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Measuring the attractiveness of regions

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OECD Regional Development Papers

Measuring the attractiveness of regions

This working paper provides a conceptual framework for measuring the attractiveness of OECD regions. First, it presents the imperative for rethinking regional attractiveness in the context of global shocks and trends and their regionalised consequences and opportunities. Then, it presents a new framework through which to look at territorial levers for attracting investors, talent and visitors, and where those policy goals can overlap. Various tools, as well a dashboard comprising 55 indicators, are produced which policy-makers can leverage to better understand their strengths and gaps in terms of attractiveness towards international targets.

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Keywords: Regional Development; Attractiveness; Talent; Investment; Tourism

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Table of contents

Acknowledgements 3

Executive summary 6

1 Three global challenges reshaping the attractiveness of OECD regions 7
- Challenge # 1: Citizens and politicians are increasingly questioning globalisation 8
- Challenge # 2: The impacts of climate change pose risks to regional resilience 8
- Challenge # 3: COVID-19, and more recently the war in Ukraine, have magnified the unequal exposure of some regions to global shocks 9

2 With risk comes opportunity: rethinking regional attractiveness in the new global environment 11
- The increase in remote working offers new opportunities for regions 11
- Changes in global value chains are creating place-based opportunities 11
- Active industrial policies can bolster the position of regions in globalisation 14
- A new, fairer taxation framework elevates the importance of non-financial drivers of attractiveness 15

3 Beyond competitiveness towards quality of place and of life 16
- Quality of place' has become an increasingly important draw 16
- Well-being: An emerging north star for talent, investment and visitors 17
- Existing approaches for measuring attractiveness are too often limited to the national level 19

4 The OECD methodology for assessing regional attractiveness 21
- Methodological framework 21
- Attractiveness dashboard 23
- Methodological framework for the formation of a vision of attractiveness 29

Conclusions 33

References 34

Annex A. List of attractiveness indicators 40

Annex B. Suggested dashboard indicators 44

Annex C. Performance table: the attractiveness of French Regions for all indicators 47

Annex D. Correlation matrix of attractiveness indicators (in French) 49

FIGURES

Figure 1.1. By 2070 some regions may become virtually uninhabitable and some more suitable for living 9
Figure 1.2. Disparities in regional unemployment during the COVID-19 crisis 10
Figure 4.1. Fourteen dimensions representing six domains of territorial attractiveness towards three core targets: investor, talent and visitors. 22
Figure 4.2. Regional land disparities in OECD regions. 25
Figure 4.3. Classification of regional attractiveness indicators 28
Figure 4.4. Composite indicators: Grand Est (France) 30
Figure 4.5. A Reader's Guide to Attractiveness Radars 31
Figure 4.6. Example of an attractiveness profile: Grand Est (France) 32

TABLES

Table 3.1. Selected attractiveness measurement indicator sets and initiatives 19
Table 4.1. Profiles of attractiveness targets 21

BOXES

Box 2.1. Examining the place of Regions in Domestic and Global Value Chains 13
Box 4.1. Selection of indicators – Methodology 23

Executive summary

Whilst there has been considerable attention in recent years on the geographical (sub-national) disparities associated with globalisation far less has been devoted to the spatial impacts of new and emerging megatrends on globalisation, despite evidence of their strong spatial impact and, in turn, contribution to "geographies of discontent" (OECD, 2022[1]; Dijkstra, Poelman and Rodríguez-Pose, 2020[2]). Even before Russia's unprovoked aggression against Ukraine and COVID-19, the pace of expansion in globalisation was beginning to slow, with changes in the configuration of global value chains being increasingly influenced by growing societal pressures for responsible and green supply chains. Supply-chain bottlenecks and the increased political spotlight on essential and strategic industries (including energy security) that have followed in the wake of the COVID-19 crisis and the war in Ukraine have further reinforced some of these dynamics, and indeed the importance of addressing information gaps. This is all the more important because many of the factors influencing the shape of globalisation (e.g. geographical advantages, skills of the local workforce), are strongly determined at the sub-national level.

Regions and sub-national governments, and indeed national governments, have of course long known this, but, increasingly, many are tackling the challenges presented by globalisation – the geographies of discontent - and looking to capitalise on their assets and opportunities by looking through the prism of inclusive and sustainable development. Under this lens, local conditions of quality of life are taking the front seat in regional policy and planning strategies, with the recognition that economic development and human and planetary well-being are inextricably linked.

To assist territories in achieving this agenda, the OECD has developed a diagnostic tool for measuring and assessing the drivers of regional attractiveness and, in turn, supporting public actors in identifying available assets and potential challenges to strengthen the attractiveness of territories towards investors, talent and visitors.

This document presents that tool. It starts by introducing the rationale and methodological framework for measuring the attractiveness of regions, and then proposes a regional attractiveness diagnostic. On this basis, multidimensional profiles – based on six core dimensions representing 55 indicators – can be produced to allow OECD regions to better pinpoint the strengths, gaps and opportunities for rethinking territorial development in light of the many evolving global megatrends that are shaping globalisation. The scores require the regional context to be applied – as in some instances a high score may not translate into strong performance and low will not mean weak. Rather, it will depend on regional trends and development ambitions.

