its choices will therefore be relevant to others. While it will, as noted above, be desirable to try to limit the volume of new infrastructure to be built for the Games (Japan does not need another public works-driven stimulus package), the Olympics will still require substantial new construction. Ensuring that new infrastructures and facilities are barrier-free and accessible to all will be an important and tangible legacy of the Games. Japan's technological prowess already gives it an edge when it comes to aiding people with mobility and visual problems and other special needs.

The Games will also offer Japan a chance to reinvigorate and deepen its economic and social integration into the larger world. As noted in Chapter 1, there is a widespread perception, both within Japan and abroad, that the country has been turning inwards in recent decades. The Games offer an opportunity to change both the perception and the reality underlying it. To do this, Japan must do more than add more English-language signage in public places. It needs to mobilise local communities not merely to volunteer individuals for assigned tasks but to develop and implement initiatives of their own. For example, MEXT (2014) proposes building on the success of the one school-one nation programme created for the 1998 Nagano Winter Games, expanding it to communities: community and neighbourhood groups could host activities around different events or providing volunteers to help at nearby venues – what MEXT calls a "one-district-one-discipline initiative". Mobilising seniors would be an important element of such initiatives.

Japan will want to leverage the Games to realise other potential environmental and cultural benefits, as well:

- It is important to recognise the Games as an opportunity to pursue environmental improvements. For example, Germany adopted a Green Games Programme for the 2006 FIFA World Cup. Plans for London 2012 included specific provision to use world class standards in sustainable construction.
- One of the major benefits of the Athens Games in 2004 was the restoration of ancient sites and buildings as part of preparations for the Games. This could be especially important for Japan, in view of its exceptionally rich cultural heritage and also of criticism that the (sometimes hasty) preparations for some past Games have harmed the hosts' cultural heritage (Whiting, 2014).
- It is important not to overlook the potential of major events to contribute to local revitalisation. These were important themes for London 2012 and the Manchester Commonwealth Games of 2002. This is not an automatic consequence of bringing investment and visitors into a place for an event. It requires a degree of intentionality, not least the preparation of measures to train workers and in engaging local firms and populations early and intensively. The Lille City of Culture Programme and the Sydney Olympics both achieved very high levels of local participation, ensuring that local inhabitants shared ownership of the event rather than looking on as perhaps disaffected bystanders (OECD, 2010a).

Social policy for large cities

Better urban policies could raise both fertility and female activation rates

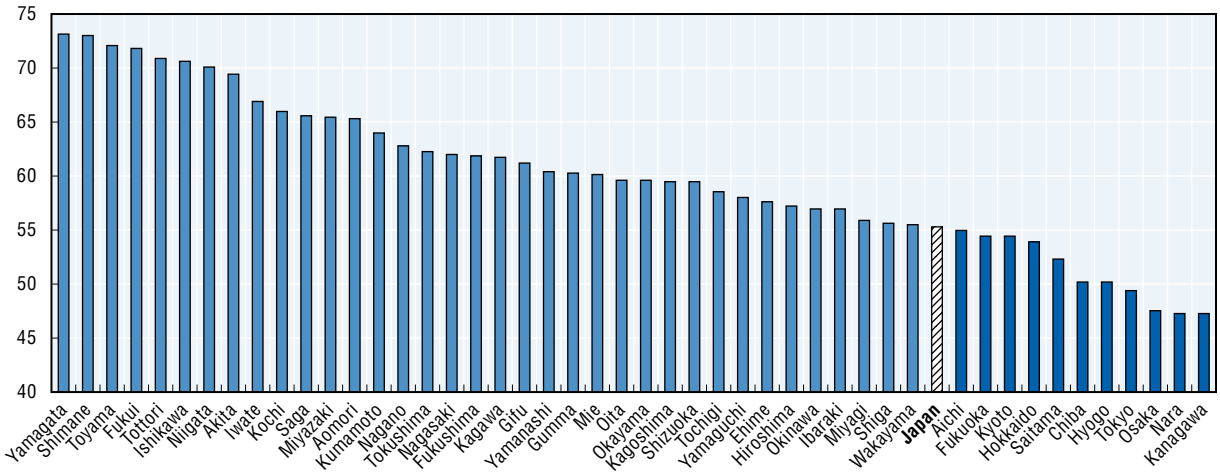
As noted in Chapter 1, the major cities tend to be where fertility is lowest; perhaps surprisingly, the same is true of female labour force participation. The labour force participation rates of prime-age (25-44) married women in Tokyo, Osaka, Hyōgo, Chiba, Kanagawa and Nara prefectures are all 5 percentage points below the rate for Japan as a whole (Figure 3.25). One of major reasons why women in large cities find it hard to combine work and parenthood is the lack of childcare facilities. Since female labour force participation has steadily been increasing, the demand for childcare services has also been increasing even as fertility has fallen. In Tokyo, the demand for childcare services is even greater, since the number of preschool-age children is still growing, in contrast to the rest of Japan (the city's growth more than offsets its lower fertility rate). While the capacity of childcare services is increasing, in 2013, more than 8 000 children in Tokyo were wait-listed for certified nurseries in their neighbourhoods. The authorities are trying to address this: the Act on Child and Childcare Support enacted in 2012 aims to improve both the quantity and quality of childcare service, by providing childcare services for approximately 400 000 additional children by the end of FY 2017 and by improving staff-child ratios and working conditions for staff. It will also extend support to a wider range of childcare services, to reflect different needs.

Spatial development plans and strategies can also help facilitate the combination of careers and family life. For example, long daily commutes seem to be another obstacle for working parents in large metropolitan areas. The average commuting time for working women aged 25-44 in the cities of Tokyo, Yokohama, Kawasaki, Chiba and Saitama was 80 minutes in 2005, compared to 49 minutes in four Hokuriku prefectures,[41] though their average work hours are about the same across the country (Hashimoto and Miyagawa,

2008). Promoting mixed-used urban development in order to make jobs and homes closer at a metropolitan scale is an important long-term urban spatial strategy. Floor area ratio bonuses and other type of incentives could be also used in order to facilitate the provision of childcare facilities at strategic locations in central urban areas.

Figure 3.25. **Share of married women in the workforce, in 2010 (%)**

Participation rate of prime-age, married women, by prefecture



Source: Data from the 2010 Japanese census provided directly by the authorities.

StatLink http://dx.doi.org/10.1787/888933324958

Another option is to develop more childcare facilities at or near railway stations. In 1996, the Japan Railways Co. (JR) opened its first nursery at JR Kokubunji station in Tokyo. Working parents could take their children to the childcare facility at the station and directly take trains to work. JR has since expanded this programme and as of April 2015, it provided 82 childcare facilities of various types at and near stations in the Tokyo metropolitan area, in collaboration with local governments. JR also works closely with childcare facilities near its stations and provides "pick-up" services. In the mornings, parents can drop their children at a station, and JR staff members take them to their childcare facilities. In the evenings, the children are brought back to the station and looked after until their parents collect them. Similar projects are being carried out by all the major railway companies in Tokyo, as well as in Osaka, Kobe and many other cities in Japan.

Some initiatives could help both families with children and the elderly

As noted above, the population ageing challenges that face the large cities differ from those confronting other places. Two particular types of neighbourhoods in large cities call for policy intervention as regards to ageing. The first are decayed and under-invested built-up areas found in urban centres. These neighbourhoods are typically home to large concentrations of older people, who typically live in old wooden buildings that are not earthquake-resilient. Some houses are vacant and poorly maintained. The other places where older people tend to be concentrated in big cities are large-scale housing developments, or "new towns", in metropolitan suburbs. These tend to be houses constructed in the 1960s and 1970s, when urbanisation was at its fastest. In many instances, the concentration of the elderly in these neighbourhoods also creates a concentration of urban poverty. Long-term urban sustainability will be at risk if urban policies do not address these problems.

Urgent action is needed to roll out comprehensive elderly-care services in these neighbourhoods. Given the speed of increase of the elderly, it is also important to continue promoting elderly-friendly rental housing, with care services for those who stay at home, as alternatives to hospitalisation or long-term care facilities. The central government can play an important role in reorganising regulatory frameworks for land use and construction and promoting the provision of elderly-care (or child-care) facilities in existing residential neighbourhoods. For example, while it requires special permission to build office buildings in most residential areas, small office space for elderly-care services could be permitted as a default use of zoning, considering the magnitude of urban ageing. Converting vacant homes into elderly-care (or child-care) facilities should also be facilitated. Moreover, families with children, no less than older people, can benefit from the creation of walkable environments and more accessible public services in these neighbourhoods. Monitoring service accessibility is important here: for example, Portland's "20-minute neighbourhood" programme aims to ensure everyday services within 20 minutes (by walking, cycling or mass transit) and to promote the location of services in neighbourhoods in which they are insufficient (OECD, 2012c). In fact, most of age-friendly urban policies are also good for families with children.

Notes

1. The comparison here refers to the cities themselves, not to the functional urban areas (FUAs), which have far lower densities. Indeed, only 4 FUAs in the OECD area have population densities above 4 000 for the entire FUA. These are Seoul/Inchon, Busan and Changwon in Korea, as well as Tokyo (Japan).
2. The reverse might be argued and often has been that the urban mega-region in central Honshū– and Tokyo, in particular – tends to suck money and talent out of the rest of the economy. However, the fact that concentration is not accompanied by rising wage disparities and a growing productivity gap suggests that rural-to-urban migration is driven by push factors in the regions more than the pull of the capital.
3. This proxy is valid under the assumption that the local labour market is competitive, if this is the case, employee's wages reflect their productivity.
4. The analysis here covers only those countries with metro-level patent data available and more than 2 functional urban areas with populations above 500 000.
5. Kantō, based on Tokyo; Keihanshin, around Osaka and Kyoto; Chūkyō, centred on Nagoya.
6. See Lutz and Ren (2002) for an overview of the literature.
7. Female literacy is by far the biggest factor depressing fertility, as it simultaneously offers women new opportunities outside the home and makes it easier for them to learn how to manage their reproductive careers.
8. It is noteworthy that if one excludes the most prominent outlier, Okinawa, from the figures, the slope of the line steepens and the r-squared reaches almost 40%.
9. Estimates here refer to the FUAs, as defined in OECD (2012a), rather than to the cities defined as administrative units.
10. PricewaterhouseCoopers' "Cities of Opportunity"; A.T. Kearney's "Global Cities Index"; the EIU's "Hot Spots 2025"; Mori Memorial Foundation's "Global Power Cities Index"; Z/Yen Group's "Global Financial Centres Index 17"; fDi Intelligence's "Global Cities of the Future"; Grosvenor's "Resilient Cities"; Arcadis' "Sustainable Cities Index"; and the Reputation Institute's "CityRepTrak".
11. Hong Kong, China; London, New York, Paris, Singapore and Tokyo turn up near the top of almost all of the ratings. A few other OECD cities (Chicago, Seoul, Stockholm, Sydney and Toronto) turn up more sporadically. There are 90 "slots" available in the top-ten rankings reviewed, but only 37 cities are ranked; 6 are found in at least 5 top-ten lists. In all, 50% of the 90 slots were held by just 8 cities. Beijing and Shanghai appear, twice and once, respectively. Singapore and Hong Kong appear in the top 10 on 7 of the 9 lists, but other cities outside the OECD area occupy only 5 of the 90 slots.

12. The main exception being the Mori Memorial Foundation.
13. The zones have been created in the framework of the 2013 Japan Revitalisation Strategy; they are discussed in greater detail in Chapter 4 below.
14. Building standards are particularly important: the 1980 building code addresses the seismicity of buildings and the evidence suggests that it makes a big difference – during the 1995 Kobe earthquake, it was older buildings that tended to collapse.
15. The old-age share of the population in public rental housing is far higher than the average in Tokyo, having risen from 18.6 to 32.2% over 1995-2005.
16. The theory does not encompass the housing market, but such outcomes are consistent with it, if not predicted by it.
17. The 2013 figure was close to 100 000, with 15-29 year-olds accounting for over 80% of the inflow.
18. The Central Circular Route, the Tokyo Outer Ring Road and the Metropolitan Intercity Expressway.
19. In April 2015, a maglev train carrying 49 Japan Railways employees reached a world-record speed of 603 km/h, travelling 1.8 km in 11 seconds. The new record came less than a week after the train had reached 590 km/h, breaking its own 2003 record of 581 km/h.
20. The corresponding figures for Osaka and Nagoya were, respectively, 3.7 m metres^2 (+52%) and 2.1 m metres^2 (+79%).
21. See, for example, the 2014 Global Power City Index produced by the Mori Memorial Foundation: Tokyo
22. At present, there are two commercial maglev systems are in operation: the high-speed Transrapid system in the Pudong district of Shanghai, China, and the low-speed "Linimo" line in Nagoya, built for the 2005 World Expo. China and Korea are both building low-speed maglev lines of their own design, in Beijing and at Seoul's Incheon airport, respectively.
23. On a visit to the United States in 2013, Prime Minister Shinzō Abe observed that the technology could connect the centres of Washington, DC, and New York City in less than an hour (Lippert, 2013).
24. That said, studies point to the importance of adequate investment in the maintenance of public infrastructure. Such investment may be less visible – and thus less attractive to elected politicians – but it can yield important returns.
25. See also Feigenbaum (2013) on the difficulty of making a "purely commercial" case for HSR.
26. This addresses two drawbacks of previous models. Most could not address the spatial interaction that exists within regional transport systems, while others took spatial interactions into account using a partial equilibrium framework rather than a general one.
27. Defined as passenger-kilometres per kilometre of line length.
28. Passenger numbers rapidly jumped from 1.5 to 3.7 million per year, rising at around 6% per annum thereafter.
29. Since the intermediate stops were the results of exogenous decisions, the authors exploit conditions approaching a natural experiment, assigning places with stops as the "treated counties" and comparing them to control cases (counties that were not treated). Once the cases are established, the authors use a difference-in-difference specification to assess the economic impact of the HSR.
30. In addition, the spread of economic activity to intermediate cities may be a result of the pent-up potential in the dense urban area of the Cologne-Frankfurt corridor and is unlikely to be consistently reproduced.
31. McCann (2007) observes that IT interactions tend to be most intensive among co-workers who also have the most frequent face-to-face interactions.
32. See, e.g. Economic Research Associates (1984), Humphrey and Plummer (1995), Oxford Economics (2012), and the study of the London 2012 Games examined by Shapiro (2014), which was commissioned by the government but subjected to no peer review and which came in for sharp criticism on methodological grounds.
33. See, for examples, Madden (2002), Baade and Matheson (2002), Preuss (2004), Giesecke and Madden (2007), Kasimati and Dawson (2009).
34. Blake (2005) argues that the differences between the two approaches can affect the results, with input-output methods tending to produce more positive estimates, owing to the assumption of fixed prices and fixed coefficients in the models. This typically results in much higher estimates

than are generated with CGE models. This is particularly important for estimating tourism demand and the impact of construction expenditure on the economy – two areas of particular importance when assessing the impact of the Games.

35. Ecological footprint analysis has the advantage of taking into account global environmental impact and measures that are easily communicated, but is difficult to implement for large-scale events where too many factors need to be considered. The environmental input-output analysis is more transparent and detailed, but relies on a set industry structure that may not be appropriate and is restricted to national analysis. Both approaches are limited by data availability in linking economic and environmental factors.

36. The authors do not control for the self-selection of countries into the sample of countries bidding for the Games.

37. Oxford Economics (2012) notes that international tourist arrivals typically decline in the year prior to an event, as people postpone visits to coincide with it or seek to avoid the disruption caused by construction of the major infrastructure projects. The case of the London Games is instructive: the United Kingdom received about 5% percent fewer foreign visitors in August 2012 than in August 2011. Those who came for the Games did spend more, but the country had already spent billions of dollars to attract them (The Telegraph, 2012).

38. The idea of using it for the Glasgow Commonwealth Games in 2014 was also floated.

39. If stadiums were good business, the private sector would supply them.

40. This agreement was negotiated and signed by Canada, the province of British Columbia, the city of Vancouver, the Resort Municipality of Whistler, the Canadian Olympic Authority, the Canadian Paralympic Committee, and the Vancouver 2010 Bid Corporation.

41. MIC's social and life basic survey H18 – update.

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Chapter 4

Policies to ensure Japan's regional and rural revitalisation

This chapter is concerned with the revitalisation of Japan's smaller cities and towns and its rural areas. It begins with a review of revitalisation policies in Japan and then presents a brief overview of economic conditions and trends in Japan's intermediate and predominantly rural regions. It then presents the current package of revitalisation policies before turning to three key themes that emerge in discussions of regional and local revitalisation efforts. The first is the relationship between agricultural and rural development policies, which has been evolving in Japan in recent years. The second is the design of policies for geographically challenged regions, such as small islands and remote mountainous areas, of which Japan has many. The third concerns the policy framework for managing infrastructure, service delivery and economic development in places that are destined to lose much of their population over the longer term.

While Japan needs to make its large urban areas more dynamic and productive, it also needs to find better policies for unlocking the potential of smaller cities and rural areas. This chapter begins with an overview of the evolution of policies aimed at promoting the development of Japan's non-metropolitan areas – rural areas, towns and smaller cities – and at their recent economic performance. The discussion then turns to the broad regional revitalisation strategy initiated by the government in 2014 before turning to specific policies concerned with SME promotion, entrepreneurship and innovation, rural development and policies supporting geographically disadvantaged regions. Finally, it explores policies for managing land use, service provision and economic development in towns and cities that are shrinking.

The evolution of Japanese revitalisation policies

The challenges facing non-metropolitan areas are not primarily about demography

The ongoing decline of many second-tier cities and rural areas in Japan is rooted not in demographic trends so much as in structural economic change. Indeed, Japan's rural population began falling in about 1950, long before fertility dropped and the total population trajectory shifted towards decline.[1] Many of its second-tier cities also began to lose population while it was still rising nationally. The principal factor at work was not low fertility or increasing longevity but the movement of labour out of rural activities, owing both to increasing productivity in agriculture and the shift in the structure of the entire economy towards industry and services, where agglomeration economies are particularly important and cities thus have an enormous advantage. Even second- or third-tier cities and rural towns have struggled in the face of such change. For a time, their lower costs and relatively abundant labour enabled some provincial towns and rural areas to benefit from industrial relocation, particularly of space- and labour-intensive industries. However, much of this activity moved offshore in the late 20th century, and the evolution of the Japanese economy towards more R&D- and capital-intensive activities simply reinforced the advantages of the big cities (Elis, 2011). Non-agricultural rural activities have also been hit hard, most notably in the decline of many mining towns and the struggles of smaller ports in the face of consolidation in that sector (Coulmas and Lützeler, 2011).

Japan's complex geography has long exerted a powerful influence on the evolution of regional policies. Although a huge part of the population is concentrated around the three main cities, the rest is dispersed over a very wide area. The country comprises more than 6 800 islands, of which 316 are inhabited. All, apart from the 5 main islands,[2] have fewer than 70 000 inhabitants, but they are spread over such a wide area that Japan's exclusive economic zone covers 4 470 km^2 – 12 times the country's land area. Moreover, much of the country (and, in particular, of the main island of Honshū) consists of mountainous regions and complicated coast lines (35 000km in total). Altogether almost 70% of Japan

is forested (comparable to the levels found in Nordic countries), much of that being quite mountainous as well; only 12% is cultivated, and roughly 8% is given over to roads, residential use and industry. As a result, the country is rich in terms of biodiversity, soil and water resources. However, infrastructure management, particularly for transport, is exceptionally complicated and costly, and many rural communities face unusually severe accessibility challenges. In addition, most of the country is vulnerable to natural disasters, most notably earthquakes, typhoons and tsunamis. Support for geographically disadvantaged regions has typically taken the form of infrastructure investments to improve connectivity, special conditions regarding tax sharing, support for some transport services (regular sea/air transport) and tax breaks for households and firms confronting specific local problems (e.g. for the construction of snow-resistant housing).

As urbanisation accelerated in the 1960s and 1970s, measures to support geographically disadvantaged regions were reinforced by special fiscal support for municipalities facing significant loss of population. These measures tended to focus on the rate of population decline. Not surprisingly, many of the beneficiary municipalities were also geographically disadvantaged. These early efforts relied to a great extent on the "traditional" instruments of regional policy used in other OECD countries: large infrastructure projects and tax breaks to encourage industrial location in particular places. These efforts only ever had a limited impact, and they were undercut from the 1970s onwards by a series of developments, including the oil shocks, which accelerated the structural shift towards high-value services (and thus towards Tokyo); globalisation, which has facilitated the transfer of manufacturing operations from Japan to overseas locations, a process that accelerated in the 1990s with the rise of the yen; and demographic shifts that made it harder for firms to recruit the labour they needed in many areas. Policy since the late 1990s/early 2000s has shifted again, towards reliance on innovation and cluster policies, though infrastructure policies remain important, as do tax breaks for, e.g. companies that relocate some headquarters functions to the regions (Ministry of Land, Infrastructure, 2014). These new approaches, particularly those concerned with innovation and entrepreneurship, are considered below.

Rural policy has changed considerably in recent years

For many years, rural development policy was almost coterminous with agricultural policy. Even as Japanese agricultural policy came to recognise the importance of multifunctionality, farming remained at the centre. Thus, the 1999 Food, Agriculture and Rural Areas Basic Act defined the stable supply of food and the preservation of multifunctionality as its key objectives.[3] Sustainable agricultural production was seen as the means to achieve these two objectives, and rural hamlets were seen as important because they could support agricultural production by collective maintenance of land and water resources. This has lately begun to change, however, with the emergence of initiatives like the "sixth industry", which is explored below. As will be seen, the challenge at present is to manage the trade-offs that sometimes emerge between facets of agricultural policy and rural development policy: in particular, this concerns the balance between the pursuit of higher productivity in farming and the desire to limit the depopulation of rural hamlets. More efficient rice farming might in many cases lead to an accelerated outflow of population. One of the major concerns of this chapter is how to manage these two objectives in tandem.

