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Japan is at the forefront of moving from waste to sound materials management.

Biodiversity conservation, within and outside protected areas, should be strengthened.

Environment is a prominent component of Japan’s aid and foreign policies...

...and could be strengthened by systematically assessing the environmental impacts of aid projects.

JAPAN

Introduction

In the last decade, Japan has made steady progress in addressing a range of traditional environmental problems, notably air emissions, water pollution, and waste management (Figure 1). However, several more complex, long-term challenges have come to the fore requiring new and improved policies; in particular, climate change, sound materials management, and biodiversity conservation. Japan’s policy responses to environmental pressures were developed in a period of sluggish economic growth compared with the main OECD, and many Asian, economies. Nevertheless, Japan remained OECD’s second largest economy, a major player in world trade and among the largest exporters of technology-intensive goods. Manufacturing makes up a larger part of the economy, and of energy use, than in many other OECD countries. Relatively poor in natural resources and very densely populated, Japan has strong incentives to manage its land, energy and natural resources efficiently, particularly through innovative technologies and systems. More than two-thirds of the country is covered by forests, and the vast majority of the population, infrastructure and economic activities are concentrated in coastal plains and basins, resulting in considerable environmental pressures in these areas.

Figure 1 ECONOMIC GROWTH AND ENVIRONMENTAL PRESSURES

a) Emissions from energy use only; excludes international marine and aviation bunker; sectoral approach.
b) Waste collected by or for municipalities, waste directly delivered and separate collection for recycling by the private sector. It includes household, bulky and commercial waste and similar waste handled at the same facilities.
OECD Economic Outlook: No. 88

OECD, 2010
Environment and eco-innovation are key drivers of Japan’s strategy for long-term growth...

The global economic downturn of 2008 precipitated the sharpest recession in the Japanese economy since the Second World War. The government’s response to the crisis included substantial additional support for the environment sector, mostly for energy efficiency, renewable energy technologies, and related R&D. Environment-related measures are estimated at USD 28 billion, or 0.57% of Japan’s 2008 GDP, and accounted for about 16% of the overall anti-crisis package. However, some measures included in the stimulus package, such as support for agricultural production and the car industry, are likely to have adverse environmental impacts and distort competition. The economic crisis also underlined the need to develop a new economic model to reinvigorate economic growth, create new jobs and enhance the quality of life. Japan’s New Growth Strategy to 2020 takes up this challenge by identifying the environment, and in particular eco-innovation, as new sources of long-term economic growth. **Japan should evaluate the impact of the New Growth Strategy to 2020 on the environment, as well as the net contribution of environment-related sectors to growth and employment.**

...and Japan is a world leader in a range of green technologies.

Eco-innovation has long been a key feature of Japan’s environmental policy, driven by close collaboration between government and the business sector. Between 2000 and 2005, Japan accounted for 30% of world inventions in air, water and waste management technologies. Japan is a pioneer and world leader in a range of green technologies, including climate-related and information and communication technologies (Figure 2). According to some studies, Japan has the third largest share of the global market in environmental goods and services. Employment in environment-related enterprises has doubled since the early 2000s. The private sector has a growing role in providing environmental infrastructure and services, and eco-business is expected to expand further.

In recent years, environmentally related R&D expenditure has increased considerably, especially in the private sector. However, public spending on environmental R&D represents a relatively low share of the overall public R&D budget. **Japan should further expand public direct investment in basic R&D in environment- and climate-related technologies to share the risk of developing new technology with the private sector and thereby accelerate innovation.** The government has complemented the supply of environmental technologies by deploying a range of measures to stimulate demand for green products, including green procurement, subsidies, tax breaks, and an environmental technology verification scheme. Performance targets established with the business sector, such as the Top Runner Programme, have contributed to technological improvement. Nonetheless, **these performance targets should be assessed in terms of their level of ambition, capability of inducing breakthrough innovations and cost-effectiveness.**

**Figure 2 ENVIRONMENTAL PATENTS**
Green fiscal reform would further promote eco-innovation, enhance the cost-effectiveness of environmental policy, and generate much-needed revenue.

Japan’s approach to environmental policy is characterised by a strong emphasis on performance standards and negotiated agreements with industry. While these approaches have contributed to improve Japan’s environmental performance and helped to persuade industry that investment in clean technologies can confer a competitive advantage, it is questionable whether they will be sufficient to drive further progress and development of new technologies in a cost-effective way. It is often difficult to determine the progress that would have been achieved without these measures, especially since businesses have an information advantage compared with their governmental counterparts. Negotiated agreements also tend to promote incremental rather than fundamental technological changes. More cost-effective policy instruments, particularly market-based instruments that apply to the economy as a whole, would provide better incentives for achieving environmental objectives and for promoting eco-innovation. A broader involvement of the public (consumers) in decision-making is also needed to build a broader consensus on the measures required for making the transition to a greener economy.