The tool has been developed and refined as part of a case-study report on " The internationalisation and attractiveness of French regions" (OECD, 2022[3]), which was conducted by the OECD Secretariat following a request from France, and with the support of the EC's DG REFORM, undertaken in close partnership with the French National Agency for Territorial Cohesion (ANCT), the Association of Regions, and the French pilot regions (Grand Est, Provence-Alpes-Côté d'Azur, La Réunion). The aim now is to extend this methodological approach to regions across the OECD and to improve the framework as it is applied.

1 Three global challenges reshaping the attractiveness of OECD regions

Why measure the attractiveness of regions in today's global environment?

Not all regions are made equal. Some have assets that have proved magnetic to investment, talent and visitor flows for decades. Yet these spatial inequalities have made it more challenging to achieve social cohesion, political stability and economic growth in places that have been 'left behind' (Iammarino, Rodriguez-Pose and Storper, 2018[4]). At the same time, regional embeddedness in globalisation has rendered essential the need to identify levers to attract flows of people and investment to achieve resilient territorial development and to improve local well-being for people and the planet. The idea of attractiveness as a development strategy has long been studied at the national level, typically looking at FDI or 'brain drain' or exports, but an all-encompassing, sub-national approach, and, in particular, a measurement tool that blends economic and non-pecuniary, subjective and objective drivers has not been developed for policy use (Musolino and Volget, 2020[5]).

The COVID crisis has accelerated the need for regions to consider the human, business, knowledge and infrastructure connections that underpin their attractiveness. This is all the more true given the unequal impact of pre-existing megatrends and the crisis across regions within countries. Climate change affects coastal and arid regions more than others thus emphasising their need to attract investment for the green transition while the transition also has significant implications for the attractiveness of regions with a higher share of employment in non-renewables. Similarly, demographic trends (i.e. population decline, ageing, and urbanisation) create region-specific demands for talent and investment in left-behind places (Rodríguez-Pose, 2018[6]). Digital trends also pose risks and opportunities region by region: while the share of jobs at risk to automation is as high as 40% in some regions (e.g. West Slovakia), it stands as low as 4% in others (in the Oslo area) (OECD, 2020[7]). On top of that, the suspension of movement within countries and bottlenecks at national supply chains harmed some regions more than others.

Supply chain bottlenecks have led to a profound rethink of the way places and firms interact with globalisation, with many considering how value chain macro-regionalisation, the increased use of digital analytics and, in some cases, nearshoring can enhance resilience in the long term (Mckinsey, 2021[8]). The War in Ukraine has accelerated this reflection and, in turn, the pertinence of the following question: *how can regions rethink the way they interact with globalisation*?

This reflection is not just about dealing with challenges presented by an evolving global environment however, it is also about capitalising on opportunities that are also emerging and a tool to measure attractiveness can provide regions with a competitive edge to address both. For example, data on the availability of land and how it might be developed – and at what environmental cost – can help potential investors make informed investment decisions that support regional development agendas. Indeed, land management is an essential part of a low-carbon transition. Local conditions relating to quality of life, access to – and quality of – public transport and fast internet are vital assets for small communities wishing to attract talent and visitors from abroad. The accessibility and quality of local universities will continue to influence the location decisions of foreign companies and researchers, and drivers of well-being and social

cohesion, which are strongly rooted in place, will be even more valued after a long period of restricted social interaction (Norwegian University of Science and Technology, 2019[9]).

An evidence-based diagnostic tool for attractiveness can help support regions who may feel they have not benefitted from globalisation by identifying the strengths, gaps and opportunities available to attract foreign and national investment to regions in addition to attracting talent and tourism, altogether providing more resilience to global economic and environmental shocks. It also provides a lens for regions to locate their performance and comparative advantages relative to other regions domestically and at the OECD level across a range of dimensions. Before presenting that tool, three global challenges to regional attractiveness are presented.

Challenge # 1: Citizens and politicians are increasingly questioning globalisation

According to a 2021 poll, attitudes towards globalisation have plummeted by an average of 10 percentage points since before the COVID-19 crisis with just 48% of respondents (among 25 countries surveyed) indicating that globalisation is "a good thing for their country" (World Economic Forum, 2021[10]). This public scepticism is mirrored in rising calls for protectionist economic policies that promise a return home of jobs and prosperity and less multilateralism. In the European Union, this is manifested in increasing discord with European integration, particularly in regions suffering from economic and industrial decline (Dijkstra, Poelman and Pose, 2018[11]; European Commission, 2022[12]). In a large-scale qualitative study on perceptions toward globalisation U.S. and U.K. participants expressed a view that globalisation has led to declining opportunities locally and the death of the 'main street' or 'high street' thereby eroding social cohesion (Pew Research Center, 2020[13]).

The question today is not about less or more globalisation as much as it ought to be focused on harnessing international connections to improve outcomes for people and planet, locally. This may help to alleviate some of the scepticism towards trade and globalisation, as well as towards immigrants, that is higher is those regions that have benefitted less from economic globalisation. This is a process whereby public, private and third sector actors need to collectively identify the quantity and quality of the international connections currently in place and then the levers for attractiveness that exist which can help strengthen those connections. This paper services the latter step, offering a starting place for policy-makers.