Regions and municipalities have also been increasingly active

As demographic pressures have mounted in recent decades, the local authorities themselves have tried an ever-wider range of strategies to combat population decline. Some of these have been purely local initiatives and others have been supported by the national or prefectural authorities. So far, nothing has stemmed the tide. The large cities have tremendous advantage in competing for younger people, in terms of the range of available job opportunities, educational opportunities and even "marriage markets". The rise of two-income households tends to reinforce this advantage, because it is easier for both partners to find work in thicker labour markets. As a result, some places have competed to attract retirees instead, and not without success. However, the sustainability of some of the instruments employed is open to question: Elis (2011) notes that subsidies for real estate purchases can be substantial in some places, but it has become clear that cost escalation over time (as the newly arrived retirees grow older) is a problem. Other areas have pursued local policies to support fertility, including awards and even marriage brokerage offered by municipal governments.[4] In some places, relocation subsidies, cheap housing and family-friendly services can indeed work, though this seems to be most promising in places close to a city offering employment and education opportunities.

The current push for regional revitalisation comes at a critical juncture

Japan has now experienced several decades of local and regional revitalisation initiatives. Such policies have been a recurrent priority of governments since the 1970s, in the form of policies aimed at industrial decentralisation, nodal development, relocation of the functions of the capital, decentralisation of corporate headquarters, "hometown revitalisation", and the development of "regional core cities" and "wide community areas" (Sasaki, 2015). Even leading government ministers acknowledge that there is a need to explain how and why the current effort will be different;[5] otherwise, there is a very real risk of cynicism about how much difference it will make. Some observers are already expressing concern about the failure of many subnational governments' local revitalisation plans to engage critically with past policy failures, as well as inadequate assessments of local resources, capacities and demographic prospects (Nishimura, 2015).

Nevertheless, there are some reasons to think that this time can be different. First, the Masuda Report on the consequences of depopulation (Box 4.1), which appeared in 2014, has galvanised a large part of the political elite, particular those active in regional and local politics in places that are losing population. Secondly, public interest is also high. A Dentsu poll of 10 000 people conducted in April 2015 found that 80% were aware of the local revitalisation policy (though only about a third knew of its content) and three-quarters favoured steps to counterbalance the concentration of people and activity in Tokyo. Such awareness matters, because the "local revitalisation" initiative is predicated on developing a national popular movement: the aim is not to impose a central vision on the country from the top down but to use central leadership to mobilise bottom-up initiative in local communities (Kido, 2015). Thirdly, fiscal pressure is another factor setting the current effort apart from those of the late 20th century or even the early 2000s: local revitalisation is seen as central to generating growth and to longer-term prospects for putting Japan's public finances in order. Finally, the current effort to build and sustain a whole-of-government approach to revitalisation is encouraging, in view of the often confusing multiplicity of objectives and mechanisms that have prevailed in the past. Sustaining this effort will be critical.

Box 4.1. **The Masuda Report**

In the midst of Japan's demographic transition, and in light of previous policies' perceived inadequacies, the Japan Policy Council (JPC) in May 2014 published a study entitled "Stop Declining Birth Rates: The Local Revitalisation Strategy", which sought to galvanise debate and policy making on the intersection between ageing and the economy. The report is often referred to as the "Masuda Report," after JPC chairman Hiroya Masuda. The report attracted widespread public attention with its stark warning that 896 local governments – roughly half the total - risked "extinction" by 2040 through further declines in their populations of young women. It argues that the best response to regional decline would be a strategy of building "regional cities attractive to young people," by forging a "new structure of agglomeration" and a "choose and focus" strategy of investment. The report emphasises the need to make these regional cities into the nodes of networks that function to "dam" the flow of younger people into the largest cities.

This approach is consistent with some recent government initiatives, particularly those of the Ministry of Internal Affairs and Communications (MIC), which Mr Masuda previously headed. The "autonomous settlement region," which the MIC inaugurated in 2008, is anchored on "core" regional cities of at least 40 000 residents, building on transport, information and communication technologies (ICT) and other networks to link them with surrounding towns and villages and rationalise the region's distribution of health, education, and other services. As of February 2015, there were 85 of these regions. The programme is financed with special incentive measures in the special "Local Allocation Tax" (LAT) (ordinarily used for emergencies). From fiscal year 2014, these incentives were increased to JPY 85 million for the core city and JPY 15 million for each area community (Ministry of Internal Affairs and Communications, 2015).

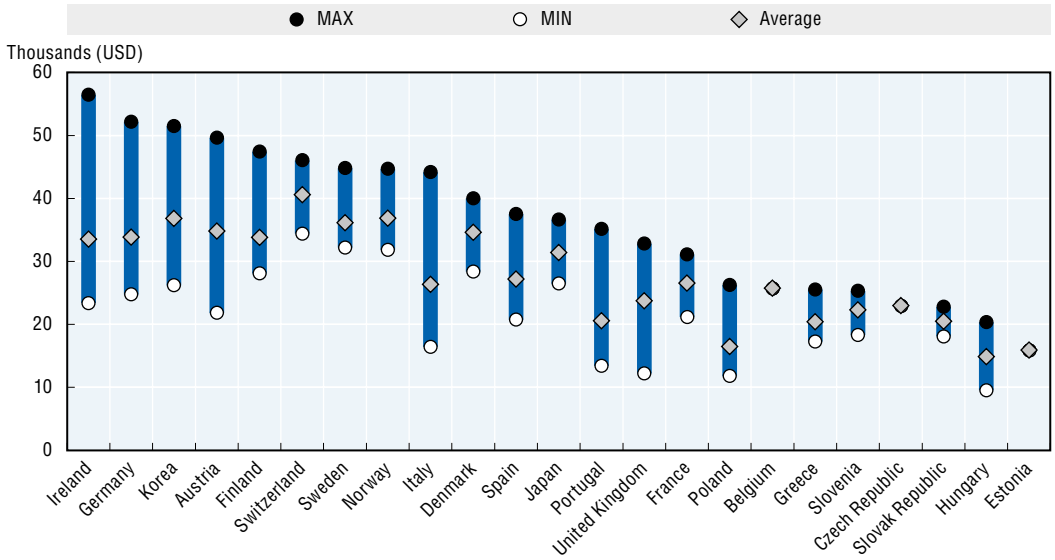
The Masuda Report was presented to the Council on Economic and Fiscal Policy, the Industrial Competitiveness Council and other ranking policy-making organs. Its warnings and recommendations, and subsequent interventions by the JPC, have become important sources of inputs into, and showcases for discussion of, the revitalisation strategy. The report and the follow-up to it have been important in provoking discussion across Japan, as well as in focusing attention on the need to overcome sectoral policy approaches in favour of more integrated strategies for adapting to demographic decline.

Economic conditions and trends in performance

Japan's rural regions are still relatively prosperous by OECD standards

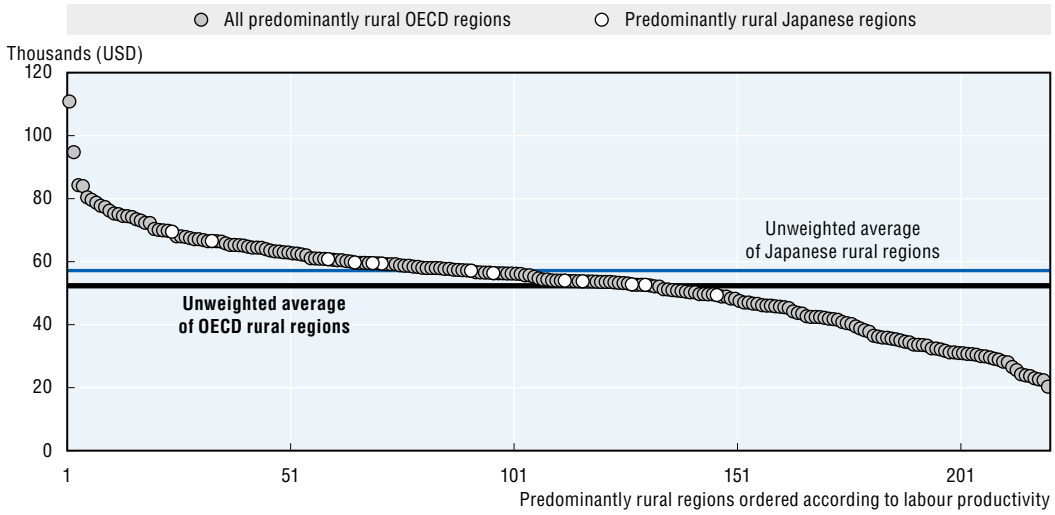
This chapter is devoted to the challenges facing Japan's non-metropolitan regions, including smaller cities and towns, as well as rural areas. These are considerable. Nevertheless, it would be a mistake to focus on the problems to such an extent as to overlook some of the considerable strengths of such regions. Some of these have already been touched on in previous chapters, which have underscored the relatively low inter-regional disparities in general in Japan and, in particular, the fact that the income gap between predominantly rural (PR) and predominantly urban (PU) regions is among the lowest in the OECD. Rural regions in Japan also offer many advantages in terms of quality of life. This section reinforces that analysis by benchmarking predominantly rural Japanese regions against those of other OECD countries. While rural regions in Japan have tended to grow slowly – like all regions in Japan – they nevertheless exhibit certain strengths when seen in an OECD-wide context. In particular, GDP per capita in Japan's predominantly rural regions was about 13.6% above the OECD average for such regions in 2012 (Figure 4.1), and only one Japanese PR prefecture was more than 10% below the OECD-wide average. Labour productivity in such prefectures was also about 10% above the OECD average in 2011 (Figure 4.2). This is particularly remarkable given that Japan's economy-wide labour productivity is now below the OECD average (OECD, 2015a).

Figure 4.1. **GDP per capita in predominantly rural regions, 2012**



Source: OECD (2015b), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).
StatLink *http://dx.doi.org/10.1787/888933324967*

Figure 4.2. **Output per worker in predominantly rural regions**
OECD and Japanese TL3 regions, 2011 or latest available data



Source: OECD (2015b), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).
StatLink *http://dx.doi.org/10.1787/888933324973*

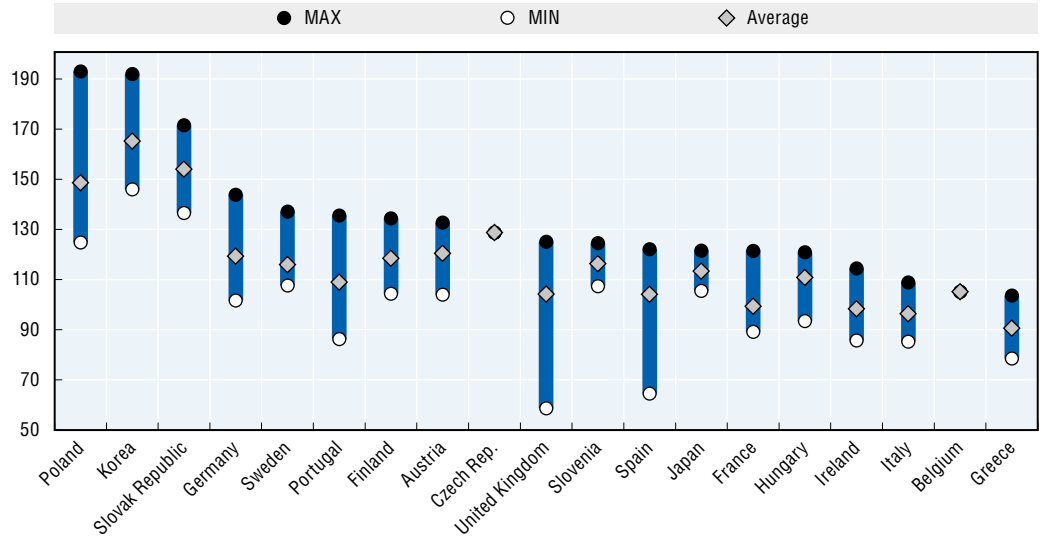
Growth has been weak but labour market performance has been relatively good

Not surprisingly in view of Japan's national performance, the country's PR regions have exhibited lacklustre growth performance in recent years. Even so, data for 2001-12 show the country's rural areas very much in the middle of OECD rural regions when it comes to the growth of GDP per capita (Figure 4.3). As was seen in Chapter 1, of course, this owed much to population outflows rather than to strong aggregate growth performance. Those outflows have caused much concern, since many rural communities have been losing their

most productive young people, but this smooth labour market adjustment has ensured that rural Japan does not experience the very high unemployment seen in many OECD rural regions. Indeed, as is clear from Figure 4.4, PR regions in Japan perform exceptionally well when it comes to labour market outcomes, especially unemployment. Labour force participation rates are above the average for PR regions in all but three of Japan's PR prefectures. Employment rates are above, and unemployment rates below, the respective OECD averages in all of Japan's predominantly rural regions.

Figure 4.3. **Change in real GDP per capita 2001-12, predominantly rural OECD regions**

2001 = 100

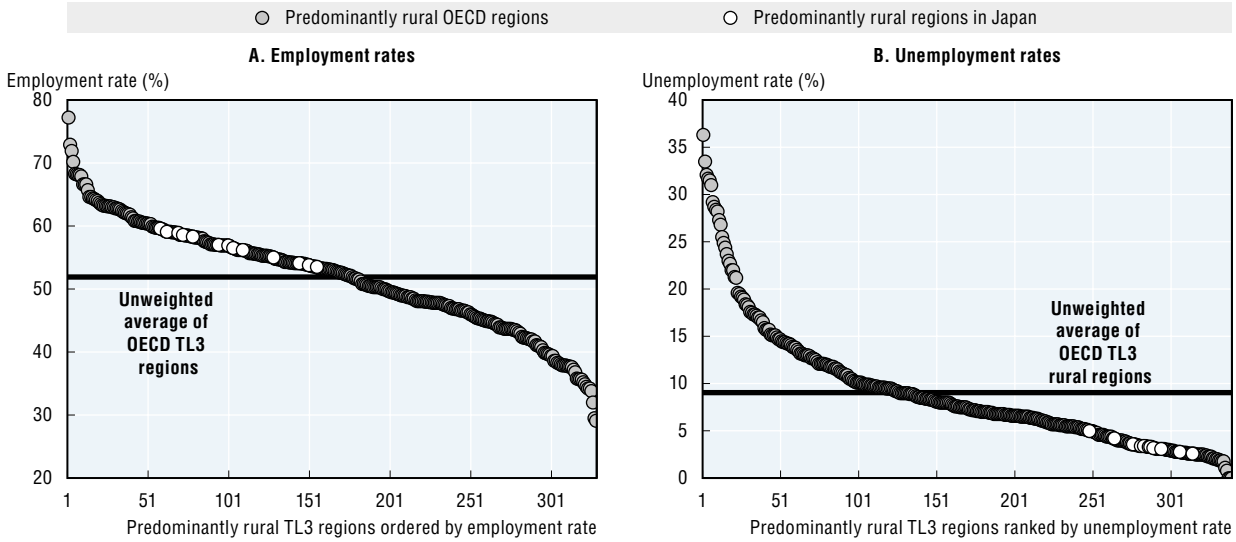


Source: OECD (2015b), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

StatLink *http://dx.doi.org/10.1787/888933324981*

Figure 4.4. **Labour market performance: Rural regions in Japan and the OECD**

2013



Source: OECD (2015b), *Regional Statistics* (database), *http://dx.doi.org/10.1787/region-data-en* (accessed 10 September 2015).

StatLink *http://dx.doi.org/10.1787/888933324999*

Policies for regional revitalisation

A new scheme for National Strategic Special Zones is being put into place

A new scheme for "National Strategic Special Zones" (NSSZs) was launched in 2014 as part of the 2013 Japan Revitalisation Strategy (Box 4.2). Special zones have long been a prominent feature of Japanese regulatory reform efforts, most notably the Special Zones for Structural Reform (SZSRs) launched by the government in 2002; by the end of 2014, there were no fewer than 1 235 such zones. These created the opportunity to experiment and pilot reform ideas in specific places, and it was hoped that such experiments would be a way to circumvent bureaucratic resistance to reform. The SZSRs were created at the initiative of local governments. Although a number of reforms piloted in the zones were extended to the whole country and their impact on investment and employment creation appears to have been positive, they achieved only limited success. This was in large measure because many of the proposals ran into entrenched opposition, not least from some central ministries (OECD, 2015c). In 2011, seven "Comprehensive Global Strategic Special Zones" were created to improve the business environment in cities, while a number of "Comprehensive Special Local Revitalisation Zones" were created for agriculture, tourism and culture. They provided for tax, fiscal and financial support as well as regulatory exceptions. By September 2013, 41 such zones for local revitalisation had been designated.

Box 4.2. **National Strategic Special Zones**

In March 2014, the government approved the creation of six National Strategic Special Zones. Considerable effort has been made to ensure strong national and local backing for them. A national-level Council on National Strategic Special Zones is chaired by the Prime Minister and includes the Minister of State for National Strategic Special Zones, other relevant ministers and private-sector experts. Each Special Zone has a headquarters, bringing together the Minister of State for National Strategic Special Zones, the mayor and local business leaders. The headquarters collects regulatory reform ideas from the private sector, which are then examined by the central government's Council. The reforms can be extended nationwide. Once the reforms are agreed, the local headquarters is responsible for implementation. The six zones designated in March 2014 include major urban areas:

- Tokyo area: centre for international business and innovation
- Kansai area (Osaka, Kyoto and Hyōgo prefectures): hub for medical innovation and human resources
- Okinawa prefecture: international tourism centre
- Fukuoka City: promotion of start-up businesses through employment reforms
- Yabu City, Hyōgo Prefecture: reform centre for agriculture in mountainous regions
- Niigata City: reform centre for large-scale agriculture

The National Strategic Special Zones' main objectives are: i) formation of international centres with the "best environment in the world"; ii) creation of international innovation in healthcare; and iii) the formation of action centres for agriculture. These objectives are to be achieved through regulatory reforms in urban development, education, employment, medical care and agriculture. The zones are intended to spark private-sector investment.

Source: OECD (2015c), *OECD Economic Surveys: Japan 2015*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/eco_surveys-jpn-2015-en*.

The new zones differ from them in several important respects.

- The central government is playing a much stronger role in the definition and creation of the NSSZs, as well as in running them. Local political and business leaders are also deeply involved, so the approach is based on a search for social consensus rather than on top-down decision making.
- The NSSZs provide for the possibility of tax breaks and subsidies.
- The NSSZs are meant to be fewer but more significant; under the 2002 scheme, some 5 725 proposals for zones were put forward and 1 235 SZSRs were created. This time, there are just six, four for major urban areas and two focused on agriculture and rural regions.

The zones' success will depend on the ability of the new structures, which bring together national government, local governments and business leaders, to advance and implement bold reforms. Although there is broad consensus on the need for deregulation, resistance to specific reform measures is often very strong. In the Fukuoka zone, for example, an attempt to relax employment protection for regular workers in venture businesses less than five years old was blocked (OECD, 2015c).

SME policies need to make the sector more dynamic and more internationally integrated

As noted in Chapter 1, Japan's small and medium enterprise (SME) sector is very large and constitutes the backbone of many local economies. However, it is not particularly dynamic. OECD (2015c) reports that government support constitutes 10% of SME financing – 20%, if guarantees are included. This helps keep many low-productivity SMEs afloat – so-called "zombie firms", which would probably fail if they were forced to rely on market-based financing (Solomon, 2014). Indeed, bankruptcy rates in Japan have fallen steadily for a decade, at a time when, owing to the crisis, they have tended to rise in most countries (Solomon, 2014; OECD, 2015c). It is important to recognise that the problem with firm turnover identified in Chapter 1 is linked to efficient exit as well as easy entry: continued public support for inefficient SMEs is an impediment to entry as well as exit, since it distorts competition in favour of incumbents and allows weak enterprises to soak up investment and other resources that might have been more efficiently deployed elsewhere. Given Japan's productivity challenge, as well as its fiscal problems, it is essential to focus (limited) support on start-ups and to push SMEs towards more market-based financing. Government financing support should be limited to financing gaps that arise as a result of identifiable market failures and the cost of support (especially loan guarantees) should be sufficient to discourage heavy reliance on this source of finance.

This does not mean that there is no room for effective SME policies in Japan's revitalisation. On the contrary, there are a number of steps that can be taken to help SMEs adapt and grow even while putting them under pressure to become more competitive. One way would be to build on the Ministry of Economy, Trade and Industry's (METI) promising one-stop support initiative for SMEs to create a sort of "SME extension service", comparable to the agricultural extension services that exist in many OECD countries. Agricultural extension is the function of providing need- and demand-based knowledge in agronomic techniques and skills to rural communities in a systematic, participatory manner; it helps farmers access scientific research and to apply that new knowledge to agricultural practices. Something similar could be done for SMEs (and start-ups) in respect

of, for example, innovation and internationalisation. METI is already active in these areas, but it could help to bring as many such functions together under the aegis of the one-stop shops, which could in turn serve also as local platforms for collaboration among firms.

Internationalisation should be central to these efforts. METI's 2011-13 Framework for Supporting SMEs in Overseas Business exceeded its targets and demonstrated the potential demand for such support, but more systematic efforts could be undertaken by national and subnational authorities to help SMEs overcome the barriers to integration in global value chains. While the indicators of low SME internationalisation in Japan are partly the result of their close links to large companies and the prevalence of indirect trading through general trading houses (*shosha*), METI research points to Japanese SMEs' lack of experience, human resources, marketing and other know-how necessary for internationalisation (EJCIC, 2012). These are the same kind of obstacles facing SMEs in many countries (Wilson, 2007; OECD, 2009a). METI is active in these areas, but regional and local actors can also help their SME populations with these issues, particularly by organising the collection and dissemination of information and regional/local marketing efforts. On the basis of a comparative study of SME experiences in the Asia-Pacific region, APEC (2014) emphasises, among other things, the promotion of supply-chain finance and financial skills training, support for collaboration and clustering of SMEs, and assistance with standardisation and certification procedures (and, where possible, cross-border harmonisation of the same). Wilson (2007) underscores the importance of governments acting, at home or in international negotiations, to reduce the administrative burden of cross-border activities, the quality of advisory services and steps to encourage local networks to integrate into larger regional, national and international ones.

The potential pay-offs to such efforts are significant. METI analyses show a clear and positive correlation between SMEs' outward foreign direct investment (FDI) and their rates of employment growth (EJCIC, 2012). Despite the fear that outward FDI might involve "outsourcing Japanese jobs", it seems to be the case that such firms retain core functions in Japan even as they enhance their competitiveness by internationalising.