There has been a slightly greater use of market-based policy instruments since the 2002 OECD Environmental Performance Review, notably water and waste charges, a coal tax and a CO2 voluntary emissions trading system. However, tax rates on energy products, including transport fuels, are among the lowest in OECD and do not adequately reflect environmental costs (Figure 3). Revenue from environmentally related taxes has increased since 2000, although it has decreased as a share of GDP and of total tax revenue (Figure 3). There is a continued strong tendency to stimulate consumers to purchase environmentally friendly products by providing various forms of subsidies (e.g. tax breaks for fuel-efficient vehicles) rather than by including environmental costs in the price of goods and services. However, these incentives encourage greater use of the subsidised products which can potentially offset the technical efficiency gains, and are a cost to the already strained Japanese public finances. Japan should take advantage of the 2011 tax reform to broaden the use of environmentally related taxes and to reduce incentives and subsidies that have perverse environmental effects. In addition to providing better environmental incentives, such measures would generate revenue that could help fiscal consolidation or compensate for reductions in other taxes.

Figure 3 ENVIRONMENTALLY RELATED TAXES

<table>
<thead>
<tr>
<th>Environmentally related tax revenue, 2007</th>
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<tr>
<td>Japan</td>
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<tr>
<td>0.0</td>
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<td>as % of total tax revenue</td>
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<th>Taxes on unleaded petrol, 2008</th>
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<tr>
<td>Japan</td>
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<tr>
<td>0.0</td>
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<td>as % of GDP</td>
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- At current prices and purchasing power parities. Unleaded premium (RON 95); Japan and Korea: unleaded regular.
- Source: OECD-EIA Database on economic instruments for environmental policy; OECD-EIA (2009). Database of end-use prices.
Japan has taken important steps to integrate climate, energy and transport policies...

Energy, transport and climate policies are generally mutually supportive, with a strong focus on energy efficiency, renewable energy sources, infrastructure development and R&D. While Japan is a world leader in renewable energy technologies - especially photovoltaic - and generation capacity has increased, renewables continue to account for only about 3% of energy supply. A negotiated agreement with the manufacturing sector to reduce greenhouse gas (GHG) emissions has been central to Japan’s climate strategy. It may have helped Japan’s major industrial sectors to become among the most energy efficient in the world. Unlike many OECD countries, Japan has made progress in the transport sector, where GHG emissions decreased by 12% between 2000-08. Technological advancement and tax incentives have helped to improve the average fuel efficiency of the road vehicle fleet considerably, and the rise in global oil prices has helped to moderate private car use. However, electricity consumption in the residential and commercial sectors has been growing steadily, largely due to the increased use of electric appliances which more than offset technical efficiency improvements. Overall, Japan’s climate policies focus on technological improvements and pay insufficient attention to demand-side management, which would help to change consumer behavior.

...although more cost-effective measures are needed to achieve ambitious climate targets, including a clear price on carbon.

In 2007, domestic net GHG emissions were +9% above the 1990 level, despite Japan’s commitment under the Kyoto Protocol to reduce emissions by 6% on average over the 2008-12 period – a 15% per cent implementation gap (Figure 4). Increased emissions are largely driven by increased share of fossil fuels, especially coal, in the energy mix. The economic recession helped bring GHG emissions down in 2008, though this effect is likely to be temporary. Therefore, achieving the Kyoto target and the 2020 pledge submitted in the framework of the Copenhagen Accord remains challenging. Japan will also need to make extensive use of the Kyoto flexibility mechanisms to reduce the costs (Figure 4) of achieving its targets.

Japan’s climate policies share similar strengths and weaknesses with the broader approach to environmental policy. While very good progress has been made in some sectors, the costs of reducing emissions vary widely, and there is a need to create stronger incentives for emissions reduction across the economy as a whole. Japan should examine the cost-effectiveness of the
current climate policy mix, particularly negotiated agreements. Putting a consistent price on carbon, covering the widest possible range of activities, e.g. through a mandatory cap-and-trade scheme in combination with a carbon tax, would drive investment in renewables and energy conservation more cost-effectively than current policies. The government has postponed the introduction of a carbon tax for several years. A novel trial emissions trading system is being tested, but it remains voluntary, marginal and subsidised. The 2010 bill of the Basic Act on Global Warming Countermeasures foresees the introduction of emissions trading and taxation measures and represents a step in the right direction.