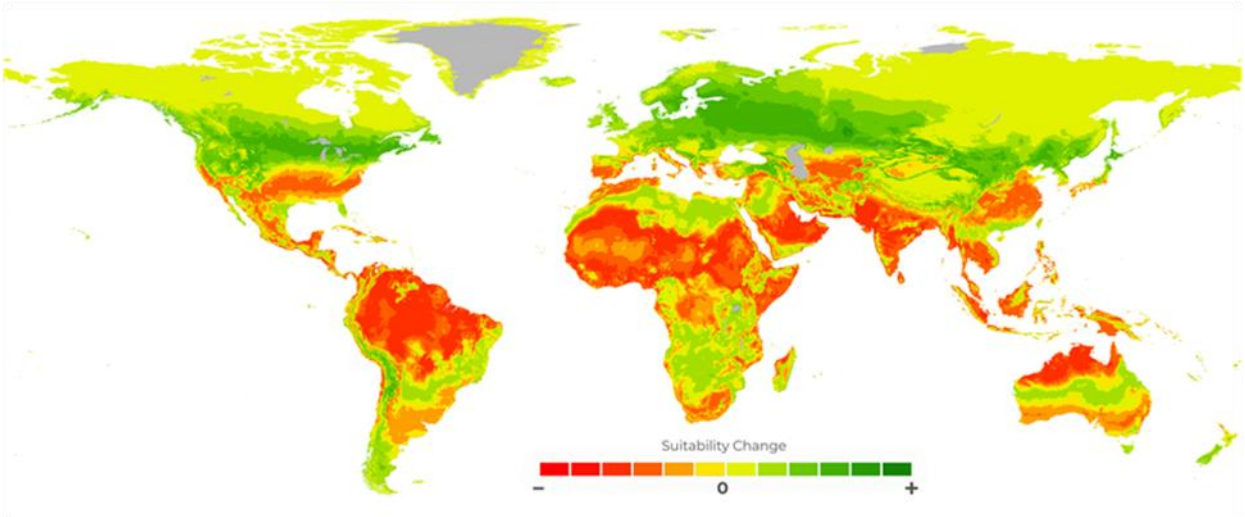
Challenge # 2: The impacts of climate change pose risks to regional resilience

Climate change is rapidly, and quite literally, changing the shape of regions in ways that urge actors to come together to find local solutions to a global problem. Indeed, with 63% of climate-related public expenditure (1.1% of GDP) and 69% of public investment (0.4% of GDP) taking place at the subnational level, the climate crisis is an opportunity for regions to build resilience and enhance their attractiveness towards international targets (OECD, n.d.[14]). While the concept of 'climate havens' – places that will remain relatively resilient to climate change and thus suitable for increased human settlement – has become popularised, it is unclear that regions and cities are doing enough to actually achieve or to maintain this 'haven' status in the decades to come (Yoder, 2021[15]). Meanwhile, research suggests that most of the world's regions that today are considered biodiversity hotspots are unlikely to maintain suitable temperatures for most species by the end of the century, threatening to push the consequences of climate change into overdrive (Brown et al., 2020[16]). Regardless of the policies put in place to reduce emissions, it is clear that some regions will become far less suitable for living than they are today with research showing that about 30% of the world's population will live in places of 'unlivable heat' within 50 years (see Figure 1.1).

To make matters worse, subnational governments are emerging from the COVID-19 crisis with fiscal pressures that may constrain their ability to respond. In this context, it is clear that public finances alone will not be enough to make the changes required to fight climate change. In the context of the war in

Ukraine, there is also concern about potential increases in more carbon-intensive fossil fuels to offset the supply shock of natural gas from Russia. At the same time, however, there is also renewed momentum to accelerate the green energy transition (Cohen, 2022[17]). Attracting private investment in clean energy sectors, and data on where those investments are needed or could materialise is going to be crucial. Furthermore, priorities will need to be brokered to ensure that the funding priorities of private investment align with the critical role of climate-related public investment and expenditure at the subnational level. In addition, visitors and talent increasingly place value on places and firms that provide access to environmental amenities – coasts, parks, trails and the like – and that embrace sustainability as a core value. Measuring the quality of/and access to these amenities is thus an important part of understanding territorial attractiveness.

Figure 1.1. By 2070 some regions may become virtually uninhabitable and some more suitable for living



Source : (Xu et al., 2020[18])

Challenge # 3: COVID-19, and more recently the war in Ukraine, have magnified the unequal exposure of some regions to global shocks