A range of programmes now exist to support innovation in Japanese regions

The OECD defines innovation as "the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations" (OECD, 2011a). It thus encompasses a wide range of activities in addition to science-intensive research and development (R&D), including changes to production processes, management and organisation, training, testing, marketing and design. It is a social, institutional and geographical phenomenon, not just a technological or sectoral one. While science-intensive innovation tends to be concentrated in the largest cities, other forms of innovation can be, and often are, far more widespread. Moreover, there are opportunities for less populous areas to participate in high-tech innovation processes: Orlando and Verba (2005) find that incremental innovations associated with mature technologies are easier to anticipate than innovations in newly emerging technologies. This means that firms and investors involved in developing relatively mature technologies can plan in advance to locate in less populous, less costly places. Patent data tend to support this view. The implication is that policies that mitigate distance from thick markets and sources of knowledge spillovers can make less populous places more appealing to such innovators.

Japan's regional innovation policies have long been characterised by cluster initiatives. There are various programmes to support industrial and knowledge clusters, depending on focused sectors and supporting ministries. The Ministry of Education, Culture, Sports, Science and Technology (MEXT) also promotes large-scale research collaboration among universities and companies for innovation, which could contribute to competitiveness of regions (Box 4.3). In addition, the Ministry of Economy, Trade and Industry (METI) has extensive programmes to revitalise SMEs through innovations. Although the initiatives by different ministries are gradually being integrated and co-ordinated, they remain rather fragmented and complex. For example, the Tokai region (Gifu, Shizuoka, Aichi and Mie

Box 4.3. **Regional innovation policies in Japan**

Japan's regional innovation polices have been driven mainly by two ministries: the Ministry of Economy, Trade and Industry (METI) and Ministry of Education, Culture, Sports, Science and Technology (MEXT).

METI's **Industrial Cluster Programme**, started in 2001, aimed to enhance the competitiveness of Japan through industrial clusters formed by local small- and medium-sized companies and venture businesses utilising "business seeds" developed by universities and other research institutions. By 2009, the METI promoted 18 projects nationwide based on the Industrial Cluster Plan starting from fiscal year 2001 through close partnership between METI's regional Bureaus and about 10 200 regional SMEs taking on the challenge of new businesses and researchers etc. and more than 560 universities in total. Each cluster tried fostering network formation while also developing specific businesses. METI has allocated JPY 16.6 billion as the budget related to these activities in FY 2009. METI estimated more than 70 000 new businesses were launched under the Programme between FY 2001-07. After METI's direct support ended in 2009, each project maintains and develops their network and activities by themselves. Since 2014, METI's cluster support has been focused on smaller projects led by highly motivated private companies. Project managers are appointed to help the clusters, mainly with distribution channels: the idea is to link local actors, who are familiar with local assets, to outsiders who can help them tap wider markets.

MEXT's **Knowledge Cluster Initiative**, started in FY 2002, aimed to create accumulation of knowledge for internationally competitive technological innovation by collaborative research among research organisations, R&D-oriented companies, and universities as a centre of knowledge. MEXT is supporting 15 regional clusters nationwide, among which 11 are global (to create regional innovations that are internationally competitive) and 4 are local (to create regional innovations that may be small in scale but maximize local characteristics). MEXT's budget for FY 2009 was JPY 8.7 billion. The clusters produced more than 8 000 academic papers and 2 500 patent applications between 2002 and 2008 (Ministry of Education, Culture, Sports, Science and Technology, 2009).

In FY 2011, the MEXT, in collaboration with the METI and the Ministry of Agriculture, Forestry and Fisheries (MAFF), introduced the **Regional Innovation Strategy Support Program**. The MEXT, METI and MAFF jointly selected 24 regions (9 regions for strengthening international competitiveness and 15 regions for advancement of research function and industrial concentration). The three ministries provide co-ordinated support to these regions.

Besides, the **International Science Innovation Hub Development Project** provides support for the construction of research facilities. In FY 2012, the MEXT selected 15 projects nationwide. Since 2006, the MEXT also started the **Program of Innovation Centre Creation for Advanced Interdisciplinary Research Areas**. This programme supports large-scale joint research among universities and companies which can lead creation of new growth industry. Twelve projects are selected.

Source: Ministry of Economy, Trade and Industry (2009), 2009 Industrial Cluster Policy Brochure, available at: *www.meti.go.jp/policy/local_economy/tiikiinnovation/source/2009Cluster(E).pdf*; Ministry of Education, Culture, Sports, Science and Technology (2012), Brochure on Regional Innovation Strategy Support Program 2012, *www.mext.go.jp/english/science_technology/1324629.htm* (accessed on 6 August 2015); Ministry of Education, Culture, Sports, Science and Technology (2009), Brochure on Knowledge Cluster Initiative, 2009 edition, *www.mext.go.jp/a_menu/kagaku/chiiki/cluster/1288448.htm* (accessed on 7 August 2015).

prefectures), internationally renowned for its manufacturing (*monozukuri*) industry, has been supported by one knowledge cluster initiative, two industrial cluster projects and four regional innovation strategy support programmes. Most of these cluster projects are technology-oriented and organised by industrial sector (nanotechnology, life photonics, energy, etc.).

From the competitiveness point of view, regions and cities need to think about how to link these different activities and stimulate cross-sectoral interaction, which could lead further innovation, and how to diffuse the results of innovation to a large number of companies and residents. The problem with a purely sectoral approach is that many of the most important innovations occur between sectors – e.g. the emergence of handheld devices for telephony, Internet use and even the viewing of film and television. Strengthening connectivity will play a crucial role (in metropolitan Japan, this will be an important function of the *Chūō Shinkansen*, as seen in Chapter 3). For Japan, however, policies to promote networking of individuals and institutions in a global setting could be more urgent. Both METI's Industrial Cluster Programme and MEXT's Knowledge Cluster Initiative promoted exchanges and tie-ups with overseas clusters to some extent (Ministry of Economy, Trade and Industry, 2009; Ministry of Education, Culture, Sports, Science and Technology, 2009), although few joint innovation actions were found. Networked innovation can also open a new window for smaller cities and regions without full capacity to enter large-scale, international projects led by other cities and regions. Multinational enterprises and universities have a critical role to play as knowledge conduits for local SMEs. In order to support inter-urban networks, government financial support could prioritise joint projects undertaken by individuals and institutions located in at least two different cities/regions.

Since FY 2011, MEXT, METI and MAFF have selected regions that have proactive and prominent initiatives formulated through collaboration among local governments, firms and research institutions, and financial institutions as "regional innovation strategy promotion areas" and have built a system to offer support for continuous development from the research phase to commercialisation. As of FY 2014, there were 40 regions so designated, including 15 "regions for the enhancement of international competitiveness" and 21 "regions for the enhancement of research functions and industrial clusters". The former are reckoned to have the basis for world-leading technologies and the potential to attract people and resources from overseas, while the latter have been selected for their potential to secure overseas markets in the future. The remaining four regions were selected to receive assistance in connection with reconstruction following the Great East Japan Earthquake.

Innovation and entrepreneurship must go hand in hand

Entrepreneurship has been recognised as one of the main engines of economic and social development. It is also critical to any innovation promotion effort, especially in non-metropolitan areas, where innovation is less likely to occur in large, established companies. New ideas and technologies do not create jobs or value added; entrepreneurs do. Innovative ideas, products and processes need entrepreneurs to bring them to market. According to a US National Commission on Entrepreneurship report (NCOE, 2001), innovation is the most important contribution of entrepreneurship at the local level. Together, entrepreneurship and innovation can generate economic growth and new wealth for a locality; and ultimately they improve quality of life for local residents (NCOE, 2001). Innovative entrepreneurship can have many local spillover benefits for existing local businesses (Acs and Audretsch,

1988; Acs and Varga, 2004; Drucker, 1984, 1985; Pavitt et al., 1987). In the second half of the 20th century, small entrepreneurs in the United States were responsible for 67% of inventions and 95% of radical innovations (Timmons, 1998). They have fuelled job creation and economic growth.

For innovation and entrepreneurship to flourish, the costs of failure must be reduced

The problem for Japan is that, as seen in Chapter 1, its entrepreneurship performance looks comparatively weak by international standards. Entrepreneurship is not widely seen as an attractive or respected option (see the survey data in OECD, 2013), and entrepreneurial failure tends to be very costly, not least because entrepreneurs and small-business owners often have little choice but to guarantee company debt, borrowing against their homes and other personal assets. Business failure often means personal bankruptcy and loss of one's home (Solomon, 2014). This a particularly strong deterrent to older people considering entrepreneurship. Some go so far as to argue that the social stigma and financial repercussion of failure are so great that the founders of failed businesses become social outcasts, a risk few Japanese wish to take; those with reasonably good employment prospects, in particular, will be less likely to consider entrepreneurship, an activity that may thus – by default – be left largely to those whose chances are poorer (Wadhwa, 2010; Makinen, 2015). In a 2012 survey, the share of Japanese who thought that failed entrepreneurs should have a second chance was the second lowest in the OECD area (OECD, 2013). Not surprisingly, the employment prospects of failed entrepreneurs in Japan do appear to be poor, as are their chances of securing the funding needed to try again. This is a particular problem, because in other countries successful entrepreneurs often succeed only at the second or third attempt – after they have learned from failure. If failed entrepreneurs are less likely to enter the field again, then more entrepreneurs will be first-timers, making first-time mistakes.[6] Little learning will occur. This contrasts with the experience of places like Silicon Valley, where the motto of "fail fast, fail cheap, and move on" is often quoted (Lee et al., 2011).

This is something the government is determined to address, having set explicit targets for increasing new start-ups over the coming years. To some extent, this may entail a degree of cultural change, which may not be easy or quick. Numerous observers, including Prime Minister Shinzō Abe (Nash, 2015), suggest that Japanese society is relatively risk-averse (Tabuchi, 2012; Kopp, 2012), and some survey data do indeed point to this conclusion (Iwamoto et al., 2012). Cultural change is often a slow and difficult process, but it can occur and policy can help to promote it. As Lindbeck (1995) and others have shown, cultural norms and habits do not exist in a socio-economic vacuum: they are themselves shaped by rules, institutions and incentives.

Here there are some steps that Japan can take to stimulate entrepreneurship, in particular by making entrepreneurial failure cheaper. The bankruptcy reforms of the last decade have already had a palpable positive effect in encouraging entrepreneurship among young, high-skilled Japanese (Eberhardt, Eisenhardt and Eesley, 2014), and further reforms are planned. The Civil Code is to be revised so that SME managers and entrepreneurs can in part be released from personal guarantees on corporate debt in certain (still to be specified) circumstances. Since these amendments will take time to prepare, the government has already asked banks to allow personal debt forgiveness to managers of bankrupt firms under certain conditions (Solomon, 2014).[7] As noted in Chapter 1, the Revitalisation Strategy also includes steps to promote venture capital, and METI's start-up support

programmes now include loans and guarantees that are unsecured, with no need for guarantees and even the possibility of funding for second-attempt start-ups. Interest rates are slightly lower for women, youth and seniors (Ministry of Economy, Trade and Industry, 2013). Entrepreneurship education is also taking root, with support from the government, but most programmes are still quite small. Regional and local authorities could do much here, expanding such programmes and designing curricula to reflect local conditions. Local communities, especially in rural areas, can also do much to increase social recognition of entrepreneurs and of the contributions their business ventures make to local revitalisation (OECD, 2011a).

Some rural areas are well-placed to attract entrepreneurs in knowledge-intensive services

As noted above, the shift towards an economy dominated by services initially reinforced the advantages of the big cities at the expense of non-metropolitan areas. However, this may be changing to some extent as a result of the growth of the information economy. Rural areas with attractive landscapes and amenities – and especially those that combine these attributes with good external connectivity – could make themselves into attractive locations for start-ups in knowledge-intensive service activities (KISA). A relatively new trend in entrepreneurship mixes knowledge-based competitiveness and services; it has been growing rapidly in amenity-rich rural areas of many parts of OECD countries since the turn of the century. OECD (2007) has published a list of KISA industries based on their International Standard Industrial Classification (ISIC). According to recent research (OECD, 2006; Martinez-Fernandez, 2010; Lafuente, Vaillant and Serarols, 2010; Vaillant, Lafuente and Serarols, 2011), KISA firms are both sources and carriers of knowledge that influences and improves the performance of clusters across all sectors of the economy. KISA firms cover management and business consulting, ICT, professional, health and legal services, together with insurance and financial services.

Although KISA firms have long been more common in large metropolitan areas, some rural regions have seen rapid growth in KISA, largely as a result of "amenity migration" (Vaillant, Lafuente and Serarols, 2011). Entrepreneurs and staff of KISA firms are often attracted to amenity-rich rural areas that are easily accessible to major urban areas. It is worth highlighting that, in contrast to technology-based manufacturing, KISA firms have tended to spread much more widely across rural territory. In Spain the autonomous region of Catalonia led the way in the growth of rural KISA firms, with up to 10% of new KISA firms created between 2003 and 2006 established in rural areas (Lafuente, Vaillant and Serarols, 2010). And while rural areas usually lag far behind their urban counterparts in knowledge-based firm creation (Roper and Love, 2006), the proportion of rural KISA firms in this amenity-rich region of Spain increased faster than in urban areas during the early 2000s (OECD, 2009b). The increased entrepreneurial activity of rural Catalonia has been accompanied by rising economic prosperity, with most parts of rural Catalonia benefiting from above-average economic growth (Lafuente, Vaillant and Rialp, 2007). In Japan, this sort of dynamic underlies the emergence of a small but growing IT cluster in the small town of Kamiyama (Box 4.4)

Although KISA firms are not intensive creators of employment, they generate economic spillovers for the (often low-density) communities in which they are located. Many KISA firms are one-person firms constituted by self-employed professionals. Apart from the fiscal benefits generated by the presence of KISA firms, they help retain wealth locally, as local firms and individuals use their services; and they create new wealth by generating

revenues that complement existing services. Moreover, not only are KISA firms attracted to amenity-rich areas, they add to these amenities through the local supply of their services, as in the case of the Sunshine Coast (Box 4.5).

Box 4.4. **Green Valley, Kamiyama**

Kamiyama, a rural community in Tokushima Prefecture on the island of Shikoku that set out to attract IT start-ups several years ago. The programme was launched by Green Valley, a non-profit private group, and was designed to revitalise the town by offering abandoned houses to IT engineers and other workers as satellite offices. The project is small but it has attracted 10 IT ventures to this town of 6 100 since 2010 years. Underlying Kamiyama's bucolic appeal is an advanced IT infrastructure built with the help of the prefectural government's drive to extend broadband access to its entire territory. Fibre optic cables have been installed in each house and the monthly fee is low (JPY 2 625 in 2013) Data speed in Kamiyama is about 5-10 times faster than Tokyo, because there is so much less traffic. Significantly, Kamiyama also refrained from offering fiscal "sweeteners", which might prove expensive and unsustainable over the long term, fearing that tech entrepreneurs who came in search of such perks might leave when they ran out: in contrast to old industrial investors building large factories, tech firms' rely mainly on (highly mobile) human capital. While the long-term future of this venture and others like it is not assured, Kamiyama has made a promising start. The tech cluster has attracted international attention, but it is also significant that Green Valley's revitalisation strategy goes beyond attracting IT firms: its efforts to attract and retain highly skilled workers by offering a good quality of life also extend to the promotion of cultural activities and exchanges, including an artist-in-residence programme.

An important part of Kamiyama's focus is on changing the structure of the population: revitalisation may slow the decline of Kamiyama's population or even reverse it. In 2011, the population, which had fallen from 21 000 in 1955 to just about 6 000 in 2010, rose – albeit by only twelve people. However, given national population trends it would be premature to bet on a change in trend and, in any case, that is not the focus. Green Valley's founders emphasise the quality of the population, not its size. The key to future prosperity lies in attracting young and skilled people, so that even a smaller Kamiyama can offer opportunities and a good quality of life to its residents.

Sources: Tomoe, A. (2014), "Aging Kamiyama Hopes to Rejuvenate with IT Startups", *The Japan Times*, January 1; Fifield, A. (2015), "With Rural Japan Shrinking and Aging, A Small Town Seeks to Stem the Trend", *Washington Post*, 26 May; Green Valley Inc. (n.d.), "In Kamiyama", *http://www.in-kamiyama.jp/en/about-us/* (accessed 14 December 2015).

The promotion of new entrepreneurial activity must be conducted in parallel with the attraction and retention of talents. Because of the current lack of adequately skilled labour for these enterprises in many regions, encouraging an overly rapid increase in new knowledge-based start-ups, with its consequent requirements in terms of qualified labour, may simply lead these ventures to leave. New firms must be able to inject new ideas and innovations into the local industrial fabric so as to create a positive contagion effect and lead existing business owners to also adopt more modern business methods, albeit at a pace that a region's labour market can sustain. Many local economies also need a greater diversity of consumer services to increase their attractiveness to entrepreneurs and highly skilled workers. New ventures in proximity services – everything from hair-dressing to restaurants – should therefore be valued, both because they provide much needed private proximity services and amenities, and because they help to integrate and optimise the economic contribution of segments of the population that may not otherwise find their place in the local economy.

Box 4.5. **Sunshine Coast KISA firm development**

KISA firms have multiplied around an amenity-rich rural region in the Sunshine Coast of British Columbia, Canada. In this area endowed with exceptional natural amenities, several hundred businesses exporting services around the world have been created. These include engineering, architecture, marketing, publishing, design, information technology, wellness and counselling, financial management and more. Through networking and the establishment of a virtual cluster tying all these KISA firms together (Sunshine Coast Intelligence Services Cluster Network, *www.coastisc.net/*) the authorities have not only ended many rural KISA entrepreneurs' sense of isolation but have also helped establish social and professional connections. This has given rise to a virtual local market with many KISAs using each other's services. There are several examples of different KISA firms in the region that have combined their services to increase business reach and competitiveness. The availability of system amenities further increases the attractiveness of the area for new KISA firms. The Sunshine Coast is quickly gaining recognition not only for the exceptional amenities it offers residents but also for those it offers its growing community of KISA firms and entrepreneurs.

Source: OECD (2012a), *OECD Territorial Reviews: Småland-Blekinge, Sweden 2012*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264169517-en*.

The experience and skills of older people are an entrepreneurial resource

As noted in Chapter 1, encouraging entrepreneurship among older Japanese is an increasingly important priority. While much of the literature suggests that older people are less likely to take entrepreneurial risk, it also finds that older entrepreneurs are more likely to be successful, not least because they have more developed networks, more experience and, in many cases higher skills and more financial resources.[8] Moreover, it appears that the propensity of older people to start businesses – whether simply to be self-employed or to build a job-creating business – is rising over time. The evidence also points to the degree to which relatively simple policy interventions can stimulate entrepreneurship among older people. Box 4.6 gives a summary of the main messages emerging from joint European Commission-OECD work on the issue. While some things, such as the tax and social security implications, are central government competences, many of the others are relatively low-cost actions that Japanese regions and towns may want to consider.

Online networking platforms are relatively simple to create and can be helpful for propagating a range of tools for would-be entrepreneurs. For example, the "Best Agers" and "female" schemes operating in a number of European countries use such platforms to organise training events, webinars, mentoring circles and other events (Kautonen, 2013). In the United Kingdom, the PRIME (Prince's Initiative for Mature Enterprise) initiative offers information, training, workshops and networking events for older entrepreneurs; in addition, it provides free or low-cost business advice, either through referral to accredited advisors or volunteer mentors (Kautonen, Down and South, 2008). It has also provided micro-finance in the past. There may also be a need for help with access to finance: though many senior entrepreneurs are in a stronger financial position than their younger counterparts, EMN (2012) finds that age discrimination is very often a real problem when they do need access to credit. In some cases, they may be asked to take out additional insurance to cover the risk. At best, that implies additional costs, but very often it is even

more of an obstacle: insurance companies can be as reluctant to cover older entrepreneurs as banks are to lend to them. Yet few public programmes to assist entrepreneurs with access to finance are adapted to the needs of older workers.

Box 4.6. **Promoting senior entrepreneurship: Pointers for policy development**

To increase entrepreneurship by older people, policy should:

1. Create a positive awareness of the benefits of entrepreneurship for older people among older people themselves, and in society in general.
2. Assist business start-ups by older people by supporting relevant business networks for older entrepreneurs and providing training to fill knowledge gaps on entrepreneurship skills for those who have spent their working life as employees.
3. Ensure that older entrepreneurs have access to financing schemes, recognizing that some groups of older entrepreneurs (e.g. those starting a business while unemployed) may need start-up financing while others (e.g. those with high incomes) may not.
4. Highlight the possibility of acquisition, rather than start-up of a business, as a means into entrepreneurship for an older person as it may be quicker, less risky and can facilitate another person retiring who may wish to do so.
5. Encourage older people to play a role in promoting entrepreneurship by others by becoming business angels or by mentoring younger entrepreneurs.
6. Ensure that tax and social security systems do not contain disincentives to entrepreneurship for older people, including investment in other businesses.
7. Reduce the likelihood that a failed venture will leave the entrepreneur destitute – the risk of losing home, life insurance and other savings is particularly serious towards the end of one's career.

Source: OECD/European Commission (2012), "Policy Brief on Senior Entrepreneurship: Entrepreneurial Activities in Europe", Publications Office of the European Union, Luxembourg, available at: *http://www.oecd.org/cfe/leed/EUEMP12A1201_Brochure_Entrepreneurial_Activities_EN_v7.0_accessible.pdf*.

Seniors may also play a role in promoting entrepreneurship without going into business themselves. One should not overlook the entrepreneurial potential of older workers, particularly retired managers and executives, as a resource for younger entrepreneurs. This is particularly true with respect to the large cadre of retired or soon-to-be retired managers of SMEs. Individuals who know how to run small and medium businesses, particularly small- and medium-sized manufacturing businesses, must be seen as a rare and valuable resource for a region or locality. Research suggests that the hardest phase of development for new firms and sectors to finance is not start-up but the long – and usually loss-making – period of "learning-by-doing", when the new entrepreneurs are ironing out the "bugs" in their processes (OECD, 2011b). The difference between survival and exit can hinge not on the overall character of the product or the nature of the production technology but on relatively small differences in quality control, the management of order flow and stock control, etc. A reduction of 1-2 percentage points in the share of defective products or a reduction of just a few hours in order turn-around times can be decisive. The shorter this learning-by-doing process is, the greater the firm's survival chances. Experienced managers can help here, and many regions might consider organising programmes to match local businessmen with entrepreneurs, whether on a voluntary basis or as paid consultants.