Japan is at the forefront in moving from waste to sound materials management.

Japan has been at the forefront of international efforts to shift from the management of waste to the sound management of materials based on the 3Rs – reduce, reuse and recycle. The Fundamental Plan for Establishing a Sound Material-Cycle Society, adopted in 2003 and revised in 2008, specifies targets based on material flow indicators. Japan is one of the least material intensive economies in OECD: the resource productivity (GDP produced per unit of natural resources) and the cyclical use rate (comparing recovered resources to total material input) of the Japanese economy have improved by over 35% since 2000, and Japan is well on track to achieve the respective targets (Figure 5).

Japan’s 3Rs policy has focused on recycling and reducing final disposal, mainly in response to landfill constraints: securing disposal sites in major cities remains challenging, especially for non-municipal waste. Thus, Japan has strengthened its recycling system, extending it to specific waste streams, such as home appliances and end-of-life vehicles. This has resulted in a dramatic fall in the amounts of landfilled waste, and Japan achieved its 2010 target ahead of schedule (Figure 5). The Eco-Town Programme, has promoted recycling and the streamlining of waste treatment, and also positively contributed to regional development (Box 1).

Municipal waste generated per capita in Japan is well below the OECD average. Generation of municipal waste continued to decrease between 2000 and 2007, in spite of a rise in private final consumption. Charging for waste management has progressed, but cost recovery for municipal services is still low and should be improved by expanding the use of waste charging schemes. Further efforts are also needed in waste prevention; for example waste generation from manufacturing industry has increased faster than GDP, and inputs of imported resources, such as fossil fuels and metals, have continued to grow in line with the demand for energy and high-tech products. 

Japan should strengthen the extended producer responsibility system in order to reduce generation and illegal dumping of waste; in particular, recovery costs should be further internalised in product prices.
Box 1 The Eco-Town Programme: success of the 3Rs at the regional level

The Eco-Town Programme is a national initiative, launched in 1997, to reduce resource use, extend the life of landfills and revitalise the local economy by optimising waste management and developing innovative recycling industries. Under this programme, the Ministry of the Environment provides grants to local authorities for town planning, community recycling, and promotion and outreach activities in collaboration with citizens and non-profit organisations; the Ministry of Economy, Trade and Industry provides investment subsidies to private enterprises willing to invest in innovative recycling projects. Between 1997 and 2006, 26 Eco-Town plans were implemented in Japan with various geographical targets: six metropolitan areas, six regions including several towns and/or villages, two islands, ten cities and two industrial or port areas. Approximately USD 1.65 billion were invested in 61 innovative recycling projects, with an average government subsidy of 36%. In addition, at least 107 other recycling facilities were constructed without government subsidy. Recycling projects concern mainly plastic, organic and municipal solid waste, waste electrical and electronic equipment and industrial waste. The Eco-Town Programme has provided a platform for the private sector to innovate and has contributed to improving the sector’s productivity. In Eco-Towns, employment in the recycling sector has grown as a share of total employment.


Biodiversity conservation, within and outside protected areas, should be strengthened.

Biodiversity protection has received growing political attention in Japan, in part due to preparations for the 10th meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD) in Nagoya, Aichi (2010). In 2008, Japan approved the Basic Act on Biodiversity, which is intended to guide the review of all nature-related legislation. As recommended in the last OECD Environmental Performance Review (2002), Japan has revised its National Biodiversity Strategy. The most recent, 4th National Biodiversity Strategy provides a set of measures to halt biodiversity loss in Japan in the short-term, and sets the target to improve the state of biodiversity by 2050.

Over the last decade, biodiversity sites have continued to deteriorate and fragment, reflecting insufficient attention given to nature protection within and outside protected areas. A relatively high portion of species face a significant threat of extinction: more than a third of freshwater fish and nearly a quarter of mammals. Invasive alien species are also an increasing threat. Little progress has been made in expanding protected areas. While Japan has designated some 24% of its land area for protection, only 3% of the territory conforms with the more restrictive categories of protected areas used by the International Union for Conservation of Nature, which is low by OECD standards. There is significant scope to increase the portion of forests and marine areas dedicated to nature conservation. The variety of protection regimes has resulted in heterogeneous management practices. A further streamlining of nature conservation laws, and closer inter-ministerial co-operation, are needed to promote a more coherent approach to biodiversity conservation.