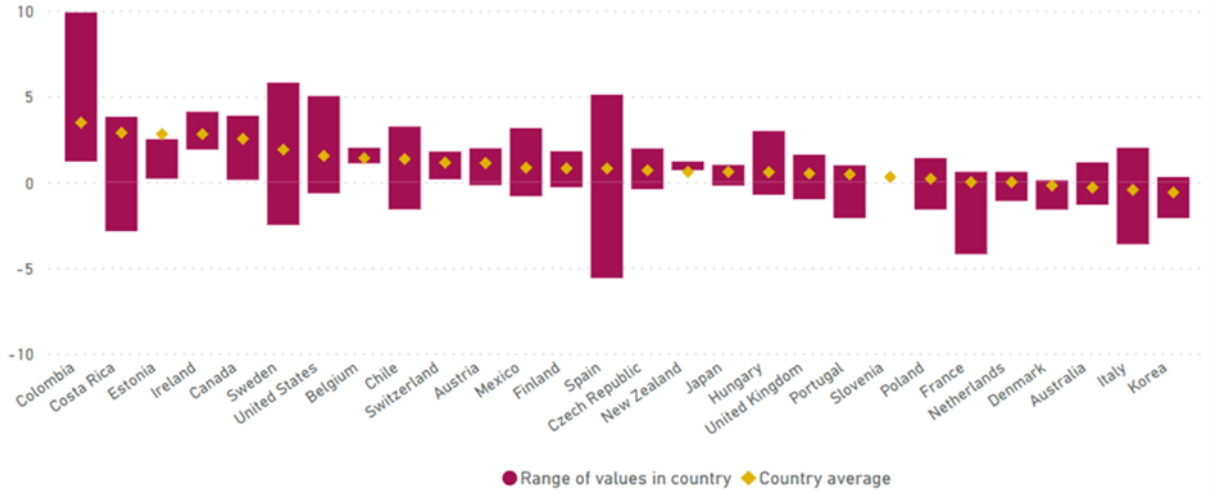
Within countries – and indeed within regions – lower income areas have been hit harder by COVID-19. In the U.K., the local authorities that fall in the bottom decile of England in terms of net income saw COVID-19 death rates that were 29% higher than in higher deciles. In Ireland, the Northern and Western Region which significantly trails the other two TL2 regions in terms of employment levels, GDP per capita and overall international connections (see the OECD's work on Regions in Globalisation), regional analysis shows a higher economic exposure to COVID-19 (Daly, 2021[19]). These examples are consistent with the findings across the OECD highlighted in the Regional Recovery Platform (e.g. see Figure 1.2) whereby, in many instances but by no means all, the negative shocks to health and employment resulting from the crisis disproportionately impacted regions that were already facing acute economic challenges (OECD, 2022[20]). In many cases, it is the sectoral composition of local industry that exposes them to shocks, with those reliant on tourism, retail, food and accommodation services being most affected during the COVID crisis because of lockdown measures that disproportionately affected these sectors. In the fallout of the war in Ukraine, those regions with a high sectoral concentration in agriculture and energy-intensive industries adversely affected by the shock to supply and the resulting price increases across energy products, wheat and fertilizers, to name only a few are also highly exposed (OECD, 2022[21]). It is essential

for national, regional and local actors to work together to identify and properly 'diagnose' and develop strategies that help subnational economies address current, and prepare for future, megatrends.

Altogether, regions need to consider which high and low-skills requirements need to be bridged to achieve inclusive and sustainable regional development. This means development that translates to real wage growth for low and middle-income earners and a swift energy transition that ushers in gainful employment in emerging sectors like renewable energy production.

Figure 1.2. Disparities in regional unemployment during the COVID-19 crisis

Illustrates the range (bars) and country averages (diamond) in the change of unemployment levels since Q4 2019 (%, TL2 and TL3 regions)



Note: Time series data ends at Q4 2021 or the latest available quarter. Island regions like Canary Islands (Spain), Madeira (Portugal) and Hawaii (United States) saw large increases in unemployment given their dependencies on the tourism economy
Source: OECD Regional Recovery Platform

2 With risk comes opportunity: rethinking regional attractiveness in the new global environment

The increase in remote working offers new opportunities for regions

As megatrends – accelerated by the pandemic – transform the way we live, work and travel, a framework that assesses regional assets and amenities that support new investment preferences and new lifestyles is essential. The massive expansion of teleworking for certain professional categories has opened up new possibilities, especially for smaller cities, towns and rural areas who have historically had a harder time attracting highly skilled jobs and professionals that tend to be based in urban areas. In the U.S., these trends have recently picked up whereby large cities (1 million+ inhabitants) saw population losses between 2015-2020 while mid- and small-size cities experienced healthy population growth rates which illustrates a degree of urbanisation beyond the metropolises that captured much of the employment and population growth for decades (Frey, 2021[22]). This is by no means a universal trajectory as trends in demographic distributions fluctuate across time and space but it does suggest new opportunities for left-behind places in the quest for investment and population attraction and retention.

Indeed, it is possible for a community to promote its capacity to accommodate teleworkers – local and international – who wish to carry out their professional activity at a distance (either temporarily or permanently) in order to benefit from a more attractive quality of life. Although teleworking is an opportunity for territories that have been excluded and even disadvantaged from the prosperity of the big metropoles, this transition requires significant investment in order to adapt to the needs of domestic and expatriate workers and their families. This reception implies the availability of adequate digital infrastructure (e.g. broadband internet and digital hubs) and other quality of life offerings that appeal to mobile talent (OECD, 2020[23]). This includes access to natural capital and heritage sites, but also quality public services (transport, health, and education), leisure activities and local cultural offerings. More and more, it is about social cohesion and sense of belonging to, and participation in, the community. However, even with these draws in place, strategies need to be carefully considered to ensure their long-term effectiveness in retaining talent (and investment) given that “if you can do your job from anywhere, someone anywhere can do your job” (Simon Kuper, Financial Times).

Changes in global value chains are creating place-based opportunities

The COVID-19 crisis has interrupted or strained the flows of many Global Value Chains (GVCs) (Ravi, 2020[24]). Yet while the focus on GVCs amid the crisis has been on interruptions, their existence must be credited with the massive global distribution of vaccines, face masks, test kits and other items essential to curbing the spread of the virus (OECD, 2020[25]). Before the crisis, various economic studies had revealed that the growth of GVCs had slowed and that some reorganisation of GVCs was to be expected. Today, there are still major tensions regarding access to certain key components, linked to the strong economic

recovery underway in China and the United States, volatile commodity prices driven by the ongoing war in Ukraine and ongoing border closures in some countries (most notably, China). Even as signs of recovery begin to show, inflationary pressures – exacerbated by Russia's ongoing illegal invasion of Ukraine – continue to stoke pessimism among firms and households on the rising cost of living and doing business.