Business successions present a challenge and an opportunity

While the growing propensity of older Japanese to express an aspiration to become entrepreneurs or self-employed is to be welcomed, the other reality that the MIC's recent employment status surveys underscore is the ageing of the population of active entrepreneurs. In 1979, just 18.9% of Japan's active entrepreneurs were above the age of 50 and only 6.6% above 60. Those shares grew steadily, decade by decade, apart from a brief decline in the late 1980s/early 1990s, and by 2012 fully 46.7% of active entrepreneurs were over 50 and almost one-third (32.4%) were over 60. This is more than just a consequence of population ageing – the older cohorts' share of the active population rose from 25.2% to 38.6% over the same period. This matters, because it means that the future of a steadily growing share of Japanese SMEs is in question as their founder-owners approach retirement.

In many OECD regions, low birth rates combined with high numbers of business owners approaching retirement age mean that, over the next decade or two, there may be unparalleled shortfalls of business owners, with potential negative effects on local economies (OECD, 2011b). Succession issues have become one of the main concerns of business development officials in many OECD countries. In North American rural communities, for example, the baby-boom generation of entrepreneurs and business owners is retiring but there is a lack of rural youth available and willing to take up those businesses. In such places, many family businesses are run by the older generation, while the younger generation increasingly tends to migrate to bigger cities and often has little interest in continuing the family business. Many businesses stand to close, not because of financial problems but because there is no one to take over once the owner retires. A recent assessment by the Canadian community development programme, Canada Futures, found that the family ensures only a small minority of successions in non-metropolitan areas. For businesses that did not have a family member willing to take over the business, two-thirds had not developed a succession plan and over 80% of older owners planned to sell their businesses but were unable to find buyers. As a result, some 30.6% of retiring business owners decided to close their businesses (Camire, 2011).

This represents a challenge, but it is also an opportunity – an opportunity to attract new, younger talent to a region or locality. It is also a chance to infuse firms with new dynamism: the 2015 SME White Paper reports that the performance of SMEs in which founders handed over control to younger successors improved. However, smooth business successions must be planned well in advance. To avoid unnecessary closures, local business facilitators can help older entrepreneurs to develop succession plans. Experience elsewhere suggests that most businesses are far from being "sale-ready" when the time comes for the current owner to retire. When a family member does not take over, great care must be taken to make the business as attractive as possible to a prospective buyer. Business owners need to prepare and value their businesses. They have to review and upgrade their firms' processes to optimise their attractiveness, and they often need assistance with this process.

METI's SME Agency and the Japan Finance Corporation are both active in this area, with programmes to support smooth successions, including the transmission of skills and techniques, and assistance with financing. However, more can be done. Local business development officers can help connect buyers and sellers, providing information about businesses that are for sale to potential young entrepreneurs in the community, as well as to inbound investors and migrants who may be looking for an opportunity in the area. In fact, an inventory of potential business succession opportunities (possibly web-based) could

help bring to a community people who might be attracted by the lifestyle and amenities it has to offer. It could also be a way to offer opportunities for women and older workers who wish to become entrepreneurs or alternative business strategies for locals who already work as self-employed entrepreneurs. The important thing is to help connect buyers and sellers (Clark, 2011). Local financial institutions need to be receptive to financing business transition opportunities within the community. Support in the form of leverage loans is often needed to ensure a smooth transition to the new owners. One valuable benefit to the buyer is the potential for local mentorship from the previous owner, often within the same community. Business facilitators should help ensure that, where possible, this option remains a part of any succession plan.

Agricultural policies and rural development

At national level, the broad outlines of rural development policies are defined in two basic documents: the Headquarters' Comprehensive Strategy for Regional Revitalisation and MAFF's Basic Plan for Food Agriculture and Rural Areas, a medium-term policy document that is renewed every five years. The current plan was adopted in March 2015. It, in turn, reflects the approval in December 2013 of a "Grand Design" for agriculture called the "Plan for Creating Agriculture, Forestry, Fishery and Regional Revitalisation" under the Headquarters for Agriculture, Forestry, Fishery and Regional Revitalisation, which is chaired by the Prime Minister with the Cabinet Secretary and the Minister of Agriculture, Forestry and Fisheries as vice-chairs. It presents agriculture, forestry and fisheries policies, on the one hand, and regional policies on the other as the two wheels of a cart. The aim is to balance the two and to realise complementarities between them, largely via the measures to enhance the multifunctionality of agriculture, forestry and fisheries.

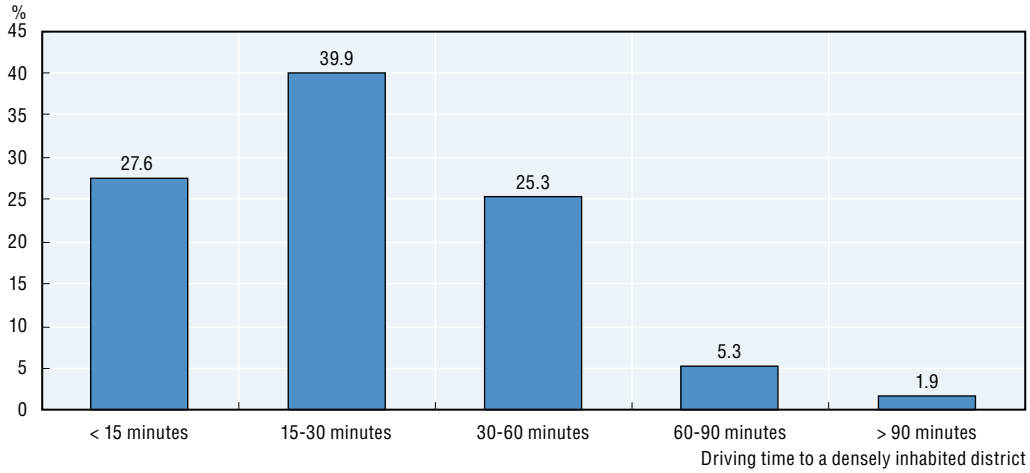
Thousands of rural hamlets face the risk of depopulation

One of the primary concerns of Japanese policy makers confronting depopulation is the fate of the country's small hamlets, which are disappearing at an alarming rate. At present, there are around 130 000 agricultural hamlets[9] in Japan; on average, they have around 30 ha of farmland, two-thirds of which consists of rice paddies, the rest being used for other crops. In 2010, there were about 198 households per hamlet, a figure that was up almost 2.5-fold since 1970 but some 7% down over the previous decade. However, median hamlet size rose from 48 to 50 households over the period, suggesting that the average has been hugely influenced by hamlets in proximity to cities, where the number of non-farming households rose very rapidly.[10] However, only about 9-10% of households were actually engaged in agriculture; most live from non-farm income sources. Depopulation and ageing both are more advanced in rural hamlets and proceeding faster than in other areas of Japan, thanks largely to the emigration of young people to the cities, which reflects both the employment and consumption opportunities that cities offer and the drastic decrease in labour required for agriculture. A number of observers have expressed great concern about the prospect of tens of thousands of these hamlets simply disappearing (see e.g. Odagiri, 2012, 2015).

In fact, many of these hamlets are not facing any immediate threat. According to the agricultural census of 2010, two-thirds are within half an hour's driving time of an urban centre, while over 90% are within 1 hour (Figure 4.5). In some cases, these urban centres may not be very large, but given that the criterion used requires a density of 4 000/km^2, they are unlikely to be small, because pockets of such very high urban density do not often

appear in isolation. This implies that the vast majority of hamlets are effectively within the commuter belts of reasonably good-sized cities and, indeed, almost 56% of hamlets fall within zones associated with city planning.[11] This is not entirely surprising: it reflects the facts that cities in Japan – as in most places around the world – have historically grown up fastest in places with satisfactory food supplies near at hand. Large-scale, long-distance trade in perishable foodstuffs is a relatively recent development, so the best farmland in a country is often in the immediate vicinity of its largest cities. That is one reason that the conversion of farmland for urban development is such a perennially difficult issue: it is not a matter of countries "running out of land" but a problem that arises because the best farmland is in the places where the pressure for urban development is greatest.[12]

Figure 4.5. **Agricultural hamlets grouped by driving time to a city**



Note: Densely inhabited districts are defined as contiguous census blocks with a population of at least 5 000 and an overall population density of at least 4 000/km^2.

Source: Agricultural census, 2010. Data provided directly by Official Statistics of Japan (Government of Japan).

StatLink *http://dx.doi.org/10.1787/888933325001*

The fact that so many hamlets are clustered around cities does not mean that they face no challenges. In some cases, they, like hamlets deep in rural areas, perform important environmental functions, and they are often exposed to negative externalities from nearby cities. However, the survival chances of hamlets close to cities are probably greater than those of more remote places. Issues like connectivity are less of a problem for hamlets close to cities, and they have many more options when it comes to survival strategies, since they can be more attractive to commuters and retirees, and they may have particular appeal for young people wishing to start families. Attention to landscape and rural amenities can help them differentiate the quality of life they offer from that of nearby cities while retaining many of the benefits of proximity to urban services.

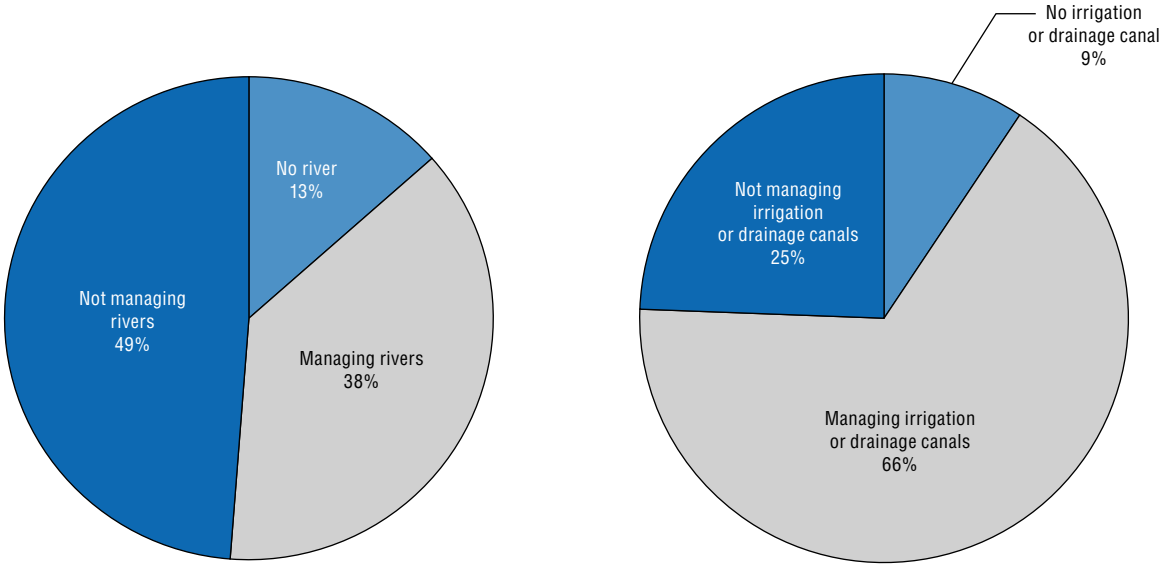
The rationale for policy towards small hamlets needs to be crystallised

Perhaps the most fundamental problem with respect to the survival of rural hamlets lies in the fact that the government has yet to define the rationale for supporting their continued existence. To say this is not to suggest that the authorities should simply turn their back on such communities and leave them to their fates. On the contrary, there are a number of reasons why the authorities do not want to see them disappear. The point is rather that it is impossible to devise efficient and effective policies to support the viability

of agricultural hamlets without a clear understanding of what those reasons are. Once this rationale is clarified, it becomes possible to determine which policy interventions to preserve hamlets would make sense. This is a critical point because, given Japan's demographic trends, there is no doubt that many hamlets will disappear and the resources to support their continued viability are in any case limited; the government cannot ensure the survival of all rural hamlets, and excessive dispersion of effort will undermine the effectiveness of policy. Of course, it is not for officials in Tokyo simply to decide which hamlets to maintain and which to close, but they will have to make decisions about infrastructure investment, support programmes and the like, and that requires a clear understanding of when, where and why policy should intervene to support hamlets' viability. Some (probably many) hamlets that do not meet those criteria will still survive – they will find other strategies – and some that qualify for support may not prove to be viable in the long run. But national policies need to be framed so as to ensure that measures for the support of rural hamlets are broadly consistent with the broader goals of the Grand Design and the National Spatial Strategy.

One of the obvious concerns is the role hamlets play in agricultural production, particularly in managing rivers, irrigation systems and other watercourses. Major infrastructures (reservoirs, intakes, pumps and main canals) are usually operated and maintained by the Land Improvement Districts (LIDs).[13] However, tertiary irrigation and drainage canals are generally managed by local residents (Figure 4.6). This would suggest a clear agri-environmental case for supporting many hamlets. However, much depends on the direction of agricultural policy. It is often assumed that agricultural production and the viability of rural communities go hand in hand, but this is not necessarily the case. Rice production is not labour-intensive, and efforts to foster the consolidation of rice farms in the interests of productivity reduce labour demand. While rice farms remain very small (2 ha on average, according to MAFF), the share of agricultural lands cultivated by large-scale (10 ha or more) farmers is increasing rapidly: it rose from 7.9% in 2000 to 18.7% in 2010.

Figure 4.6. **Hamlets managing rivers and irrigation infrastructure**



Source: Based on the data of the General counter of Official Statistics of Japan (2015), Census of Agriculture and Forestry, *http://www.e-stat.go.jp/SG1/estat/List.do?bid=000001047529&cycode=0* (15 July 2015).

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In many areas, there is a tension between the promotion of agricultural productivity and sustaining the population, especially where the main actors are large-scale farmers who take over land from small-scale producers (Box 4.7). In some suburban areas, though, farmland consolidation and the diversification of agricultural production are proceeding in tandem, which is helping to sustain or even increase the local population. That is why many prefectures prefer to diversify agricultural production and to promote collective farming in areas where rice is the major crop. In many areas, there has been a move towards community agriculture, in which a large number of small farmers operate as one larger organisation, contributing land, labour or capital as they are able. In hamlets close to cities, there is a lot of part-time farming. Both strategies help sustain hamlets' population but at the expense of lower farm productivity.

Box 4.7. **Rice farming and rural development**

Rice is Japan's most important crop, not only from an economic point of view, but also from a social and environmental perspective. It accounts for only 12% of total value added in agriculture and fisheries, and this share has been gradually and steadily declining. However, rice farming is the largest user of land and water. It accounts for more than 50% of the total cultivated area in Japan and accounts for the majority of agricultural water consumption. Over the last decade, MAFF has sought to increase the productivity of agriculture with policies targeting large-scale farmers and promoting farm consolidation – a major departure from traditional policies, which supported all types of farmers, often enabling low-productivity small-scale and part-time farmers to remain in business, rather than exiting the market in favour of larger, more efficient producers. At present, "business farmers" (i.e. those who make their living as farmers rather than using part-time farming to supplement their incomes) are a minority of all farmers but they now cultivate around half of all farmland; MAFF is working to increase that figure to 80% over the coming decade.

The average age of farmers in Japan is quite high (around 66, according to MAFF but this includes many part-time farmers) and few young people work in the sector, so the time is in some respects quite propitious for consolidation. Retiring farmers often lease their land to larger producers.[14] The problem is that farm consolidation could undermine the viability of rural hamlets. Given the size of most hamlets, an average hamlet could profitably sustain just one or at most two rice farmers. If the remaining farmers sell or lease their land to such a producer, this accelerates population outflow. Often, the landowner who stops farming remains in the hamlet but his children are unlikely to do so. To maintain and demonstrate the multifunctionality of agriculture, MAFF designed a second set of policies to ensure payments to hamlets collectively maintaining irrigation and drainage facilities, as well as companion policies focused on rural development. However, these payments are tiny compared to overall levels of agricultural support and the tension remains.

Source: Shobayashi, M. (2015), "Looking Back at the 15-Year Development of Direct Payments in Japan: Is Multifunctionality a 'New Bottle' for the 'Old Wine'?", *Agriculture and Economics*, Special Issue, March, pp. 39-52 (in Japanese); information provided directly by the Ministry of Agriculture, Forestry and Fisheries.

MAFF has unveiled a basic plan with a multi-faceted approach to rural revitalisation…

The policies for rural revitalisation in the 2015 Basic Plan for Food Agriculture and Rural Areas are grouped into three categories:

- The first group is to preserve **multifunctionality** via a new direct payment scheme focusing on collective action for the maintenance of irrigation and drainage facilities and a new initiative to foster the establishment of networks among neighbouring hamlets.

- The second category concerns the **revitalisation of rural economies** through the use of local resources. This includes support for the so-called "sixth industry". "Sixth-order industrialisation" essentially involves the formation of integrated value chains encompassing production, processing, distribution and marketing by linking agriculture, forestry and fisheries producers to those with expertise in the secondary and tertiary sectors, particularly processing and marketing. The name reflects the fact that rural producers of (primary) agricultural commodities are engaged in processing (secondary) activities and in distribution/marketing (tertiary) operations – hence, 1 + 2 + 3 = 6. There are also measures to promote the consumption of local foods and to support the development of biomass and renewable energy, as well as greater use of ITC in farming and distribution.
- The third group of policies aims to promote urban-rural exchanges, like green tourism, children's experiences of agriculture and rural life, and welfare farms to foster collaboration with the medical, welfare and food industries.

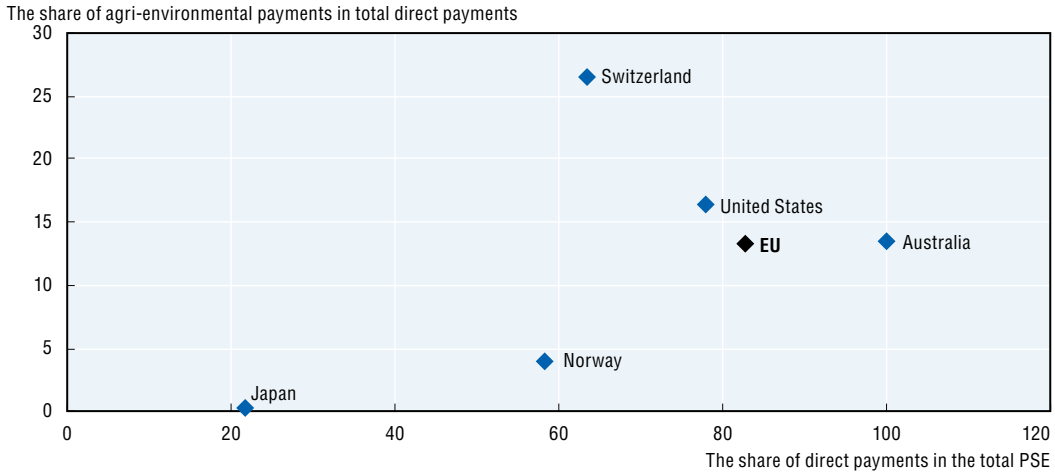
In principle, each of these three strands of policy has much to recommend it and is consistent with the "small stations" initiative and other elements of the broader revitalisation effort. A focus on multifunctionality would help to clarify the rationale for supporting hamlets and also the instruments to be used. The "sixth industry" initiative has already begun to bear fruit in some places (see below). It is unlikely to have a dramatic macroeconomic impact – urban areas will retain their advantage in secondary and tertiary activities[15] – but it really does not need to anyway: successful sixth-industry initiatives are already showing that, in a thinly populated rural area, even a small niche activity can make a big difference. Much the same can be said of the attempts to promote migration from cities to rural areas: they will not alter the settlement pattern much but they can make a difference in local communities, particularly those well-placed to attract former urbanites.

Elements of the plan's agricultural policies will also have important implications for rural development. It promotes the production of fruits and vegetables, as well as livestock products, which are higher value-added products and also require more labour. This is consonant with the aim of increasing farmers' income from farming and with sustaining more farmers on the land. Another important twist in the plan is the decision to treat community farming groups as business farmers (*ninaite*, or literally "leaders"). *Ninaite* are considered to be the future of Japanese agriculture. They are defined in the plan as efficient and stable farmers whose lifetime income and working hours are equivalent to those of people employed full-time in other industries in their regions. In keeping with policies to favour productivity, the government is promoting farmland consolidation and the promotion of full-time farmers, they include certified farmers[16] and those expected to be certified, as well as community farming groups. The plan states that the government will support business farmers with subsidies, loans, financing, etc., and promotes the corporatisation of farming. The public corporations for farmland consolidation to core farmers through renting and sub-leasing (farmland banks), which were established in each prefecture in 2014, are also now incorporated into the basic plan as part of the consolidation drive. A key priority for MAFF is creating conditions to attract younger people into full-time farming; the ministry estimates that Japan needs to double the number of new farmers who start farming and remain with it and to increase the number of farmers aged 40 or less to 400 000 by 2023. This is to secure roughly the number of farmers needed to maintain the current level of agricultural production.

...but more can be done to address non-agricultural facets of rural development

One major limitation of the 2015 plan is that its primary rural development component is still concerned with agriculture.[17] The biggest policy measure in the rural development framework is the system of direct payments for maintaining irrigation and drainage facilities and agricultural roads but also for environmental protection and planting on roadsides. However, a policy focused on how local communities can support farm production and environmental/landscape management will not make hamlets attractive enough to draw young people into rural areas unless they are farmers. In fact, much more could be done by giving greater weight to other agri-environmental concerns, particularly landscape management. This would serve a dual purpose, advancing the goals of sustainable agriculture and also making hamlets more attractive places for non-farmers to settle. The share of direct payments in the total producer-support estimate[18] for Japan is exceptionally low, at just below 22% in 2014, compared with levels of 58-83% in OECD Europe (the EU21, Norway and Switzerland), 78% in the United States and 100% in Australia. Moreover, the share of agri-environmental payments in total direct payments is also extremely low (Figure 4.7).[19] In sum, just under 0.05% of producer support to agriculture in Japan consists of agri-environmental payments.

Figure 4.7. **Share of agri-environmental payments in total direct payments to agriculture**



Source: OECD (2015d), *Producer and Consumer Support Estimates* (database), OECD, Paris, *http://www.oecd.org/agriculture/agricultural-policies/producerandconsumersupportestimatesdatabase.htm* (accessed 10 July 2015).