Financing for nature conservation remains at a low level and has not noticeably improved since the last OECD review. There have been a few initiatives involving fees charged to visitors of nature conservation sites and of payments for ecosystem services (Box 2). However, Japan should make greater use of economic instruments to finance nature protection and encourage landowners to manage their land to provide ecological services. Japan is promoting the revitalisation of traditional rural landscapes (satoyama landscapes), aiming to achieve a balance between farm production and conservation of biodiversity and ecosystem services. In 2007, Japan introduced an agricultural support scheme designed to promote more environmentally friendly farming. Although the overall level of support to agricultural producers is high, environmentally related payments account for only 0.5% of the total, a very low share compared to many other OECD countries. Japan should redesign agricultural support measures so as to decouple payments from commodity production and link them to otherwise unremunerated but beneficial public environmental services.*
Box 2 Paying for ecosystem services: the Yodo River

For 30-40 years Osaka prefecture has paid Shiga prefecture a cumulative amount of JPY 50 billion (about USD 530 million) for sustainable forest management around Lake Biwa as part of the Yodo River water resource development plan and the Lake Biwa comprehensive development plan. The aim is to protect Lake Biwa (located in Shiga prefecture), which is the source of the Yodo River that supplies drinking water to Osaka prefecture and Osaka City. Effectively the downstream community is paying the upstream community to maintain its source of water supply. Such payments for ecosystem services could be extended to other river basins, based on a cost-effectiveness analysis of meeting the desired objectives (e.g. protect the city’s water supply sources from pollution).

Environment is a prominent component of Japan’s aid and foreign policies...

Japan has played a proactive and constructive role in international environmental co-operation, particularly in the areas of climate change, waste management and resource productivity, chemicals management, water and, more recently, biodiversity. In recent years, Japan has considerably expanded its environmental co-operation, exports of environmental technology, and environmentally related development co-operation within the fast-growing Asian region, where environmental pressures have intensified in line with rapid economic growth. These activities have contributed to real environmental improvements in some countries, such as China and Indonesia.

Japan is one of the largest donors among OECD countries. However, it is one of the few OECD donor countries with declining official development assistance (ODA): in 2008, Japanese ODA was less than 0.2% of gross national income, which is among the lowest in OECD and far below the 0.7% United Nations goal. However, Japan’s environment-focused aid represents a large share of the country’s aid policy, accounting for about 30% of its bilateral ODA commitments in 2008, which is high by OECD standards. Japan should maintain a strong commitment to environment, while expanding the volume of ODA in line with international commitments.

...and could be strengthened by systematically assessing the environmental impacts of aid projects.

Over 90% of Japanese bilateral environmental co-operation is in the form of loans that must be repaid, albeit on concessional terms. Japan’s loans for environmental projects are, in part, tied to the procurement of Japanese goods, services and technologies. Arrangements such as these generally increase the cost of aid. Japan should maximise the benefits of environmental development aid by providing it under untied conditions. All ODA projects are systematically assessed for their economic and socio-environmental feasibility before approval, and environmental impact assessment of aid projects is carried out by partner countries according to their own procedures. However, the way in which opportunities and risks identified in these assessments are followed up is not always clear. Japan is at an early stage of applying strategic environmental assessment of development co-operation plans and should continue to develop a more comprehensive and systematic approach to environmental screening of strategic interventions.
These Highlights present key facts, figures and policy recommendations presented in the 2010 OECD Environmental Performance Review of Japan. This Review examines Japan’s progress since the previous OECD Environmental Performance Review in 2002, in particular the extent to which Japan has met its domestic objectives and international commitments. The Review is based on the report prepared by the OECD Environment Directorate, with the contribution of reviewers from three examining countries (Germany, Korea and Norway). The OECD Working Party on Environmental Performance discussed the report at its meeting on 4 May 2010, and approved the Assessment and Recommendations. The 38 policy recommendations aim to provide further support to Japanese initiatives on:

- greening growth;
- implementing environmental policies;
- international co-operation;
- climate change;
- waste management and the 3Rs (reduce, reuse, recycle);
- nature and biodiversity.

This review is part of the OECD Environmental Performance Review Programme, which provides independent assessments of countries’ progress in achieving their domestic and international environmental policy commitments, together with policy relevant recommendations. They are conducted to promote peer learning, to enhance countries’ accountability to each other and to the public, and to improve governments’ environmental performance, individually and collectively. The Reviews are supported by a broad range of economic and environmental data.

Each cycle of the Environmental Performance Reviews covers all OECD member countries and selected partner countries. The most recent reviews include: Luxembourg (2010), Ireland (2010), Greece (2009), Finland (2009) and Turkey (2008).

For further information
OECD Environmental Performance Review of Japan: www.oecd.org/env/countryreviews/japan
OECD Programme of Environmental Performance Reviews: www.oecd.org/env/countryreviews
Environmental Data and Indicators: www.oecd.org/env/indicators

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