In this context of compounding crises threatening global supply and the provision of key commodities and inputs, several OECD countries have decided to support relocation strategies or indeed to double down on pre-existing plans to relocate some of their production processes. This is occurring in light of rising foreign wages, price instability in factors of production (transport, energy) and the cost savings associated with automation. For example, France's COVID recovery plan *France Relance* dealt out roughly 1 billion euros in support of reshoring and maintaining certain industries, notably health, essential goods, electronics, the agri-food industry and telecommunications (Région Ile de France, 2021[26]). Likewise, the Wallonia Region of Belgium earmarked 3 million euros of its *Get Up Wallonia* recovery plan to support the reshoring of food systems. The European Union has also explored a number of sectors where territorial cohesion could be enhanced through reshoring and relocation strategies, highlighting the potential in the pharmaceutical and medical space, as well as potential nearshoring of activities to Eastern and Southern Europe (European Commission, 2021[27]). However, it is also argued that reshaping, and not reshoring, should be the priority given that many economies (predominantly in East Asia) deeply-integrated into GVCs fared better through the pandemic (World Bank, 2022[28]). Overall, these strategies aim to secure a country's value chains in order to ensure the resilience of the systems of production in the event of new crises, including for essential production processes related to sanitary goods or food security. Additionally, factors like the availability of land, the qualifications of the local workforce, the presence of a creative and cultural industry, or an ecosystem conducive to attracting researchers in the R&D field all contribute to a firm's production strategy, and are each highly territorialised (Charbit and Gatignol, forthcoming 2022[29]). Regions need to take a close look at which segments of GVCs their local assets are geared towards and how, in turn, to attract multi-national enterprises (MNEs) and foreign direct investment (FDI) that make best use of those assets and that lead to the upgrading of those assets, be they human or technological (Crescenzi, Harman and Arnold, 2018[30]). How regions draw links to GVCs will depend heavily on FDI, which is why they are a critical component of a regional attractiveness strategy and need to be better mapped and governed in the evolving global environment. Beyond FDI, regions need to consider how attracting investment and talent can support existing and native SMEs, give birth to new firms and help upgrade supply chains to be more resilient to future shocks (OECD, 2021[31]). Attracting foreign investment can support the international business linkages of SMEs and present opportunities for new value chain linkages, knowledge spillovers and increased productivity, all of which is dependent on the quality of the FDI attracted and the absorptive capacity of local SMEs (OECD, 2021[31]). Finally, in a recent and extensive special review of the changing shape and geography of globalisation, academics have pointed to the fact that it is not a deterministic process and will require regions to be flexible and adaptive (Gong et al., 2022[32]). They make the strong case that four forces – geopolitical uncertainties, climate change, technological change and crises and shocks – are culminating in this shift of global production networks causing places to be reactive and strategic in their engagement with globalisation.

Box 2.1. Examining the place of Regions in Domestic and Global Value Chains

The impact of GVC disruptions varies across regions within OECD countries depending on their integration in GVCs while it also presents consequences for the functioning of domestic value chains (DVCs). Less developed regions that may not rank highly as foreign exporters, are often providers of essential inputs to core exporting regions. Focusing on building resilience in the *upstream* 'source' region is as essential as the development of the *downstream* region directly exporting to foreign markets.

These changes in the reorganisation of GVCs also imply risks and challenges for territories. For example, increases in fuel prices and the desire to reduce greenhouse gas emissions may redistribute GVCs, but not necessarily in a way that is favourable to economic activity in some territories and/or in all sectors. An increase in e-commerce is also likely to have an effect on the evolution of DVCs (in particular) and GVCs by opening up new economic opportunities in areas such as transport and warehousing, while at the same time putting new pressures on communities' land resources, which are already under pressure in some regions. Indeed, it is placing pressure on conventional bricks and mortar retailers, which may in turn affect social cohesion. While regions adapt to and mitigate the effects of climate change, they also need to adapt their policy agendas; they need to rethink what attractiveness levers they can manipulate to mitigate against potential losses derived from the green transition. More generally, they are encouraged to consider what economic opportunities exist that can build more resilient localities (IJtsma and Los, 2020[33]).

While there are few studies on the position of regions in global value chains, some promising approaches have emerged. Honing in on the COVID-19 crisis, a study of Brazilian States highlights the spatially contingent impacts on Domestic (DVCs) and Global Value Chains. The study shows that while richer, populated centres may be more exposed to global supply chain interruptions, poorer peripheral regions are also impacted by fluctuations in interregional flows caused by depressed demand in the richer areas (Sanguinet et al., 2021[34]). The ripple effect thereby causes some damage upstream even for less globally-integrated regions and illustrates the importance of better understanding supply chain linkages within a country.

In Europe, a European Spatial Planning Observation Network (ESPON) approach to understanding interregional flows of knowledge, capital and goods is being developed (ESPON, 2021[35]). The initial exercise illustrates which regions within countries and between bordering countries are most economically integrated and which physical routes are optimally used for trade. This mix of econometric and spatial analysis can help policymakers in assessing the vulnerability of regions to certain shocks.

Finally, using input-output (IO) tables from the EUREGIO database which synthesises the regional flows of all goods and services (updated most recently in 2020), (European Commission Joint Research Centre, 2020[36]), the Banco de España analysed Spanish regions in GVCs, highlighting, for example, how the Basque country was most exposed through backward participation (meaning they rely most on inputs of production from other regions and countries). Madrid was found to be most impacted by changes in U.S. tariffs and the largest overall foreign dependency (Tello-Casas and Prades-Illanes, 2020[37]).