StatLink *http://dx.doi.org/10.1787/888933325020*

There is certainly room to improve the environmental performance of Japanese agriculture: the nitrogen balance per hectare (kg/ha) is exceptionally high by OECD standards and remained stable in Japan between 1990-92 and 2007-09, while it fell by more than 40% in the EU15 and by over 30% in the United States – in both cases from lower initial levels. The reasons for this lie chiefly in fertiliser use per hectare, which in 2008-10 was 5.7 times the EU15 level and 18.7 times the US level (Shobayashi and Sasaki, 2014). Reorienting farm support towards greater emphasis on agri-environmental outcomes could do much to improve environmental quality in rural Japan, while making rural hamlets more desirable places to settle. A policy package to improve landscape management and agri-environmental performance would encompass regulatory measures, as well as direct payments. One factor complicating regulatory approaches lies in the difficulty of

attaching cross-compliance conditions[20] to direct payment policies, because Japan relies so heavily on price support via tariffs, and direct payments are very small. Farmers would therefore have every reason to resist the compliance burden. Yet a very large increase in agri-environmental payments would be very expensive to the budget, and a reduction in, e.g. tariff protection would not offset this fiscal cost.

One approach might be to earmark a portion of grants for local revitalisation for landscape management in such places. The problems with earmarks are well known (Chapter 2), but this may be a place to employ them, since small hamlets may find it hard to compete with other possible objectives if grants to municipalities are treated as general revenue. This is a common problem with integrating rural and regional development policies: when they are separated, farming interests tend to dominate rural policy but when they are integrated, urban interests prevail over rural. Either way, the needs of the non-farm rural economy can be squeezed. If rural hamlets are thought to have special value, then earmarking a portion of the revitalisation grants for them could make sense, while still leaving the design and implementation of policies to local governments. This would in fact be an approach quite similar to that used in the second (rural development) pillar of the EU's Common Agricultural Policy (Box 4.8).

Box 4.8. **Rural development policy: The EU model**

The Common Agricultural Policy (CAP) is a system of European Union (EU) subsidies and programmes meant to enable producers of all forms of food to survive and remain competitive on world markets. The key objectives of the CAP are to: increase agricultural productivity; ensure a fair standard of living for agricultural producers; stabilise markets; assure availability of supplies; and ensure reasonable prices to consumers. The Union's rural development policy emerged in a piecemeal way through successive reforms of the CAP. Consequently, there are now two "pillars" through which funding is disbursed. Pillar I, the larger share of the overall budget, provides subsidies to farmers. The second pillar is the Rural Development Regulation.

The CAP has evolved in ways that make it more important for broader rural development issues and EU countries can now use the flexibility in the CAP to shift money from direct payments for commodities to other programme areas. Early opportunities for modulation* of direct payments were implemented by the United Kingdom and France at the turn of the 21st century. These were largely for agri-environmental improvements, but they tended to be most valuable in marginal farming areas where additional farm income plays a relatively larger role in the local economy.

The expansion of Pillar II makes the CAP an increasingly important factor in rural policy. With the introduction of Pillar II to the CAP in 1999 it began to play a major role in rural development policy within the European Union. As funds are diverted from Pillar I to Pillar II and programmes under Pillar II become more structured and better funded, they play larger roles in conditioning national rural policies. Because Pillar II remains highly oriented to agriculture it promotes a stronger role for farming in rural development. Funding is made available for farm diversification, agri-environmental improvement, farmer training and improving infrastructure that has direct ties to agriculture, such as modernising farm market towns.

The broadest aspect of Pillar II is its support for the LEADER programme, which offers opportunities for introducing locally based rural development approaches that rely on a wide variety of sectors and actors. LEADER ("*Liaison Entre Actions de Développement de l'Économie Rurale*", meaning "Links between the rural economy and development actions") is a local development method which allows local actors to develop an area by using its endogenous development potential. The LEADER approach has been an important component of EU rural development policy for over 20 years. Since 2007, it has been funded by the European Agricultural Fund for Rural Development (EAFRD). In the period 2007-13 it was successfully extended to fisheries areas as Axis 4 of the European Fisheries Fund and since 2014 this approach, called

Box 4.8. **Rural development policy: The EU model** *(Cont.)*

"Community-Led Local Development" (CLLD) can draw on the resources not only of the EAFRD (where it is still called LEADER), but also of the European Maritime and Fisheries Fund (EMFF), the European Regional Development Fund (ERDF) and the European Social Fund (ESF). Some financing for LEADER programmes also comes from national governments.

The LEADER programme is a hybrid rural/regional policy for specific target areas. LEADER works with a bottom-up approach to decision making and management responsibilities, adopts a multi-sectoral vision and favours multi-level governance arrangements between transnational, central and local governments. LEADER brings public and private stakeholders together in local action groups (LAGs) which are responsible for project selection and the implementation of local development strategies as agreed with the Commission. Norms regulating the LAGs limit the share of public administrators and elected officials to no more than 49% of a LAG's executive council, thereby ensuring a strong voice for local non-state actors. The programme has been widely recognised as a success due to its innovative character and because of the results obtained in many rural areas despite relatively limited budgets.

* The term "modulation" is used to describe the transfer of funds from direct subsidy payments under Pillar I of the CAP to rural development expenditure under Pillar II of the CAP. It is a mechanism used to shift financial resources across otherwise separate budget lines.

Source: OECD (2011c), *OECD Rural Policy Reviews: England, United Kingdom 2011*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264094444-en*.

Land-use co-ordination represents another step that could be taken to improve rural landscapes and also to increase farm productivity: farmland consolidation could serve both objectives. That is why the government is currently encouraging the activity of farmland banks as a tool to reduce the transaction costs between retiring farmers and business farmers who want to consolidate land; the issue is not just how much land they farm but how big the contiguous plots are, as farming is much less efficient when the producer has to work a patchwork of scattered plots. An alternative model, which has emerged in Shiga Prefecture, also holds promise. The so-called "Shingai model" involves the formation of an organisation of landowners in a given hamlet; they act collectively to manage their land in such a way as to maximise the efficiency of the tenant farmers cultivating it. They operate on the basis that members do not concern themselves with the identities of the tenants who work their lands: the organisation works with the various tenants to facilitate consolidation (Shobayashi and Okajima, 2014). By setting pre-determined conditions for farmers, such an organisation can also address collective challenges like flood protection and landscape management. This could be reinforced by having LIDs charge cultivators rather than landowners for rehabilitation work on irrigation systems – this would create incentives for much more efficient water use in farming (Shobayashi, Kinoshita and Takeda, 2010).

The "sixth industry" initiative is a welcome innovation in rural policy

MAFF's sixth industry policies touch on another crucial priority – creating more non-agricultural jobs in rural communities. This is surely the most important task of revitalisation: it is the job market that is the main factor drawing people to the cities, and it is clear that agriculture is likely to employ fewer people in the future, not more. Rather than trying to entice large companies to build factories in rural areas, the sixth industry policy aims to build on what is there already. The production of (renewable) energy, landscape preservation, leisure and tourism offer complementary opportunities to create thriving local economies. In some ways, this represents an extension of the idea of multifunctionality in agriculture, which is now extended across all three main sectors of economic activity.

The case for such policies stems from the need to address the peculiar challenges that confront rural economies. Low-density economies located far from major markets tend to face a number of common problems (for a summary, see Freshwater, 2012). First, and perhaps most important, the principal sources of growth tend to be *exogenous* to the region and are mediated to the regional economy via its export base. Since they can only produce a limited range of the goods and services they need, rural regions are of necessity oriented to exports of one sort or another (to the rest of the country if not always abroad), unless they benefit from ongoing income transfers. Otherwise, they cannot afford to import the goods they need from other places. Secondly, local markets tend to be thin, with weak competition. This can constitute a form of protection from external competitors (the market is costlier for them to access), but this protection is often overwhelmed by the scale and scope economies that city-based firms can exploit. That is why improved connectivity in such places often delivers bigger benefits to the city – in reducing transport costs, they make it easier for outsiders to penetrate the local market. Small market size is also a constraint on firm growth. Partly for this reason, firm populations in rural places tend to be dominated by small and medium-sized enterprises (SMEs), but these are often low-growth firms.

Low density economies are, almost by nature, characterised by limited diversification of economic activity. Smaller places cannot achieve critical mass or economies of scale in many activities. This also means that local producers often face thinner markets for their inputs – a lack of redundancy in markets can mean that weakness in one part of a supply chain harms other firms in the chain. It is not so easy to replace a supplier who fails or is under-performing in terms of quality or price. Low levels of diversification thus imply heightened vulnerability to external shocks. Moreover, in almost any sector in which production is mobile and there are potential economies of scale, firms are likely to move closer to the centres of demand. For small, remote rural places, this means putting a premium on other sources of competitive advantage, e.g. focusing on unique or place-specific qualities of products, where scarcity can add value. This is the logic that underlies the development and marketing of high-value agricultural products like French wines or local cheeses. It is also the basis for many of the strategies adopted in sixth-industry initiatives in places like the Seiwa area of Mie Prefecture (Box 4.9). Such strategies need to be founded on local assets that are relatively immobile, since mobile assets (including both human and financial capital) will tend to move to the places where they yield the highest return. The multi-faceted nature of the Seiwa area's activities is also important: they do not rely on one activity or initiative to make all the difference. On the contrary, the different elements of the revitalisation effort reinforce one another.

In many cases, rural innovation arises not in laboratories but as a result of identifying new uses for local resources or new ways of marketing them. Haga (2014) points to the case of Kamikatsu, a small mountainous area on the island of Shikoku with a population of about 1 767 in 2014 (down from 4 000 in 1970). An outside entrepreneur, recruited by the municipality to come look at possible business ventures in the area, created a company that marketed *tsunamono*, decorative leaves to garnish traditional Japanese cuisine. From modest beginnings in 1986, the company grew to sales of more than JPY 200 million/year in 2000-13, employing 197 locals – mainly elderly women. In addition to business success, subsequent studies found that the women so employed were healthier and happier than their unemployed peers.

Box 4.9. **The Seiwa area, Mie Prefecture**

The Seiwa area of Mie Prefecture is a rural district with a population of about 5 000 and an area of 53.6 km^2, of which 70% is forested and about 13% is cultivated. The average farm size is roughly 0.4 ha and the main products are rice, tea, Chinese cabbage, cabbage, white alliaceous, wheat and soybeans. By the early 2000s, Seiwa found itself facing an ageing and declining population, a lack of successor farmers and the growth of abandoned farmland, which, in turn, contributed to the encroachment of wild animals into cultivated areas. In response, the ten small hamlets in the area formed the Seiwa Rural Resource Management Association, which has put in motion an impressive array of local projects.

In an effort to enhance the landscape and protect farmland, the association organised maintenance of the canals and farm roads, including the planting of flowers on unused land, the creation of a biotope and the introduction of multi-use of irrigation water for community purposes (firefighting, environmental uses, etc.). Some farmland has been returned to a wild state, but co-ordinated land management has made it possible to do this efficiently and without harming the land that remains under cultivation. Household garbage is now composted. In an effort to do more than just preserve agriculture, the Association has moved in the direction of the sixth industry, organising local festivals and building a market for distinctive local produce. This, in turn, has reinforced environmental performance, as the farmers found that it was better to market green produce than to use pesticides and this has also helped to promote green tourism in the area and to improve the quality of the water.

What began as a resource preservation exercise in the face of farm abandonment has thus led to a wide range of new activities. Though backed by the municipality, the Association has not relied much on municipal or central government funds, though it has attracted sponsorship for some activities from Sharpe.

Source: Information provided directly by Seiwa Rural Resource Management Association.

The small island municipality of Ama-cho in Shimane Prefecture offers an excellent illustration of how local revitalisation can occur in a rural setting (Box 4.10). Ama-cho's experience is instructive in a number of ways, and the lessons it holds are relevant to remote rural communities that are struggling for survival elsewhere in Japan and, indeed, around the OECD. First, it is important to note that Ama-cho's turn-around took time and that there were numerous false starts and failures: the town had been struggling with decline for decades before it hit upon a mix of policies that enabled it to change the trajectory. Secondly, there was no "silver bullet", no single intervention that put the town on course for recovery; on the contrary, the change in Ama-cho's fortunes has been the product of a multi-faceted strategy that involved measures to put public finances in order; innovation in public service provision (especially education); innovation and entrepreneurship that combines technologies from elsewhere with local assets; and a mix of public and private initiative, as well as public-private collaboration. Thirdly, Ama-cho's turnaround was engineered locally; it was not the result of large-scale intervention or funding from without. Finally, Ama-cho has not turned in on itself but has rather reached out to the world, working to export its products and attract visitors and newcomers. One characteristic of many remote rural communities, particularly islands, is a failure to see residents as a fungible commodity: there is little interest in attracting newcomers and even selling one's home to an outsider can be very badly seen in the community (Chavez, 2014).

Box 4.10. **Ama-cho**

Ama-cho (Shimane Prefecture) is a municipality on the island of Nakanoshima, one of the four inhabited islands of the Oki Archipelago in the Sea of Japan. In 2013, it had a population of 2 343 and an estimated population density of 69.6 persons/km^2. With an economy based primarily on agriculture and fisheries, Ama-cho saw its population fall by more than 70%, from almost 7 000 in 1950 to not much more than 2 000 a half-century later. It has since begun to grow again, attracting an influx of new residents from elsewhere, and the local economy has picked up considerably. Ama-cho has recently been cited as a model for regional revitalisation. Its turn-around involved a number of factors:

- Falling population and the consequent strain on public finances generated considerable pressure on Ama-cho to merge with its larger neighbour during the Heisei merger wave of the early 2000s, but the town's leaders feared the resulting loss of identity and control over their own fate. They were afraid of being neglected as a small part of a larger municipality. Retaining independence, in turn, meant drastic cuts in spending: the mayor and other municipal staff took large pay cuts,[21] some residents surrendered benefits such as public transport subsidies for the elderly, and the community pulled together to provide some services informally.
- Ama-cho was perilously close to being unable to sustain its school, which at one point had just 89 pupils and could not sustain enough staff to ensure a full range of subjects, let alone high-quality programmes. In response, Ama-cho began working to attract "exchange students" from cities in Japan – young city-dwellers keen to spend a semester or a year in a rural setting – and to introduce new curricula, like regional studies and career planning. As a result, student numbers nearly doubled, allowing an expansion in the number – and range of qualifications – of teaching staff. There are plans to begin attracting overseas exchange students as well. The Oki Dozen learning centre was established to help students outside of school to prepare for national exams and future careers.
- Ama-cho has in recent years benefited from important product innovations. The best-known is the cell-alive system (CAS) for freezing seafood products in a way that retains more of the quality of fresh produce than other technologies. This allows for the marketing of Ama-cho's rock oysters (another new product) much further afield and at higher prices than would otherwise be possible. Other new ventures include the raising of Oki premium beef (50% of which has been given the highest possible grade of A5) and seaweed cultivation.

Many of the above changes have been the fruit of collaboration between private entrepreneurs and the municipality, such as the public-private partnership to create a sea-cucumber processing facility, which now exports to China. This co-operation has been most evident in efforts to market Ama-cho to Japan and the world.

Sources: Quarshie, J. (2014), "The Town That's Battling the Demographic Tide", *Japan Times*, 21 September; Abe, H. (2014), "Pursuing Local Economy and Well-Being in Ama Town, Shimane Prefecture", *JFS Newsletter*, No. 140, April; Ama-cho (2015), "A Bold Challenge from a Tiny Remote Island", brochure, Oki Ama-cho.

The importance of these factors becomes all the clearer if one examines Ama-cho's revival against the backdrop of some less successful cases. Chavez (2014), for example, considers the decline of one island community in the Seto Inland Sea, where the population has dropped from over 900 in the late 1990s to just 563 in 2014. Its challenges are in many ways similar to Ama-cho's but the response has been quite different. A new port was built with central government funds in 2002 and the beach was upgraded with government

funding at around the same time. New schools were built with central funds in the late 1990s. All of these new facilities are now largely empty, and the schools face the prospect of closure in the next few years. NGOs have worked on the island, promoting artist-in-residence programmes and the like. The island has excellent Wi-Fi, cheap housing and an attractive landscape. Chavez concludes that what the community lacks is local initiative: plenty of resources have been poured into the island from without and there are some attractive rural amenities and resources to hand, but the local community has not – yet – taken its fate into its own hands with entrepreneurial initiatives and an active commitment to drawing in outsiders.

Ama-cho probably also benefits from being a fairly small place. Relatively modest initiatives, based on place-specific local assets, can make a very big difference to a small community's prosperity and well-being. Social capital and trust within the community have been critical ingredients in Ama-cho's success, and these can be easier to foster in small communities, where residents know one another. In contrast to some other places, though, Ama-cho has worked deliberately to foster a strong sense of community that is still open and outward-looking, welcoming visitors and newcomers and encouraging people to try new things – even when there is a real risk of failure. The island tries to provide young people with opportunities to "learn by doing" that a big city could not give them. Small rural places are often thought to be very conservative and resistant to change, and sometimes they are, but a growing number of Japan's rural communities are showing how they can embrace much more open and entrepreneurial attitudes to change.

The challenge for small and medium-sized cities, whose functions are fundamentally urban, may be far greater. Elis (2011) presents case studies of three rural towns on Honshū, who continue to struggle with the revitalisation challenge now that their primary economic *raison d'être* is gone (Box 4.11). What Elis observes, above all, though, is that the responses in all three cases are basically defensive/reactive – the emphasis has been on trouble-shooting and crisis management. Municipal mergers helped ease some public finance problems but were insufficient to change the dynamic. To their credit, all three towns assessed situation realistically and wisely avoided the continuation of policies predicated on the assumption of growing or even stable populations. Finally, it is striking how much the course followed by local actors was shaped by incentives set at national level (reduced transfers, merger incentives, etc.). Even when decentralisation gives local communities greater control over their fates, the structure of choices they face is often strongly shaped by national policies and international economic realities.

Tourism is complement for many strategies but not a sound basis for most

Tourism promotion is an important part of many local revitalisation strategies and, indeed, a central part of Japan's national economic development strategy (Box 4.12). Its potential for rural areas, especially, is obvious. Local economies benefit directly from the influx of outside visitors, and many of the investments made to help attract tourists can also enhance the local quality of life. Indeed, many local "tourism development" programmes in OECD regions are as much about securing resources for local amenities as about really building a tourism sector (OECD, 2012b). Green tourism, in particular, can enhance quality of life and the environment if it helps local communities pay for their investment in greener production and local environmental improvements – as was the case in the Seiwa area (Box 4.9). However, it is important to bear in mind the limits of tourism as a basis for development. First, many places simply lack the necessary assets in what is, ultimately,

Box 4.11. **The struggles of rural mining towns**

Elis (2011) examines three towns located in different parts of Honshū that are experiencing severe demographic decline: each underwent population decline of close to or over 50% during 1965-2010. All three are also historically dependent on central and prefectural transfers. Two are former mining towns and all became part of merged municipalities during the Heisei merger wave of the early 2000s. They have struggled since.

- The first of the three lost two-thirds of its hospital beds when the local hospital became a clinic. A ski resort there was not attracting enough visitors in 2008-09 and was thus becoming a burden on the local government.
- The second likewise underwent a merger with a larger neighbour, as well as curtailing subsidies for some local associations and events and privatising some public facilities. Hospitals in the newly merged municipality were – at least initially – maintained, but school closures/mergers followed.
- In the third instance, the merger resulted in an amalgamation of schools, closure of hospitals and a growing reliance on a sub-structure of municipal committees made up of volunteers to support the smaller administration. Community committees organised around elementary school districts were given funds and staff to supervise the maintenance of minor roads, flood control and other settlement-level tasks.

In all three cases, the root of the problem lay not in demographics *per se* but in the decline of the local primary sector. On the contrary, rapidly declining and ageing populations were the outcome, not the cause, of the processes unfolding in these areas, which in turn were linked to globalisation and to national policies. In response to this, they adopted varying revitalisation strategies, none of which was sufficient to stem the decline: one opened a ski resort and spa, whereas another, though largely bypassed by visitors, might yet benefit from better traffic connections. The third has tried to build its recovery on its historical heritage and local artists. It is important to recognise that the fates of these three communities are yet to be determined.

While they have so far struggled in their revitalisation efforts, the experience of Ama-cho is a good reminder of why these communities and others like them should not be written off. Ama-cho's turn-around was engineered after years of decline and some false starts. However, national and global factors have driven their decline to date, and this raises questions about how far such revitalisation strategies can lift rural areas. Many will make recover and prosper, but others will find the coming decades very difficult indeed.

Sources: Elis, V. (2011), "Rural Depopulation and Economic Shrinkage in Japan: What Can Affected Municipalities Do about It?", in F. Coulmas and R. Lützeler (eds.), *Imploding Populations in Japan and Germany: A Comparison*, Koninklijke Brill, Leiden.

a highly competitive market. Closely related to this are the risks associated with large-scale resort-oriented tourism, in particular, a field in which many Japanese municipalities invested in the past, often with little success (Elis, 2011). It is therefore encouraging that recent efforts are more modest and rely more on community initiative than large-scale construction. This is good news. A third consideration is that tourism in most places tends to be seasonal and the jobs that go with it tend to be both seasonal and low-productivity. Of course, there are areas where climate and other natural conditions make tourism profitable all year round and niche activities like cultural tourism that can support better jobs. These are, however, exceptions. Finally, there is the challenge of providing services in ageing areas, where local labour may be scarce.

Box 4.12. **Japan's "Tourism Nation" policy**

Tourism plays an increasingly important role in Japanese economic development policies. The Tourism Nation Promotion Basic Law of 2007 clearly positions tourism, for the first time ever, as one of the pillars of Japanese policy in the 21st century. It stipulates that tourism-promotion policies should be implemented on the understanding that the key to ensuring a good life for the Japanese people is to respect locally-led, innovation-oriented efforts. The government is required under the law to devise a Tourism Nation Promotion Basic Plan in order to promote tourism in a comprehensive manner. The law also charges the government with devising policies to promote international tourism and to roll out measures needed to create an environment conducive to travel. The current tourism promotion plan runs from FY 2012 through FY 2016. Its objectives include raising domestic travel consumption by tourism to JPY 30 trillion attracting 18 million foreign visitors to Japan. In addition, the Plan includes new indexes for "satisfaction" objectives for foreign visitors. The lead agency involved is the Japan Tourism Agency, which is charged with formulating and implementing policies that will create attractive tourist areas that are favoured by people inside and outside the country (branding of tourist regions, broad co-operation among areas within Japan, etc.), the promotion of Japan as a tourist destination abroad, the improvement of Japan's competitiveness in the field of meetings, incentives, conferences and exhibitions (MICE). MAFF is also active, promoting co-operation between communities, appropriate use of human resources and infrastructural support for bottom-up initiatives focused on local resources and communities.

Source: Information provided directly by the Ministry of Land, Infrastructure, Transport and Tourism of Japan (MLIT).

None of these factors is a reason for a region not to develop tourist potential where it exists. However, they suggest that tourism usually makes a poor cornerstone for a development strategy. It makes a far better complement. Here, too, the examples of Seiwa and Ama-cho are instructive: tourism is not a stand-alone sector but a part of a more complex revitalisation effort, which seeks to leverage tourism activities to promote local products. Tourism in these cases is deeply embedded in a "sixth-industry" strategy. Apart from those places with truly spectacular tourist potential, like coastal resorts in warm climates, many successful tourist sectors are linked to other activities in the region – like wine tours in France or other forms of agri-tourism around the world. This suggests that experimentation with tourism and festivals as part of a regional branding and marketing strategy should be encouraged but that big investments in tourist facilities should be approached with caution and, as a rule, left to the private sector.

Renewable energy can play a role in revitalising rural areas

Renewable energy (RE) is another area that is increasingly seen as an important element of regional and rural revitalisation strategies. According to data from the International Energy Agency (IEA), wind, solar, biofuels and waste constituted 3.1% of Japan's total primary energy supply in 2012, up from 2.6% in 2010, the last year before the March 2011 Great East Japan Earthquake. In light of the accident at the Fukushima nuclear plant, the government is committed to rapidly and dramatically expanding Japan's use of RE. Since July 2012, a system of feed-in tariffs (FITs) has been in place to guarantee purchases of power generated from RE sources at prices that will cover the standard generation costs for a fixed period of time. Rural areas will of necessity attract a large portion of investment in RE deployment, because renewables tend to be space-intensive technologies.

RE deployment can provide host communities with several benefits, including: new revenues sources, in the form of taxes, royalties for land use or income from generation; new employment and business opportunities, especially when RE projects are well integrated within the local economy; and opportunities to participate in cutting-edge innovation and global RE supply chains. Even when the basic technology is imported from outside the region, local actors often adapt it to local needs and potential. However, these benefits should not be exaggerated. Experience shows that over-selling the economic benefits of RE to host communities (as has been done in many places) can lead to disillusionment later on (OECD, 2012c). In particular, it is important not to over-state its potential employment benefits: RE tends to have only a limited direct impact on local labour markets, because most of the long-term jobs arise along the supply chain, in manufacturing, specialised services, etc. Most projects involve an employment-intensive construction phase, but, with the exception of biomass, employment falls off thereafter. Maintenance and operations are no more labour-intensive than in conventional energy sectors.

Precisely because of its job-creation potential, biomass attracts particular interest in many parts of Japan. Ashibetsu City, formerly a prosperous mining community on Hokkaidō, has constructed a wood chip factory enabling the conversion of the residuals from forestry activities into energy, which replaces fuel oil in local public facilities. The municipality reckons that the change, effected with the help of JPY 33 million in start-up support from MIC and a loan of similar size from a local bank, has resulted in lower energy costs, higher employment and increased tax revenues.

Policies need to be designed well if the link between RE and rural development is to work

It is important to be sensitive to potential trade-offs among different goals associated with RE investment. These can be significant. For instance, large biomass heat and power plants can generate more employment opportunities in rural communities than wind and solar, but they may actually increase CO_2 emissions through land-use change and the transport of feedstock over relatively long distances. Similarly RE is in most instances a capital-intensive activity, but small-scale installations typically source labour and equipment from international suppliers, thus limiting the community impact in terms of job creation. The experience of OECD regions in North America and Western Europe suggests a number of lessons about the links between RE and rural development that could be helpful to Japanese policy makers at national and local levels (Box 4.13).

To date, most of the major "mega-solar" projects initiated after the FITs were introduced have been led by companies based around Tokyo; the potential to roll out smaller projects in rural areas is far from being realised. The three challenges identified by MAFF in connection with the RE-rural development nexus closely reflect the lessons identified in Box 4.13 above: the need for consensus-building in the affected regions; the need to ensure an adequate return to the local community; and the co-ordination of land use to ensure that other rural activities do not suffer unnecessarily. The ministry's emphasis on consultation with local governments, developers, residents, experts and others is thus to be commended. Many of the biggest RE policy mistakes seen in recent years were the result of very sectoral, top-down approaches, which paid too little attention to local context or to the trade-offs between RE deployment and other goals (OECD, 2012c). Often such approaches were adopted in an effort to accelerate the shift to RE sources, but they led in many cases to delays and backlashes against RE promotion policies. Very

strong investment incentives also triggered rent-seeking and unsustainable local booms, in some cases leading to policy reversals on the part of the authorities. Such reversals, in turn, undermined investor confidence, making it difficult to implement better-designed RE promotion policies later on.

Box 4.13. **Renewable energy and rural development: Lessons from OECD regions**

Renewable energy (RE) is being championed in many places as a potentially significant new source of jobs and rural growth in OECD countries, and as a means of addressing environmental and energy security concerns. In most countries, governments have invested large amounts of public money to support RE development and are requiring significant quantities of RE to be sold by energy providers. While RE indeed represents an opportunity for stimulating economic growth in host communities, it also requires a complex and flexible policy framework and a long-term strategy. OECD research, encompassing case studies in 16 regions across 10 countries, suggests that policy design is critical if RE projects are to deliver these benefits to local economies. Specific factors to bear in mind include the need to:

- Embed energy strategies in the local economic development strategy so that they reflect local potentials and needs. Environmental and energy security arguments tend to be the main impetus for promoting renewable energy, and the local economic benefits tend to get overlooked.
- Integrate RE within larger supply chains in rural economies, such as agriculture, forestry, traditional manufacturing and green tourism.
- Limit subsidies in both scope and duration, and only use them to encourage RE projects that are close to being commercially viable on the market. If subsidies are too high, they attract rent-seeking investors, lead to high-cost energy that is only viable as long as high levels of subsidy are sustained. This can have a negative long-term impact on land use and displace other activities.
- Avoid imposing types of RE on areas that are not suited to them.
- Focus on relatively mature technologies such as heat from biomass, small scale hydro and wind. They are less likely to experience big leaps in technology that can leave new plants suddenly obsolete.
- Create an integrated energy system based on small grids able to support other activities. Policy should take into account backstop technologies for power sources that are intermittent.
- Recognise that RE competes with other sectors, particularly for land. Poor siting can adversely affect local residents and disrupt tourism, which is typically a larger source of income and employment.
- Assess potential projects using investment criteria, and not on the basis of short-term subsidy levels.
- Ensure local public acceptance by ensuring clear benefits to local communities and engaging them in the decision-making process.

There are no shortcuts to rural development. Policy makers should always take into account the overall cost of energy, and implement the least expensive energy solution that can also satisfy carbon emission reduction requirements. Only a coherent and integrated development strategy can promote growth and improve the environment.

Source: OECD (2012c), *Linking Renewable Energy to Rural Development*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264180444-en*.

The choice of national policy instruments and the level of support given to RE play a large role in decisions about the size and type of RE installation. For example, where high FITs are in place for long periods, they can lead to investments in places with limited potential or to investments that may distort local economies by attracting too much land, labour and capital into the renewable sector, thus damaging other industries. RE "booms", like most other booms, tend to end in busts (OECD, 2012c). Similarly, the choice of instrument can bias investment towards large projects. If RE policy is essentially decoupled from local market signals the resulting set of installations may not achieve local or national economic development objectives. Because national strategies set the framework conditions for individual project decisions it is crucial to think about how the signals that policy provides influences action in different types of territory. This means that national policies not only have to be judged in terms of how well they reach aggregate goals for RE but also in terms of how they alter regional economic development options. National mistakes in policy, such as the excessive investments in solar photovoltaic triggered by overly generous FITs in a number of countries, can cause financial problems at the national level and may lock regions and localities into ill-considered investments that limit future regional development options.

When it comes to RE deployment, then, more haste can make for less speed. It can also make for weaker local impacts. When central authorities push to roll out RE projects as fast as possible, it is more likely that labour and other resources will simply be brought into a place from outside and backward linkages to the rest of the local economy will be weak. A more moderate pace of development can allow time for projects to be embedded in the local economy and also for consultations on the best ways to adapt projects to local conditions. Regional/local consensus building can help to avoid policy errors as well as to allay opposition to RE deployment.

Renewable energy can also support resilience

Resilience policies offer opportunities for initiatives linking revitalisation with greener energy. There is a risk that, in response to pressure from various sectoral lobbies, resilience spending will be devoted to expensive and redundant new infrastructure projects. Less expensive local approaches may better serve resilience goals and promote both greener energy and local revitalisation. The government's current proposals include measures to promote the use of cross-laminated timber (CLT) in building construction and the use of natural barriers (as opposed to concrete) for disaster resilience. District heating and decentralised energy systems are among the approaches under consideration. Countries like the Netherlands and Denmark have in recent years moved very far very fast in demonstrating how to use district heat networks to capture and redistribute heat that would otherwise be wasted. The surplus heat produced by power plants, factories and public transport networks is funnelled into the network, eliminating waste, reducing carbon emissions, lowering fuel consumption and saving money. One advantage of Japan's traditionally heavy investment in infrastructure is that the service corridors built for telecommunications and related cables in many places already have space for heat pipes. This makes it far easier and cheaper to move towards co-generation (simultaneous production of power and heat) in such places.

When it comes to the implementation of such ideas, the Japan Association for Resilience, founded in 2014, appears to be focused on greater local activism and, in particular, on drawing local public corporations into the energy business. Their ideas are modelled on the

German *Stadtwerke*, municipally owned utilities. Germany has around 900 *Stadtwerke* that operate in energy, and they were among the major winners when German liberalised its power markets in 1998. They are also increasingly recognised as critical to that country's ability to diffuse renewable energy, whose role in Germany's power mix jumped from about 6% in 2000 to 30% in 2014. The *Stadtwerke* have helped drive this progress because they have organisational, financial and other heft together with a central role in servicing community demand for power.

To further this initiative, the Ministry of Internal Affairs and Communications in late 2014 established a study group on the deployment of "local energy systems led by local governments." The ministry's interest in this area stems not merely from its role as a lead ministry in dealing with SNGs but also from the fact that the ministry itself was formed by merging the Ministry of Home Affairs, the Ministry of Posts and Telecommunications (MPT) and the Management and Coordination Agency. The old MPT had jurisdiction over many underground infrastructure networks for communications cables, and the replacement of these communication cables with fibre-optic cables left considerable space in the communication networks. The focus of the MIC study group has been to examine the energy system plans of 14 local governments, which are centred on the use of forestry resources as a means of bolstering local economies. In May, the commission outlined the conditions for a national rollout of these kinds of initiatives based on the master plans of the 14 municipalities.

MIC sees the impending liberalisation of Japan's retail power market in April 2016 as a critical opportunity for advancing on this front (Takaichi, 2015). The group has also been examining distributed energy infrastructure projects that combine power and heat to maximise local efficiency in energy operations as well as use revamped local public corporations to co-ordinate the projects. Here, the experience of the Netherlands may be instructive. IEA (2008) reports that, after a period of very fast growth in combined heat and power (CHP) supply and in district heating and cooling (DHC) systems, the Netherlands entered a period of much slower growth in these markets following power-sector liberalisation. The problem was not that such systems could not operate in liberalised power markets but that the policy framework for the sector was not so favourable after liberalisation. In particular, the IEA argued that CHP/DHC systems needed a modest but stable feed-in subsidy to sustain their expansion, bolstered by more stringent CO_2 emissions policies. It also noted that support programmes did not extend to useful production of heat. The Japanese authorities will need to monitor carefully the impact of retail market liberalisation on renewables and may need to adapt their policies once the market is opened up.

All this takes place against the backdrop of an expanding commitment within the European Union and elsewhere to district energy systems. The United Nations Environment Program, the US Department of Energy and other agencies are collaborating on a "District Energy in Cities" initiative that has concluded that advanced district energy systems could lead to dramatic cost savings as well as cuts in carbon emissions of 35 gigatonnes by 2050 (UNEP, 2015). Being focused on the efficient cogeneration of natural gas and biomass (wood scraps), the projects in Japan do not yet reflect this recent and rapid emergence of the multiple benefits from district energy systems. Systems in Denmark, Sweden and Germany, for example, use the district energy network itself as a means of storing intermittent energy supplies from solar, wind and other renewable sources. Advocates of this approach in Japan emphasise the opportunity to bolster the energy system and decentralise it

through the deployment of cogeneration, as well as to increase reliance on RE. They see smart grids and smart communities as key networks in constructing the framework for this decentralisation of energy.

Policies for geographically challenged regions

Geography and accessibility are major challenges for many areas

As noted above, one of the challenges facing Japan has long been the situation of geographically disadvantaged areas, chiefly hilly and mountainous areas (HMAs) and remote islands. Policies targeting regions with specific natural conditions were first developed in the high-growth years of the 1950s and 1960s to reduce or limit inter-regional disparities and offset the natural and geographical handicaps facing such areas. A Remote Islands Development Act (RIDA) was adopted in 1953 and amended every ten years or so thereafter, most recently in 2013. The Mountain Village Promotion Act was first passed in 1965. The legislative framework for islands is the more complex of the 2, as RIDA covers only 262 islands, while separate acts cover Okinawa (40 islands), Amami (8) and Ogasawara (4).[22] Specific policies were also developed for areas subject to deep snow,[23] peninsula areas,[24] special soil areas and areas repeatedly exposed to typhoons. To these policies must be added a succession of laws each decade since 1970 providing financial support to depopulating regions.[25] These laws have also had a disproportionate effect on geographically handicapped places (the populations of islands covered RIDA fell by around 58% between 1955 and 2010). The territories falling under the depopulated areas legislation are home to about 8% of Japan's total population but occupy over half of its territory and more than 40% of its municipalities.

Policies toward such areas are based on a number of considerations, including equity in service delivery (ensuring adequate accessibility, in particular) and effective land and resource management. This is particularly important in respect of the islands, as Japan's exclusive economic zone is among the largest in the world, raising issues concerned with the management of marine resources. Many of these islands also possess unique or extremely rare biodiversity which needs to be preserved. The remote islands have come to assume a very important role with respect to the preservation of forests, the marine and natural environments. In addition to accessibility (transport to and from the islands has long been subsidised), measures based on RIDA are concerned primarily with three things: it provides for a higher rate of subsidy for municipal service delivery; it provides resources for ensuring adequate medical care on the islands; and it provides some tax exemptions to encourage business activities on them. The budgeting process for public works projects also differs, in that there is one integrated public works budget for each island, to be administered under the oversight of MLIT. These budgets came to a total of JPY 44 trillion in FY 2014. There are, in addition, revitalisation grants for islands (JPY 1.1 billion in 2013) that can be used for a wide range of projects, including hard and soft infrastructure, industrial revitalisation, job creation, the promotion of tourism and exchanges, or disaster resilience.

The Remote Islands Development Division of MLIT estimates that islands under RIDA consumed about 1.2% of total public works spending during the last 4 decades of the 20th century, somewhat in excess of their share of Japan's population at the start of the period (about 1%) and far above its share at the end (under 0.4%). As a result, industries and the infrastructure of the living environment of the small islands have improved.

Some islands are no longer designated as part of the Remote Island Development Region. However, population ageing and decline are still more severe in most of the islands than elsewhere, and their economies are still less productive and more dependent on tourism and the primary sector. Low incomes, in turn, fuel the outflow of young people to Honshū.

In the case of mountainous areas, the emphasis was initially on transport above all, but since 2000, there has been a system of direct payments to farmers in HMAs in an effort to prevent land abandonment and promote the "multifunctionality" of agricultural activities there. HMA farms tend to be about 30% smaller than other farms and conditions in HMAs are more difficult, so the farm productivity of HMAs is lower. This has led to increasing emphasis on farm consolidation and the promotion of community farming practices, to help organise the workforce that remains in such communities. MAFF has also been promoting sixth-industry diversification in HMAs into activities like food-processing, tourism, direct marketing of produce and catering. Ichida (2015) reports that such efforts prevented the abandonment of around 76 000 ha of farmland during 2005-09. The budget for HMAs is about JPY 50 billion per year, half provided by the national budget and a quarter each by prefectures and the 993 municipalities involved.

Box 4.14. **Italy's Inner Areas Strategy**

Italy's "inner areas", rural areas that are found to be exceptionally remote from urban centres and to face specific infrastructure and service-delivery challenges, cover almost 60% of the national territory, hosting nearly 23% of the national population and encompassing approximately 53% of Italy's municipalities. Inner areas are characterised by: distance from large and medium-sized urban centres; a wealth of natural assets and cultural resources; and a complex settlement pattern shaped by diverse natural phenomena and human settlement processes. In aggregate, these areas are experiencing population ageing and decline, loss of jobs and shrinking public and private service supply. Their decline in many cases has hydro-geological consequences and entails loss of cultural heritage and landscape degradation.

A National Strategy for Inner Areas development has recently been developed with a view to promoting the recovery of such areas on the basis of a set of interconnected projects focused on few selected priority fields of intervention and co-ordinated with ordinary sectoral policies (service provision). The strategy seeks to enhance well-being and quality of life in Inner Areas by turning differences into competitive strengths, overcoming differences, interconnecting locations, and strengthening networks. The Strategy pursues two complementary objectives: i) improving Inner Areas populations' capability to have access to essential services (education, health, transport); and ii) promoting Inner Areas' development by capitalising on local assets and stimulating job opportunities. The ultimate goal of the Strategy lies in reinforcing Inner Areas' demographic structure.

Five major innovations differentiate the strategy from previous efforts in this field:

- Though it is a national strategy, it is based on partnership across levels of government and a strongly participatory approach to local development. It neither forces local actors to conceive new development measures themselves nor plans them from the capital.
- It has two clear aims of accessibility and promoting development, and the central government's approach to these two goals is differentiated. For accessibility, it is a supply-focused policy rationalised by sustaining their quality of life. For promoting development, it is a support-giving function to promote local initiatives in selected domains.
- The framework to promote development is well-conceived. It is a step-by-step process, enabling the government to minimise the risks of pouring resources into undesirable areas and to maximise the benefits expanding others. One prototype area per region is selected to evaluate the potential success

Box 4.14. **Italy's Inner Areas Strategy** *(Cont.)*

of the Strategy and trigger a positive learning mechanism. All the selected areas come to be part of a project federation to encourage networking, exchange and learning.

- The process for selecting prototype areas is very transparent. Meetings, datasets, results and reports are published on line.
- The sustainability of Strategy actions is ensured by a bottom-up approach in which municipalities and regions are directly responsible for Strategy implementation. Municipal associations are utilised in Italy as a platform for collaborative work.

These five approaches in Italy are all consistent with the Japanese government's vision of regional and rural revitalisation and could be useful principles, as Japan works to strengthen its policies for supporting geographically challenged places.

Source: Information provided directly by the Department for Development and Economic Cohesion of the Italian Republic.

Policies to support geographically handicapped regions could be rationalised

Given limited fiscal resources and with population decline now a nation-wide problem, attention will be needed to ensure that these arrangements do not result in too great a dispersion of resources. A very large share of municipalities are now qualified as "disadvantaged" on one criterion or another, and many of those not so classified face challenges similar to those who are.

Even so, there is clearly a strong case for policies addressing geographically handicapped places. Japan's islands, for example, have special needs and will continue to require special support, if only to ensure adequate public service provision and connectivity. However, there is certainly an argument for streamlining them. The challenge is ensuring that such support is provided as efficiently and effectively as possible. It would be advisable to review the provision of support at regular intervals (at least every decade, if not every five years) to assess real needs. After more than half a century of such policies, for example, further provision of physical infrastructure is unlikely to be such a priority in many places, and technological change will alter conditions regarding accessibility challenges and service provision costs (e.g. telemedicine). The move towards more development-oriented investment in recent years is welcome but it would also be prudent to assess the impact of "softer" investments, in things like entrepreneurship promotion or sixth-industry initiatives. It should be emphasised that rationalising such policies does not imply simply abandoning remote or distressed territories to their fate. It is about adopting fewer, more encompassing instruments and regularly assessing the criteria on which they are disbursed.

The keys to revitalisation are local initiative, local assets and a focus on local prosperity

In looking at the range of revitalisation and "sixth industry" initiatives undertaken to date, a number of success factors seem to stand out.

- The most successful initiatives consistently prove to be locally driven and outwardly focused. External support is not the decisive factor: indeed, one common feature of the diverse projects identified by the Headquarters is a reluctance to accept government money and a determination to put projects on a self-financing basis (Yomiuri Online, n.d.). Local actors are actively seeking external markets and ideas and welcoming outside actors, rather than soliciting subsidies.

- They also reflect a determination to build on the diversity emphasised in the Grand Design, organising community development strategies on the basis of local, often highly place-specific assets. Given Japan's demographic and fiscal situation, this is encouraging: local communities need to abandon any expectation of revitalisation on the basis of external action and focus on asset-based community development (ABCD) strategies.[26] For local policy makers, this implies a shift of focus from local deficiencies to local assets, both tangible and intangible, and local capacities (Feldhoff, 2013).
- Social capital matters. A community's capacity for self-organisation is one of the most critical intangible assets, especially when it comes to co-production of services, an increasingly important form of collaboration between municipal authorities and citizens (e.g. community buses).
- It would appear that the most successful strategies so far are those that focus on prosperity rather than population. Ama-cho, Seiwa, Kamiyama and other such communities do not expect to return to their previous sizes; they may even shrink further. But they have established a basis for future prosperity that will allow them to attract and retain young people, ensuring that, whatever their size, they will have a healthier and more sustainable population structure. That is best achieved by economic development – and that is why, despite the attractions of the "silver economy", an exclusive focus on attracting retirees and the elderly is self-limiting; such an approach can only be sustained if other facets of the strategy can draw in younger people.