Active industrial policies can bolster the position of regions in globalisation

A trend towards the macro-regionalisation of global value chains deepens, crisis after crisis, which in turn has led to louder voices calling for more active industrial policies that increase high-value production activity in countries and regions closer to home. Following the 2008/9 global financial crisis, the share of world GVC value-added as a share of total exports has steadily declined with GVC backward and forward participation of countries stabilising or declining over the period (Kataryniuk, Pérez and Viani, 2021[38]). At the same time, the number of instances of offshoring has decreased in the European Union – a not unexpected outcome given the large wave of offshoring activity over the past two decades (Kataryniuk, Pérez and Viani, 2021[38]). Altogether, GVCs have been reshaped by rapid changes in technology, policy and economic governance and sustainability (Elia et al., 2021[39]). This is driven by a desire to diversify inputs and to reduce the likelihood of disruptions, increased transport costs and other economic and geopolitical risks (Gereffi, 2014[40]).

On the transportation front, this is evidenced in the congestion faced at ports worldwide in the wake of the pandemic and the disruptions at every point across supply chains from transporting raw materials to the delivery of final goods. The trade war between the US and China, climate-change related pressures, and now the heightened pressure brought on by the COVID-19 crisis and the war in Ukraine combine to create enormous pressure on regions embedded in globalisation. These trends help explain the economic agenda of governments looking to invest in high value-added segments of production and essential-good production on home (or near-home) soil. These active industrial policies have capitalised on emerging technologies (e.g. internet of things, blockchain, automation, etc.) to build efficiency and innovation into (macro-) regional value chains (RVCs) (Elia et al., 2021[39]).

The potential reshaping of global production presents unique advantages for OECD regions to build upon their existing assets (e.g. innovation and R&D, talent pipeline, SME population) in order to attract new investments that strengthen their position within the global production ecosystem. Russia's ongoing war in Ukraine also illustrates the need to assess the regional and sectoral linkages between and within countries to better predict the economic impact of such disruptions. As an example, some European regions are more exposed than others. Baden-Wurttemburg in Southern Germany represents 7.32% of total foreign investment in Ukraine, second only to Moscow City when analysed at the subnational dimension. This has come to the fore with the hit to production at the Mercedes-Benz plant near Stuttgart due to supply disruptions for electrical wire (Automotive News Europe, 2022[41]) predominantly produced in Ukraine.

Active industrial policies are a critical part of addressing the inter-regional inequalities that have, in some cases, resulted from trade. However, these inter-regional imbalances may not, in fact, be the direct result of trade activity rather than from the spatial advantages that position some regions above others through lower trade costs and better access to international markets (Hirte, Lessman and Seidel, 2020[42]). This is in line with earlier work (Rodríguez-Pose and Gill, 2006[43]) illustrating that as countries shift from predominantly agricultural to manufacturing economies, regional disparities tend to increase given the geographic concentration of manufacturing activity.[1]

Looking further at the interplay of globalisation and regional inequalities, a study of trade and inequality within 28 countries[2] shows that, between 1975 and 2005, inequalities increased in 18 of the sample countries, with 7 remaining fairly stable and inequalities across regions decreasing in only 3 countries in

[1] This is a predominant feature of the regional economic geography of Ukraine where Eastern regions have tended to move towards more manufacturing and IT-based economies with the West focusing on machinery and agricultural production. This has widened East-West disparities and left the West more vulnerable to the present shock (Neffke, Hartog and Li, 2022[78]).

[2] Increasing: Australia, Bulgaria, Czech Republic, Finland, France, Greece, Hungary, India, Indonesia, Mexico, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Thailand, United Kingdom; Stable: Austria, Canada, China, Italy, Japan, Netherlands, United States; Decreasing, Belgium, Brazil, South Africa

the sample: Brazil, Belgium and South Africa (Rodríguez-Pose, 2015[44]). The study showed that trade openness has no linear effect on regional disparities and instead has mixed results across countries. Engaging in globalisation can be a means for sustainable and inclusive regional development when strategies are aligned with local priorities and with due consideration for the potential spillovers for local firms and residents – both the positive and the negative. It is less a question of diversification *or* specialisation as it is about attracting investment that enhances the innovative capacity of regions and makes best use of the assets, skills and infrastructure that can foster regional development (Ortega-Argiles, 2020[45]).

In some cases, engaging further in GVCs could help regions to increase their innovative capacity, to bolster local industry and to ultimately minimize risks from future shocks (ITIF, 2020[46]). To do this, regions need to assess their comparative advantages against the backdrop of the megatrends that are reshaping the economic and social structures around us. The framework for territorial attractiveness presented in this paper can help provide this perspective as it compares relative strengths and weaknesses across less traditional drivers of investment, talent and visitor attraction. Moreover, regional input-output data (not yet included in this framework due to lack of comparable data at the regional level) could help policy-makers better understand the inter-regional and sectoral linkages that can both strengthen and weaken resilience in the face of exogenous shocks.