Many of these factors are reflected in government efforts to promote revitalisation. MAFF, for its part, put forward a vision, "For Attractive Rural Areas ~ To Make *Coming Back to Rural Areas* Real", to coincide with the adoption of the cabinet decision on "The Basic Policies for Food, Agriculture, and Rural Areas" in March, 2015. This vision shows the direction of rural policies with many case studies and emphasises the need to i) create jobs in rural areas, iii) strengthen ties between communities, and iii) strengthen relationships with urban residents.

While the government is understandably reluctant to see large parts of Japan become uninhabited, the prosperity, well-being and access to opportunity of its citizens are the primary concerns. How many people live in rural Japan matters far less than the prosperity and prospects of those who do live there. Of course, most settlements require a certain level of population to assure viability, but attracting people to a place is not an end in itself but a means to an end – the end of enabling them to offer good livelihoods and a good quality of life. This is sometimes forgotten, but it must be kept in mind, because many places may well have prosperous sustainable futures but with fewer people – as, for example, when structural change leads to a reduction in the labour intensity of the dominant local industry or when it leads to a shift in specialisation from more to less labour-intensive activities. The experiences of rural communities in places like Canada and Australia demonstrate that communities sometimes can and do shrink their way back to prosperity (Tompson, 2009; OECD, 2010a). The process, though, is often painful, which is why the last part of this chapter focuses on policies for downsizing places.

Policies for downsizing cities

The final major section of this chapter focuses on the problem of shrinking towns and cities. There is little doubt that almost all cities in Japan face a future of declining populations. Yet few cities have yet begun to confront what physical shrinkage will mean in

terms of land use, service provision or economic development. While Chapter 2 considers the infrastructure challenges in connection with local public finance and the operation of local public corporations, this section looks at international and Japanese experience of related issues such as vacancies, service delivery and economic development in the context of cities and towns that are growing smaller. It concludes with a look at the governance issues involved downsizing cities and towns.

Policy makers in most countries have been slow to focus on how to manage shrinking cities

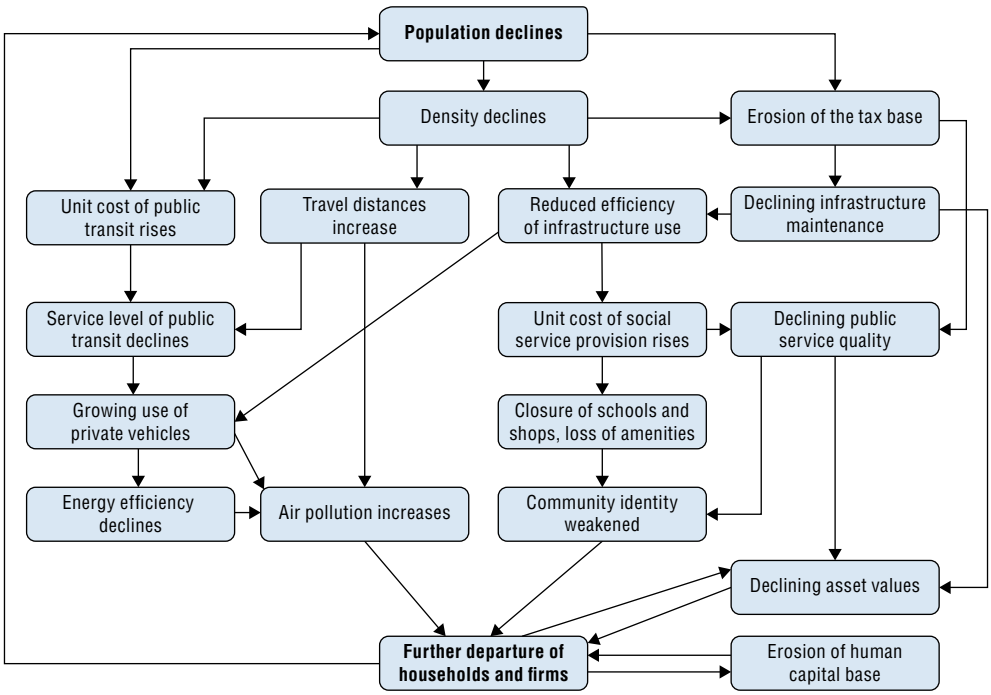
Given how widespread the phenomenon is, there is remarkably little understanding of what might constitute "best practice" when it comes to managing the shrinkage of cities. Until recently, the problem was not so common, but a large number of medium-sized cities in OECD countries have experienced substantial population decline in recent decades,[27] as have a small number of much larger ones, such as Detroit. The experience of cities in eastern Germany after unification has attracted particular attention, since many of them shrank very rapidly as large parts of the population moved to western *Länder* (Martinez-Fernandez et al., 2012).

Part of the reason for this lack of understanding has been a reluctance to accept shrinkage as permanent. Political leaders in such cities have often been reluctant to acknowledge that they might not grow back to their previous sizes, not least because the idea is electorally unpopular: citizens do not wish to think of themselves as part of a "declining community" (Schlappa and Neill, 2013). At the same time, the professionals involved in urban policy making, particularly planners and infrastructure engineers, have been trained to manage growth rather than decline (Hollander, et al., 2009; Hoornbeek and Schwarz, 2009). Planners in many places have, of course, been managing urban decline for some time, but the dominant paradigm of the field is still growth-oriented (Martinez Fernandez et al., 2012). Politically, it is far easier to sell (even unrealistic) plans for regeneration, and technically it is often more straightforward to preserve public facilities and infrastructures that may someday be needed again than to decommission or dismantle them. Where shrinkage occurs in the context of a positive demographic dynamic in the larger society, the hope that the city will "bounce back" may indeed have some basis. In a Japanese context, though, it is clear that many – indeed most – cities face an extended future of population decline. To this must be added the lobbying of construction companies and others with a vested interest in public works projects. Infrastructure spending and the allocation of public works contracts in many countries are central to the "iron triangle" linking bureaucracy, politics and business (Adams, 1981; Kondoh, 2008; Yoshino and Mizoguchi, 2009).

City shrinkage can also bring about also tremendous loss of wealth, as the loss of population reduces the value of real property and other assets held by those who remain. Once the process begins, it can become self-reinforcing. The most productive workers tend to leave first, as they have the best prospects elsewhere. The resulting erosion of the city's human capital may then prompt other promising individuals to leave, as they see that the earlier departures have reduced the opportunities available locally. This, in turn, can have a knock-on effect on asset prices, which encourages more departures (no one wishes to find himself the last homeowner in an area where house prices have collapsed owing to depopulation). This redistribution mechanism has evident effects on the generation of

fiscal revenues and thus on the investment capacities of local authorities, which further augment the risk of a sustained downward spiral. Figure 4.8 presents a stylised view of this process.

Figure 4.8. **The consequences of urban population decline**



Source: Author's elaboration.

Of course, the strength of the various effects shown in the schema above depends enormously on the size and form of the city in question. In smaller cities and towns, loss of density will matter less, because they tend to be less dense anyway and because distances tend, other things being equal, to be shorter. However, they are likely to suffer far more acute problems with the attraction and retention of firms – it is lack of job opportunities that will contribute most to outbound migration – and the financing of public services. In larger cities, where density and distances are both greater, the pattern of de-densification will matter more, since depopulation, if not well-managed in spatial terms, could fragment the urban area, leading to fragmented, "perforated" cities, where shrinkage occurs in different areas throughout the city (e.g. Detroit). Indeed, precisely because distances tend to be greater and populations both larger and denser in such cities, the potential environmental consequences of de-densification will be greater. As will be seen, policy responses to shrinkage will likewise need to vary to reflect these differences in cities' circumstances.

From a purely spatial perspective, too, the process tends to vary. Hollander et al. (2009) find that the usual pattern in western countries has – until recently, at least – been a hollowing-out of inner cities, but this pattern is far from universal and there are growing signs of a reversal. Some suburbs of Paris have gone into decline while the city centre continued to grow and even some US metropolitan areas are starting to see movement back into city centres. A pattern of "perforation" has been observed in some places in Eastern Germany. Whatever the pattern, however, shrinking cities need to deal with a range of common challenges.

Vacant sites are costly liabilities – but shrinking cities can turn them into assets

Vacant land is often the most visible by-product of urban depopulation and the management of vacant sites can be critical to a shrinking community's prosperity and sense of identity. Hollander et al. (2009: 227) observe that "vacant land saps vitality from cities and coverts a productive resource (real estate) into a community liability." Vacant residences and abandoned factories and other structures also create visual and environmental dis-amenities and public safety hazards. In many cities, failure to face the problem of shrinkage has led to numerous problems, including abandoned/under-occupied buildings, empty overgrown lots, crime, rapid ageing of the local population and in many cases large concentrations of other marginalised groups in the areas experiencing the fastest depopulation.

The first question to address concerns the potential for redevelopment. Ferber and Preuss (2006) distinguish three categories of vacant urban land:

- Sites with relatively low reclamation costs and high post-reclamation value ("self-developing sites") are likely to be very attractive to private agents and can be redeveloped with minimal public support. There is usually no need for public intervention, provided the existing planning and administrative framework is sound.
- Sites with potentially high post-reclamation value but relatively high reclamation costs ("potential development sites") may require some sort of public-private partnership to develop, with the commitment of public resources justified where the negative (positive) spillover effects of vacancy (redevelopment) on surrounding areas are significant. Private actors will likely require advice and assistance in planning and funding any redevelopment, so the authorities will need to consider public-private partnerships (PPPs) and other risk-sharing and co-ordination mechanisms.
- "Reserve sites" with high reclamation costs and low potential value may nevertheless require public investment to address environmental and other dis-amenities, lest they drive down nearby property values and thus contribute to further decline. These are likely to be very common in places where demographic trends mean that population decline will not be reversed in the foreseeable future; this category will thus be especially relevant for Japanese urban planners in the coming decades.

Where redevelopment is not feasible, holding strategies are needed to help maintain adjacent property values – particularly in respect of reserve sites. The evidence from shrinking US cities suggests that relatively simple, commonsensical first steps can make a big difference. For example, the removal of derelict structures and basic landscaping of vacant lots can raise adjacent property values by 30% (Wachter, 2005). Just planting a tree within 50 feet of a house can add as much as 9% to its value. Other simple but important steps include the prevention of illegal dumping (which can be harder when the informal oversight provided by local residents is gone). More ambitious measures, which might apply to the potential development sites or reserve sites, would include community use for grassroots economic development – letting neighbourhood communities turn vacant lots into parks or allowing entrepreneurs to put them to new uses, such as temporary marketplaces or as venues for sports and cultural events or art installations. Entrepreneurs will always look to extract value from vacancy if they can – Overmeyer (2006, 2007) points to the need for light but effective regulation of temporary use to enable such activities.

Shrinking cities in Japan may need to create land banks to help identify, prepare and redevelop vacant sites. These have become increasingly prominent in the United States since the early 1980s. They typically have special powers to acquire and assemble multiple derelict or abandoned properties and to transfer them to responsible public, non-profit or private entities for redevelopment. Where real estate markets are subject to considerable uncertainty, they assume much of the initial risk of preparing sites for redevelopment. They can also participate with city or neighbourhood leaders in the elaboration of community plans or visions for redevelopment (Alexander, 2005).

The experience of urban shrinkage in the eastern German *Länder* after unification has thrown up some promising examples of innovative policy responses (Schlappa and Neill, 2013) that Japanese cities might in some circumstances adapt:

- Leipzig in 2004 initiated the *Wächterhaus* concept to address high levels of housing vacancy in its attractive inner-city districts. A coalition of architects, planners and residents created a voluntary organisation to facilitate flexible rental agreements. For example, tenants in some cases may live rent-free in return for an obligation to protect the building from vandalism and look after simple maintenance and repairs to prevent deterioration of the housing stock or the urban environment. Such a model cannot be applied in all circumstances, but Japanese cities with attractive old centres could find it an important part of a policy package for attracting entrepreneurs and start-up firms.
- A number of cities have turned surplus car parks, offices and industrial sites into gardens for growing food and ornamental plants. The income generated is generally modest but is often sufficient to cover maintenance costs, and such redevelopment also serves to turn the sites from liabilities into assets in terms of the urban environment and local property values.
- Schönebeck has identified and planned the network of vacant sites to be redeveloped as open spaces using a "plot" approach. Instead of identifying large tracts of land for one use or form of redevelopment, the authorities have integrated into the urban fabric a network of open spaces that range from urban farmland and small allotments to restored woodland. One of the key elements here is to pursue the transition of old urban sites into new open spaces on the basis of a larger vision of the district or city – rather than lot by lot – and to allow mixed use even in areas designated for new green space.

Other examples include the conversion of old industrial sites into landscape parks and cultural attractions (e.g. Emscher Park [Ruhr] and Fürst Pückler Land [Eastern Germany]). Environmentally, this can be quite straightforward, if not always cheap. In the right locations, vacant land can help greatly with stormwater management, air quality and biodiversity, as well as reducing urban heat-island effects (Hollander et al., 2009).

The use of vacant land for urban green infrastructure – defined here as strategically planned and locally managed networks of protected green space[28] – is receiving increasing attention in the United States (Schilling, 2009). Community-driven green infrastructure plans can offer an opportunity for city leaders, residents and property owners to identify and select sites for such greening. In the first instance, they might target tax-delinquent, abandoned and poorly maintained commercial or residential properties and then follow up with incentives for voluntary acquisitions in the case of other properties that might need to be included in the plans. The design of such green infrastructure could draw on the findings of researchers like Stott et al. (2015), which point to the need to balance the benefits for eco-system services of large, contiguous green spaces in relatively densely

developed urban areas and the health and well-being benefits of smaller parks and nearby green spaces.

Reforestation strategies are also increasingly seen as part of the response to city shrinkage in the United States (Sacramento Tree Foundation, 2005), as are initiatives focused on the planting of community gardens and market gardens, though these depend greatly on soil conditions and the presence/absence of environmental pollutants (Hollander et al., 2009). The impact of such initiatives can go well beyond property values: in a block by block study of Toronto, Kardan et al. (2015) find that an additional ten trees on a given block correspond to a one percentage point increase in how healthy nearby residents felt, a result consistent with the findings of Donovan et al. (2013) in a much larger, but less urban-focused, study in the United States.

Other promising options may be more location-specific, such as identifying sites that may have considerable amenity value to the community and/or the potential to attract visitors – what Schlappa and Neill (2013), in a discussion of Altena (Germany), call "polishing diamonds". In this instance, the real obstacle was governance: a medieval castle overlooked the town but was not owned by it and was not easily accessible from it. Successful redevelopment occurred only once the town, the public entity that owned the castle and a private investor devised a way to link it better to the town, so that both could benefit from the visitors the castle attracted.

There is clearly room for considerable diversity across cities in responding to the challenges of shrinkage. Indeed, the largest cities will need diverse strategies to address conditions in different districts and neighbourhoods. As Okata and Murayama (2011) show, Tokyo is a patchwork of different types of urban spaces facing very diverse redevelopment issues. Incremental approaches, allowing for diverse and creative responses to these challenges will help different parts of the capital region to adapt to demographic, environmental and economic change while preserving their distinctive characters. Whatever the chosen strategy, it is important that municipalities and other local actors not overlook the importance of simply creating a sustainable and aesthetically appealing urban landscape as the city shrinks. This is far more promising for many than gambling on resurrection with expensive new development projects.

Service delivery challenges are particularly acute in smaller cities and towns and rural areas

As cities shrink in size, pressure on the financing of public services naturally mounts, as local tax revenues decline and the unit (per person) cost of providing services rises. In many cases, this results in the closure or downsizing of schools, hospitals or other public facilities. The result is longer journeys for citizens who need access to such facilities, at least to the extent that online or other remote connections cannot replace them. Such choices are difficult in any community, but they are particularly hard in smaller places. Large cities may close and consolidate schools, for example, without children having to travel very long distances, though the decisions they take will have impacts on local property values. By contrast, the closure of a school in a small town may result in very long bus trips to attend school in another town or city. The loss of the school may relieve the town of a public finance burden but it also means losing an asset that could otherwise help attract new residents. The same is true of the relocation of healthcare facilities and other social infrastructure: newcomers to an area are more likely to settle, and incumbent residents to stay, in places where those facilities are close at hand.

A second, more radical step for a shrinking city is to begin curtailing services to some areas altogether – not merely consolidating schools or clinics but putting an end to, e.g. public rubbish collection, bus services or water supply. In 2010, the city of Detroit began considering such possibilities for the least dense areas of that city. People might continue to live in such places but they would need private solutions for such service-provision challenges, as many rural dwellers do. In a sense, Detroit would simply be treating such areas as though they were no longer incorporated in the city (presumably, this would include cutting their local tax bills). The third, and most radical, option is to bulldoze urban areas and redevelop them as parks or farmland. As Glaeser (2010) observes, this is hardly controversial in respect of abandoned and run-down structures, which may even pose dangers to the public, but it is far more difficult to apply in respect of very large areas. The key question is whether and at what point the authorities may need to compel the remaining inhabitants to sell their properties and relocate, and on what terms – the mirror image of the more common historical problem in which the power of eminent domain and compulsory purchase/relocation has been used primarily to make room for growth.

As noted above, the problems of service provision in depopulating places tend to be most acute in smaller towns and rural areas. In major cities, the challenge usually involves rationalising and streamlining key services; local provision is rarely threatened. The number of schools, hospitals or clinics may be cut, but a major city – unlike a small town – is unlikely to be left without a secondary school or tertiary medical care, for example. However, there are two key points that are highly relevant for major cities as well:

- Quality can improve even when scale is declining. When savings are made from a reduction in the scale of services, there is often scope to soften public opposition and mitigate the effect of the cuts by using some of the savings to enhance their quality. For example, when streamlining school systems, as many cities have done, it may be possible to invest some of the savings in improving the equipment and buildings of those that remain – something that may, in turn, make it easier to attract both teachers and pupils. A similar logic can be applied to early childhood care facilities or to healthcare.
- "Smart" technologies offer promising opportunities to optimise service delivery, particularly in areas like public transport, where loss of population and density will make it increasingly difficult to sustain the levels of service that previously prevailed.

In some spheres, like telemedicine, information technology already has much to offer when it comes to sustaining service provision in remote places, though many countries have recognised that IT alone is not enough. Some have experimented increasingly with strategies for making services more mobile. Sweden, for example, long ago introduced mobile post offices in some rural areas, with rural postal vans not merely delivering letters but providing a range of other postal and related services in the communities they covered. In Germany, the AGnES Community Medicine Nurses Programme supports general practitioner physicians in rural areas, reducing the amount of time doctors spend on home visits for routine procedures. The community medicine nurses make home visits and use electronic devices (tablets or PCs) to send patients' health information in real time to the doctor, with video-conferences convened as necessary. In Canada, mobile labs have been used in some areas to provide on-the-spot training to rural residents; the service works with local employers to identify and address skills gaps (OECD, 2010b). In France, the *Maisons de santé* form part of a multi-dimensional strategy for supporting rural healthcare that also includes telemedicine and other measures (Box 4.15).

Box 4.15. **France's *Maisons de santé***

The development of *Maisons de santé* ("Health houses") is part of a three-pronged policy aimed at delivering a first level health service all across the country. The strategy also includes the promotion of telemedicine and incentives (grants and/or subsidies) for physicians to settle in territories that are short of practitioners. This initiative is all the more important because territories that face a shortfall of healthcare services are often characterised by higher-than-average shares of elderly people in the population. Many of these are prone to health problems and usually unable to cover long distances to meet a physician.

Gathering nurses, physiotherapists and physicians under one roof makes it possible to increase the efficiency of healthcare provision via mutualisation of costs (rent, medical devices, employees), longer opening hours and easier replacements. Moreover, an increasing number of practitioners (especially younger ones) seem to appreciate this new way of practising medicine, avoiding professional isolation and enabling better co-ordination of care. It is also easier for patients, who can find several services at the same place. These *Maisons de santé* are usually set up by local authorities and benefit from state subsidies once they have signed an agreement with the *Agence Régionale de Santé* (Regional Health Agency), which operates under the Ministry of Public Health. The government's objective is to increase the number of *Maisons de santé* from about 600 at present to 800 in 2017.

Source: Information provided directly by the Commissariat Général à l'Égalité des Territoires.

Japan is in the forefront of efforts to adapt public transport for rural areas

An increasing number of Japanese regions outside metropolitan areas are struggling to sustain their rural public transport networks as financially independent private businesses due to population ageing and decline. Efficient provision of public transport is often a challenge in areas with relatively low population density: long distances and low ridership make it difficult to offer public transport options that are quick, reliable, affordable and efficient enough to attract rural consumers without requiring huge public subsidies. However, open data and mobile information platforms are rapidly changing the options available when it comes to public transport provision in rural areas; this is particularly true of the rise of "big data" (Box 4.16). OECD/ITF (2015) draws on the experiences of a number of OECD countries, including Japan, to understand these shifts. It looks, in particular, at the potential for "demand-responsive transport" (DRT) to meet public transport needs in rural areas. There essentially two models of DRT: door-to-door or predefined pick-up and drop-off points with service provided only if there is demand. For example, in the Czech Republic, "Radiobus" operates like a conventional bus in that it has a regular timetable, but it runs only when users confirm demand (by phone or Internet) and only on the part of the route required.

Information and communications technologies are used to adapt collective transport routes, stops and timing to the actual needs of customers. In addition to working well in areas of low population or at periods of low demand, such schemes can operate effectively in denser areas to meet the needs of specific groups that are dispersed among the general population, like the elderly or the handicapped. DRT schemes may be fully or partially funded by local transit authorities, as they are often providers of socially necessary transport and may be selected by public tender. However, they can also operate independently as private concerns or community operated non-profit enterprises.

Box 4.16. **"Big data" and public transport provision**

"Big data" holds much promise for improving the planning and management of transport activity by radically increasing the amount or near-real-time availability of mobility-related data. Transport authorities will need to ensure an adequate level of data literacy for handling new streams of data and novel data types. Traffic operations, transport planning and safety are areas where authorities must critically evaluate where and how new, or newly available data and data-related insights, can improve policy.

"Big data" can help governments, businesses and individuals to make more informed decisions. Better data can help transport authorities to understand commuters' behaviour, provide targeted information and identify policy interventions. In fact, the biggest gains from using big data may come from changing user behaviour. From the government perspective, there is need for better data to support decision making, at least for the following purposes:

- understanding better the demand (needs by different user groups)
- better planning services to match user needs and
- making the market case for privately operated services (profitability).