A new, fairer taxation framework elevates the importance of non-financial drivers of attractiveness

In October 2021, a joint OECD/G20 forum on tax base erosion and profit shifting secured agreement between 136 states to ensure a minimum 15% tax on large multinational firms (MNFs) (OECD, 2021[47]). From 2023, this tax will be levied on the largest multinational companies, including digital companies, according to criteria established by the states party to the agreement. By placing unprecedented international limits on tax competition, it is possible that the role of taxation will be reduced as a factor guiding the choice of foreign companies, and that other factors will play a more prominent role. The attractiveness of a territory for a foreign target, be it an investor, will be concretely translated by a stronger focus on local pull factors, which vary geographically within a country. Moreover, price competitiveness alone fails to inflect firms' location decisions. Financial incentives have in the past proved to be insufficient in motivating companies to relocate (French Ministry of Economy and Finance, 2013[48]).

There are indeed a number of other factors influencing decisions made by foreign companies on where to locate. These include infrastructure (energy, 5G, digital, etc.) and services; the level of qualification and/or cost of the available labour force; regional investment policies; agglomeration effects (presence of other investors, competitors, foreign customers and suppliers); availability of land, etc and indeed location itself (e.g. proximity to markets and suppliers) (OECD, 2020[25]). These strategies should not be limited solely to investors. It is also a question of attracting and retaining talent in the sense of boosting the supply of more or less qualified local labour, capable of meeting the needs of companies, and of innovating. Access to quality public services (including health and education) and attention to well-being, including environmental concerns, are important arguments for attracting talent, sometimes proving to be more of an incentive than monetary benefits and a key lever for attracting youth (Khanna, 2021[49]) (Tuccio, 2019[50]).

3 Beyond competitiveness towards quality of place and of life

Quality of place' has become an increasingly important draw

What attracts investors, talent and visitors is inherently place-based. It relates to what specific characteristics about a place appeal to certain groups, businesses, and individuals. These factors may vary depending on geographic location or population group, historical achievements and trajectories (i.e. the extent to which regional development is path dependent), and perceptions and values. They include the local investment climate and the presence of key clusters of firms; proximity to key international and domestic markets; good governance and multi-level coordination; but also the quality of life as defined by the cost of living, housing (availability, quality and affordability), access to sound public services, a sense of community belonging, safety, environmental quality, and cultural amenities. While (quality) jobs remain the fundamental draw for low to high-skilled workers looking to relocate, other factors such as local levels of educational achievement and investment in R&D can be magnetic for highly-educated migrants and savvy investors seeking new opportunities in innovative places (Diaz Ramirez et al., 2018[51]). Access to natural and cultural capital, opportunities to upskill and a sense of belonging to the local community can then help retain talent who are new to the region.

Boosting a region's attractiveness requires a territory-based view of what factors are attractive to whom. For example, a comprehensive, multi-modal transport infrastructure and with good domestic and international accessibility can boost a regions' profile from a logistics perspective, in addition to helping to facilitate intra and interregional tourism. In this respect, areas ripe for exploitation include those that attract multiple targets at the same time; for example, an approach to expand the scope and size of R&D activities is likely to draw in investment and talent. This is precisely what the German metropolitan region of Chemnitz launched in 2008 through the *Chemnitz is Booming!* Campaign where they created incentives and networks aimed at attracting and retaining youth and enterprises in high-skill industries. This ongoing program has turned the city into a vibrant R&D hub, and continues to leverage the quality of life and environmental advantages as key draws for firms and talent. Many such initiatives can be identified across the OECD that focus on talent, investment and quality of place as three interacting dimensions of regional attractiveness (European Committee of the Regions, 2018[52]).

To capture these dimensions, measurement initiatives to quantify competitiveness beyond economic performance are fundamental. Measuring the long-term development and innovation potential of regions, the *European Regional Competitiveness Index* (RCI) does just this by looking at market dynamics, innovation, institutional performance, health and education as drivers of place-based competitiveness (Annoni and Dijkstra, 2019[53]). This blended approach capturing labour market productivity together with well-being and regional development potential is highly relevant for budget and investment decisions of policy-makers and firms.

Regional authorities are uniquely placed to advance an attractiveness agenda. On average, subnational governments are in charge of 40% of public spending and over 60% of public investment in OECD

countries (OECD, 2018[54]). They are key contributors to policies that may affect attractiveness, such as education, healthcare, housing, economic development and social protection. Of critical importance is their role in the integration of migrants at the local level which, effectively managed, increases social cohesion and contributes to talent retention (OECD, 2022[55]). Adopting a comprehensive approach to attractiveness can be a strategy for regions to compete for globally mobile talent and investment while advancing social inclusion and environmental sustainability principles. At the same time, national policies and programs need to be positioned to bolster the attractiveness of lagging regions. This can be achieved in many ways, for example through the development of new regional specialisations; cluster policies; free-ports and special economic zones; ensuring the economic upside potential of the net-zero transition is regionally distributed, and improving the connectedness of all regions through investments in broadband, logistics and transport infrastructure (European Commission, 2017[56]) (OECD, 2019[57]).

Well-being: An emerging north star for talent, investment and visitors

Before the growth in popularity of indices that compare the appeal of places to mobile talent, researchers like Richard Florida had already conceptualised the non-financial draws that had begun to reshape the playing field for talent attraction (Florida, 2000[58]). In this research, the author calls upon cities and regions to invest in those recreational and environmental amenities that provide a competitive edge in a new economy with fresh demands in terms of work-life balance. While at the time, the focus was on workers in knowledge-intensive industries it is safe to assert that these demands have spread beyond the confines of those employed in the technology sector. The challenge today is for regions to attract diverse talent and investment – from healthcare workers to renewable energy to creative and cultural industries – and thus to provide the infrastructure and offerings needed to make that transition a possibility. Moreover, regions need to consider which skills gaps – high, medium and low – are needed to be bridged to achieve inclusive and sustainable regional development. This translates to real wage growth for low and middle-income earners and a swift energy transition that ushers in gainful employment in emerging sectors like renewable energy production. This is a challenging feat without the contributions of foreign investments and talent, which can help to champion new economic opportunities and fill the employment needs of local industry.