Source: OECD/ITF (2015), *International Experiences on Public Transport Provision in Rural Areas*, OECD, Paris, available at: *http://www.internationaltransportforum.org/Pub/pdf/15CSPA_RuralAreas.pdf*.

Japanese municipalities are extremely active in this sphere; indeed, demand buses have operated in Japan since the 1970s (Takeuchi et al., 2003). What has changed in recent years is technology and uptake. Computer-assisted scheduling, routing and dispatching have made operation much more efficient, while mobile applications have made such services far easier for users. In response to these changes, and in an effort to deal with pressure on public transport services, Japanese municipalities have been ramping up their DRT provision. MLIT (2014) reports that, between FY 2006 and FY 2013, the number of DRT schemes nearly doubled. More than 200 municipalities now have "on demand" bus services. These are of three basic types. The first are essentially bus services with fixed routes that operate only on the basis of customer demand. The second type involves some flexibility along a fixed route in response to customer demand. The third involves a much freer route, based on customers' demands for pick-up and set-down: since the area of operation is defined and the number of customers small, the operator selects the route that minimises inconvenience to passengers. In addition, what are effectively shared taxis allow door-to-door service with no fixed routes or stops in certain areas. For example, the Migon shared taxi service around the Tohkadai Newtown in Komaki (Aichi Prefecture) is based on flat-rate fares, shared ride, limited area of operation and door-to-door service.

The evidence suggests that DRT users are prepared to pay a higher fare than existing bus tariffs. However, the unit cost per trip may be high, which means that vehicle choice needs to be linked to density of demand (Table 4.1). Yet if higher cost is a drawback, other aspects of system design offer benefits to offset this. The evidence suggests that successful DRT systems are designed and adapted in close consultation with users as regards routing, location of stops, frequency, etc. Indeed, even relatively simple changes, like relocation of key stops (e.g. around major transport termini) can enhance convenience and increase ridership substantially (ITPS, 2011). Moreover, these systems are continually improving, not least in Japan, where IT researchers at the University of Tokyo have helped to design systems that allow for faster, simpler dispatch, eliminating the need to call an operator,

and to optimise dispatch and route planning so that new passenger reservations do not disrupt or delay services to already-booked passengers (On Demand Bus, n.d.).

Table 4.1. **Indicative guidance for vehicle choice related to demand**

Trips per vehicle-hour x journey length (= passenger-km per vehicle-hour)	Suggested vehicle choice
Less than 10	Taxi
Between 10 and 20	Taxi(s) or flexible minibus
Between 20 and 50	Flexible minibus, with lower degree of route flexibility at the upper end of the range
Greater than 50	Largely fixed-route bus with limited deviations

Sources: OECD/ITF (2015), *International Experiences on Public Transport Provision in Rural Areas*, OECD, Paris, available at: *http://www.internationaltransportforum.org/Pub/pdf/15CSPA_RuralAreas.pdf*; adapted from Wright, S. (2013), "Designing flexible transport services: guidelines for choosing the vehicle type", *Transportation Planning and Technology*, Vol. 36/1, pp. 76-92.

Where "conventional" public transport still has a role to play, OECD/ITF (2015) points to the success of some relatively simple innovations in increasing efficiency: reducing seat density, for greater comfort; using smaller vehicles; better marketing; and a focus on service reliability by, e.g. making real-time travel information available with mobile applications. A number of Japanese locales have shown how identifying service levels based on customer need can help to plan the supply so as to meet actual demand. Such customer-based planning has resulted in the revitalisation of several public transport services in Japan, resulting in increased numbers of users. In some places, the local private sector has also been involved in designing routes and financing initiatives in co-operation with local authorities. For example, Hidakagawa-cho (Wakayama Prefecture) has integrated its bus routes with shared taxis, allowing variation in vehicle size depending on demand at different times, as well as enhanced feeder services and greater frequency. Niseko-cho, in Hokkaidō, integrated the routes of private buses, municipal welfare buses and school buses. The buses stop on demand and there is some variation of routes at times of peak demand (e.g. early morning school runs). The resulting increase in frequency and reliability then led to an upward trend in use by the general public. In a number of places, community bus services now operate on a not-for-profit basis, sustained partly by fares, but with support from municipal budgets and, most importantly, local businesses along the routes. In many cases, local volunteers play a central role. (ITPS, 2011).

Car- and ride-sharing programmes are also growing fast. In Japan, shared taxis are increasingly widespread. Car-sharing services, virtually unknown a few years ago, are spreading rapidly in many countries. One of the best-known is Paris's AutoLib, an electric car-sharing service that now has 130 000 registered users with about 10 000 individual journeys on any given day. Similar systems are springing up elsewhere: Car2go, a Daimler AG subsidiary, operates car-sharing schemes in more than 30 cities in Europe and North America, and in June 2015, Avis's Zipcar had more than 900 000 members and nearly 10 000 vehicles in seven countries. Ride-sharing schemes are also growing fast (Liftshare, Blablacar). By the beginning of 2014, it was estimated that almost 500 000 Japanese had registered for car-sharing services, and the numbers were rising fast, with private companies entering the market alongside municipalities, which in some cases have launched services on their own or in collaboration with private firms, in an effort to make better use of their official vehicle fleets (Nagata, 2014).

Virtually all of these car-sharing services rely on mobile apps for efficient matching of supply and demand. While this is often seen chiefly as an urban phenomenon (and matching is certainly easier where passenger and vehicle densities are higher), it can also work very well in rural areas, particularly for key routes to and from centres of employment or essential services. Public initiatives to support car-pooling schemes have been undertaken in many countries, e.g. France (OECD/ITF, 2015).

In some countries (e.g. Switzerland), the postal service operator is a major bus operator. In others (e.g. United Kingdom), this is an incidental role but some postal bus services are operated. Simply put, such services rely on existing postal vehicle runs to collect mail from local post offices, public mail boxes, etc., and take them to regional sorting offices, most often in a nearby town. In many cases, this can provide 2-3 runs per day on weekdays, depending on the frequency of postal collections. Replacing a small postal van with a minibus allows public transport services to "piggyback" on postal operations. Financing depends on fares and passenger numbers, and some local authority support may be required. In the United Kingdom, a demand-responsive service is now provided in some locations. However, this option can work most readily where settlement patterns in a low-density area effectively place most of the population on a linear corridor – e.g. along a peninsula, coastal road or valley (White, 2015).

There is still plenty of scope for experimentation and innovation in this sphere; the government should therefore seek to promote a trial-and-error approach, undergirded by mechanisms for sharing information and experiences. Previously, subsidies from the centre were provided to operators to combat low ridership problems. This made it harder for municipalities to co-ordinate the activities of the various operators, who were often in competition with each other and who looked mainly to the central government for guidance and support. Under the 2007 Act on Revitalisation and Rehabilitation of Local Public Transport Systems, municipalities in Japan are in the forefront of tackling rural transport needs, but the central government certifies rural public transport reorganisation plans and provides subsidies under certain conditions for maintaining regional transport in accordance with regional characteristics and reconstructing rural public transport networks. Amendments to the act in 2014 further reinforced the ability of municipal governments to co-ordinate public transport activities. Public transport reorganisation plans still require central government approval, but they are no longer defined by sector, and municipalities have greater freedom to adjust fees and tariffs, to combine some cargo and passenger transport (like Switzerland's postal buses) and the like.

This reform process has unleashed a great deal of local experimentation in public transport. The experience of Norway is instructive here. The national government provided extraordinary funding to encourage experimentation as part of its Public Transport in Rural Areas Programme. A number of schemes were created in response to this opportunity, but some of them struggled when the programme ended. That should be seen as good news: temporary funding triggered innovation. As would be expected, some of the new ideas tried proved to be more resilient than others; some needed to be reworked to make them more efficient, and others were not viable. The key is to avoid locking in support for the less efficient approaches that emerge.

Economic strategies must reflect realistic appraisals of local demographic trends

As noted above, loss of human capital is a critical part of the shrinking process. While vacant land is more visible and the reduction in services is more immediately felt, the loss of skills and knowledge may ultimately pose the greatest threat to a city's economic future.

The loss of human capital can weaken local innovation systems, making it harder for local firms to participate in highly productive value chains, and it is likely to hit small and medium enterprises (SMEs) particularly hard, as they depend primarily on the availability of skilled workers in local labour markets (Martinez-Fernandez and Wu, 2007). Shrinking cities thus need skills and employment strategies that differ from those that are suited to growing cities. In the latter, skills shortages often reflect strong demand from employers, whereas declining cities have enormous problems on the supply side, a fact that makes it all the harder to attract and retain firms.

Policies for shrinking cities require intensive vertical and horizontal co-ordination

"Rightsizing" cities undergoing rapid population decline and ageing will require important efforts to co-ordinate policy interventions across different policy domains, across levels of government and across jurisdictional boundaries. City leaders in Japan will want to bear in mind some common issues that should be aligned across levels of government and, in some cases, across municipal boundaries:

- the alignment of service provision and land-use policies
- the co-ordination of local and regional planning processes and development policies and
- the co-ordination of policies to deal with urban shrinkage at a regional scale.

One lesson that can be drawn from the experiences of many shrinking cities is that central governments may have a role to play in ensuring that local actors adopt a realistic appraisal of the situation. This is a common problem across the OECD; far too many regions and local authorities subject to demographic decline have continued to plan for growth. In many cases, they are abetted in this by fiscal transfer systems that do not penalise them for so doing or that even reward them with investments in infrastructure for which there is little or no need. It was to counter this problem that the German state of Saxony in 2010 imposed the requirement that every ministry demonstrate that local and regional planning processes have taken due account of demographic trends (Schlappa and Neill, 2013). The authorities in Japan, who have been working to make subnational governments adopt more realistic projections (see Chapter 2 above), might do likewise, requiring that municipal plans be assessed against some of the questions included in the "demographic checklist" adopted by Saxony:

- Does the proposal take into account the statistical evidence concerning population trends and the future composition of the population?
- Are intergenerational models of living and working considered?
- Does the proposal provide for the continued adaptation of physical infrastructure and services?

A second key point, which is particularly important in view of the incentives that local politicians have to be "bullish" in their demographic projections, is that too much external support for a declining city may contribute to the problem, as it can increase incentives to gamble unwisely on regeneration projects rather than adapting to the new reality. The experience of Detroit is instructive here: the city gambled repeatedly on big, visible "flagship" regeneration projects, often financed with state and federal support (Box 4.17).[29] In the end, they profited the city little. In Japan, too, revival plans for shrinking cities have often assumed either national- or prefectural-level infusions of investment, particularly in infrastructure, and inward net migration flows and important infrastructure (Onishi, 2004; Uemura, 2012). Yet such expectations are increasingly unrealistic in a Japan where most

cities are losing population and public budgets are severely constrained. Central resources will in future have to be allocated much more sparingly and much more selectively, so it is important that cities and towns facing population decline be prepared to adapt rather to expect large exogenous transfers intended to keep them growing. The alternative is to reframe shrinkage as opportunity, offering – in some cases, at least – the chance to make the city greener and more sustainable, along some of the lines suggested above.

Box 4.17. **Shrinking Detroit**

The shrinkage of Detroit is in many ways an object lesson for shrinking cities elsewhere. From a peak population of 1.85 million in 1950, Detroit shrank to just over 713 000 in 2010, a fall of more than 61%. By 2013, it was forced to declare bankruptcy. To be sure, many of the racial, social and industrial roots of Detroit's decline are distinct from those that are currently affecting Japanese towns and cities; they were far more typical of the problems afflicting US industrial cities in the mid-20th century, albeit in an extreme form: over-reliance on a single industry, suburbanisation, racial tensions, and metropolitan fragmentation and conflict, which, of course, often reflected the other factors. However, there are lessons for many cities in the way Detroit responded to demographic and economic decline:

- **Inter-municipal competition prevailed** over co-operation. Despite the struggles the US auto industry has experienced since middle decades of the last century, the city of Detroit is located at the heart of what is still a wealthy metropolitan area. Yet the lack of a regional approach meant that Detroit was often in conflict with its immediate neighbours, and what Schlappa and Neill (2013) call "competitive civic entrepreneurialism" led local leaders to focus on competing with each other for investment and resources locally rather than working together to compete as a metro region on a national and global scale. Metropolitan co-ordination is difficult to achieve in good times; it is even harder when times are tough and the incentives for municipal actors to compete for increasingly scarce human and financial resources are even stronger.
- The city itself **bet repeatedly on expensive and highly visible "regeneration" projects**, using tax breaks, subsidies, and the power of eminent domain to promote stadiums, casinos, office towers and a downtown monorail. A big new Civic Center and the massive Cobo Hall and Arena (at the time the largest convention facility in the world) were built in the 1960s, followed by the Detroit Renaissance Center in the 1970s. Such projects did nothing to spark a wider urban renaissance in Detroit. These projects failed to arrest Detroit's decline, because they did not address its roots, which lay in a difficult mix of industrial change, social conflict, suburbanisation, misguided transport policies, and political feuding.
- **Educational outcomes were poor**. Some other older US industrial cities facing depopulation and deindustrialisation in the late 20th century did turn themselves around. On the whole, education proved the best source of such urban resilience. Minneapolis, Boston and Pittsburgh, for example, have far higher shares of university graduates in the workforce, as well as well-developed links between universities and local firms. The Detroit metropolitan area lags far behind them, and the inhabitants of the city itself have much lower average levels of education than those in nearby communities.
- **The business climate was not as conducive to entrepreneurship** as those of many other US cities. In part, this reflected politics – the city focused on big, highly centralised projects for renewal, while heavily regulating local small businesses. It also reflected the dominance of the "Big Three" auto makers,[30] whose decisions shaped Detroit's evolution to an extraordinary degree. Glaeser (2011) observes that "the very success of the Big Three squeezed out the kinds of self-starting entrepreneurs that New York had in scores. And the high wages earned on assembly lines meant that there was little reason for many to pursue higher education." Later, as the Big Three shifted production out of Detroit, the city had little on which to fall back.

Box 4.17. **Shrinking Detroit** *(Cont.)*

Detroit, it should be noted, has in recent years been struggling to overcome these legacies and to shrink more successfully. While it is too early to judge the results of these efforts, one of the great ironies of the city's 2013 bankruptcy was that it occurred after the worst of the economic decline was over: the last few years have witnessed both the beginnings of a potential economic revival and an explicit readiness on the part of both politicians and community groups to re-imagine and re-plan Detroit's future as a far smaller, greener place.

Sources: OECD (2015e), *OECD Urban Policy Reviews: Mexico: Transforming Urban Policy and Housing Finance*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264227293-en*; Glaeser, E. (2011), "Detroit's Decline and The Folly of Light Rail", *Wall Street Journal*, 25 March, *http://www.wsj.com/articles/SB10001424052748704050204576218884253373312* (accessed 15 July 2015); Glaeser, E. (2010), "Shrinking Detroit Back to Greatness", *New York Times*, 16 March; Saulney, S. (2010), "Razing the City to Save the City", *New York Times*, 20 June, *http://www.nytimes.com/2010/06/21/us/21detroit.html?_r=0* (accessed 15 July 2015); Beyer, S. (2013), "Root Causes of Detroit's Decline Should Not Go Ignored", *New Geography*, 27 August, *http://www.newgeography.com/content/003897-root-causes-detroit-s-decline-should-not-go-ignored* (accessed 20 September 2015); Schlappa, H. and W. Neill (2013), From Crisis to Choice: Reimagining the Future in Shrinking Cities, URBACT, Saint-Denis, May.

The central and prefectural authorities may also play an essential role in ensuring a regional approach to shrinkage, as the experience of many struggling towns and cities demonstrates the degree to which the pressure of decline can prompt "beggar-thy-neighbour" competition rather than co-operation among adjacent municipalities. This was a particularly important problem in Detroit, but it also arises in a Japanese context. Intensifying competition for budgetary resources, people and investment is a natural outcome of shrinkage, but there is growing awareness in Japan of the need to adopt more co-operative governance approaches. The MIC programmes to promote co-operation among municipalities can make an important contribution here.

Effective governance of the shrinking process involves more than links among levels of public administration: the engagement of citizens in the process is critical. Indeed, the process by which the city downsizing is managed can be almost as important as the specific decisions reached. The choices made in "right-sizing" a city can have huge implications for its character, identity and liveability. If they are to be legitimate and accepted, they must be the result of transparent, open and honest debate involving not only policy makers but also civic and business leaders, community groups and other stakeholders about the way the city's form will change. Certainly, no strategy involving demolition, redevelopment and relocation can be adopted without such a process; the catastrophic mistakes made under slum clearance policies in some OECD countries in the last century should not be repeated (Schilling, Schamess and Logan, 2006).

Notes

1. Precision is difficult, given the problems with defining "rural" and "urban" discussed in Chapter 1, but the UNDESA population data show the rural population declining in absolute numbers from 1950; prior to that, it had experienced a sharp increase, owing to urban-to-rural migration triggered by the war and post-war food shortages, the loss of colonies (and consequent repatriation of Japanese) and the onset of the post-war baby boom.

2. Honshū, Hokkaidō, Shikoku, Kyūshū and Okinawa.

3. "Multi-functionality" is the term used to indicate that agriculture can produce various non-commodity outputs in addition to food. It is associated with particular characteristics of the agricultural production process and its outputs: i) multiple commodity and non-commodity

outputs that are jointly produced by agriculture; and ii) some of those non-commodity outputs exhibit the characteristics of externalities or public goods, such that markets for them function poorly or are non-existent.

4. The City of Ayabe (Kyoto Prefecture) offers settlement subsidies of up to JPY 50 000 per month for up to a year, as well as very low rents and loans of up to JPY 3 million to finance the renovation of vacant houses.
5. See, e.g. the comments of Shunjiro Koizumi, Parliamentary Secretary in the Cabinet Office, in Yomiuri Online (2014a).
6. Ucbasaran, Westhead and Wright (2011) do, however, cite data suggesting that this is not necessarily true of some "serial entrepreneurs", who often fail not just once but repeatedly, owing to an optimistic bias in their decision making and a failure.
7. Debtors who make full disclosure of assets and pay what they can may keep their homes, furniture, life insurance and cash savings in amounts greater than allowed by current law.
8. See Chapter 1 for an overview of this literature; see also Kautonen, 2013.
9. This figure excludes fishing and forestry hamlets.
10. Changes in household structure (reduced average household size) also played an important role.
11. These include areas designated for urbanisation, urbanisation control areas and other zones associated with city planning.
12. Conversion of farmland to urban uses is strictly controlled, but MAFF estimates that the volume of abandoned arable land has roughly doubled to around 400 000 ha since 1994.
13. MAFF and the prefectural governments manage extremely large-scale irrigation and drainage facilities, including reservoirs and drainage pumping stations.
14. Some owners do not wish to sell, and many cannot: leasing is preferred by the large producers in many areas, because land prices do not reflect the use-value of the land in cultivation but rather the potential for conversion to other uses.
15. That is why cities exist in the first place.
16. Certified farmers are those whose plans to improve agricultural management are certified by municipal authorities.
17. It is perhaps symptomatic that less than 20% of the 60-page plan is devoted to rural development; the great bulk is devoted to agriculture, forestry and fisheries. Given MAFF's responsibilities, this is entirely understandable but it highlights the problem of allowing agricultural issues to dominate rural development policies.
18. The Producer Support Estimate (PSE) is an indicator of the annual monetary value of gross transfers from consumers and taxpayers to support agricultural producers, measured at farm-gate level, arising from policy measures, regardless of their nature, objectives or impacts on farm production or income. It measures support arising from policies targeted to agriculture relative to a situation without such policies. The PSE includes implicit and explicit transfers. The percentage PSE is the ratio of the PSE to the value of total gross farm receipts, measured by the value of total farm production (at farm gate prices), plus budgetary support.
19. Here and in the accompanying figure, agri-environmental payments are those requiring specific practices and "going beyond basic requirements and voluntary" (see Box 3.3 in OECD, 2009c). This is the best proxy for agri-environmental payments, since these do not exist as a specific category in the PSE database but such payments would fall under this rubric. The estimates presented here are thus an upper bound on agri-environmental payments.
20. Cross-compliance is a mechanism that links direct payments to compliance by farmers with basic standards concerning such things as environmental performance, food safety, animal and plant health and animal welfare. Cross-compliance represents the "baseline" or "reference level" for agri-environment measures. For all requirements falling under cross-compliance, the compliance costs have to be borne by farmers (as per the "polluter-pays" principle).
21. The mayor's salary was cut by half; other staff took smaller cuts, with the reduction being inverse to the initial wage, so that the lowest-paid were least affected.
22. The Act on Special Measures for Promotion and Development of the Amami Islands and the Act on Special Measures for Promotion and Development of the Ogasawara Islands.

23. The Act on Special Measures concerning Countermeasures for Heavy Snowfall Areas charges MLIT with responsibility for promoting the availability of transport and the development of the living environment and land management in such areas; it also conducts surveys for safe, comfortable community planning. As of April 2013, 532 municipalities were specified as heavy-snowfall areas (201 of which were designated as special heavy-snowfall areas).
24. MLIT supports development of peninsular loop roads and the promotion of industries in peninsular areas under development (as of April 2013, 23 areas spanning 194 municipalities in 22 prefectures) in accordance with the Peninsular Areas Development Act.
25. Such legislation has been revised every decade or so. The Emergency Act for the Improvement of Depopulated Areas was adopted in the 1970s. It was followed by the Depopulated Areas Special Promotion Act (1980s), the Depopulated Areas Special Revitalisation Act (1990s) and the Special Act Promoting Independence in Depopulated Areas in the 2000s. Most recently, there has been a Revised Special Act Promoting Independence in Depopulated Areas.
26. See Feldhoff (2013) for a discussion of ABCD in a Japanese context.
27. Rink et al. (2012) find that almost half of all medium-sized cities in Europe were experiencing population and economic decline. Hollander et al. (2009) report that 370 cities with *ex ante* populations of 100 000 or more have shrunk by at least 10% since 1960.
28. It is important not to confuse this with the greening of conventional infrastructures – transport, water, power, etc.
29. Glaeser (2010) notes the oddity of this building-driven approach to regeneration of shrinking places: "The whole idea of saving declining cities by building more is a mistake, since the hallmark of declining cities is that they have plenty of infrastructure relative to people."
30. Ford, Chrysler and General Motors.

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