Indices like the annual Global Talent Competitiveness Index produced by INSEAD and the now-defunct *Doing Business* index by the World Bank, start down this path by providing detailed information to investors on the economic vibrancy of a country. However, they tend to lack clarity on other, non-pecuniary assets and generally do not report at the subnational dimension. With the increased flexibility and mobility of the global labour force, and megatrends such as demographic change and climate change, there is a need to look beyond mere business statistics that are largely based on past outcomes and instead to consider how employment and digital trends will create new geographies of opportunity in the years to follow (Khanna, 2021[49]).

Focusing on drivers of regional well-being allows policy-makers to look beyond highly skilled occupations as the only drivers of regional development. An elevated focus on resident well-being as a key determinant of territorial attractiveness may serve to create opportunities in low and high-skilled industries by attracting talent up and down the skills ladder who are seeking a better overall quality of life, thereby playing a vital role in reducing local labour/skills shortages. This is especially true for those whose jobs are newly remote and now have greater flexibility in terms of location choice.

In the OECD methodology, resident well-being is captured by indicators covering health, employment, education, and social cohesion such as access to quality public services and the quality of public institutions. Employment is a critical part of the well-being equation but is incomplete on its own – the quality and nature of the work (difficult to measure in its own right) is vital. Initiatives by the OECD, the ILO, and Eurofound, among others, have made strides to qualify and quantify this key component of well-being

and a pillar of SDG 8: Decent work and Economic Growth – although the availability of data at the subnational level remains insufficient to provide the full picture.

Non-pecuniary indices for attractiveness are rare despite their ability to complement existing competitiveness indices that cover only the economic characteristics of a place. Indicators that help policymakers understand the strength of the social fabric are an important indication of its productive potential (Aiginger, Bärenthaler-Sieber and Vogel, 2013[59]). Education indicators, such as access to primary and secondary institutions, reflect the robustness of local public service provisions and can be instrumental in improving social outcomes such as civic and political participation, health and well-being (OECD, 2020[60]). That said, they should also assess the accessibility – and quality and relevance – of higher learning institutions and whether they meet the needs and raise the standards of the local job market and enhance regional innovation (Krstić, Chavaglia and Filipe, 2020[61]). In the same way, the preservation of the local environment and of social cohesion can be seen as attractiveness drivers for firms and residents in choosing where to locate, live and work. This was the inspiration for Despotovic (Despotovic et al., 2018[62]) in creating a sustainability-adjusted *Global Competitiveness Index* at the national level for 30 EU countries, which expands this economic ranking to include an environment and social pillar to ultimately assess what they deem *socially sustainable competitiveness.*

Local conditions of well-being must also take into account the social-ecological nexus whereby economic inequalities are associated with poorer environmental quality (Laurent, 2014[63]). Conversely, improvements in the quality of the local environment can show strong improvements in levels of overall well-being, as illustrated in the findings of a regional study on quality of life in the Canadian region of Nova Scotia (Flood and Laurent, 2021[64]). With this in mind, this methodology considers local efforts to preserve the environment and access to natural capital, and overall indicators of environmental well-being such as air pollution.

Diversity is an additional factor that represents a virtuous circle of regional attractiveness whereby the more foreign talent present in a place the more appealing that the place becomes to prospective newcomers. That is the most significant finding in Richard Florida's seminal study of U.S. regions where he finds that openness and low (cultural) barriers to entry are drivers of attraction for human capital (Florida, 2002[65]). That said, the research focuses heavily on technology and cultural creative industries and should be renewed in the context of low and medium-skilled sectors to uncover the possibility of additional variables of territorial attractiveness for a wider segment of the population. In addition, it is not uncommon for left-behind regions to show scepticism towards an influx of workers when their regional economy is a less advanced one (Indelicato, Martín and Scuderi, 2022[66]).

Attractiveness cannot be seen solely in the eyes of investors and talent and must include the appeal of a region to potential visitors. Rethinking regional tourism development strategies in the wake of the pandemic will require a strategic and coordinated approach with those developed for sustainability and even talent attractiveness (e.g. the rise of digital nomads exemplifies a new kind of 'working tourism'). Tourism can help improve the attractiveness of places by offering diverse employment opportunities; increased demand for specialised services from small businesses while it promotes the cultural and natural assets of territories (OECD, n.d.[67]). Regions will look to host visitors who stay longer, explore more of the region, engage in meaningful ways with locals and leave the local environment intact and even strengthened through their visit and their expenditure in the territory. This methodology assesses the attractiveness of regions to visitors through a number of indicators, including the duration of nights stayed and visitor origin (domestic versus inbound) but also aims to look at the satisfaction of the overall visitor experience pending the availability and usability of said data for future studies. Utilising non-conventional indicators (e.g. web-scraping data from travel sites and geospatial mapping of regional tourist offerings) can help decision makers understand how local services (i.e. public transport, parks, visitor information) can improve the overall visitor experience and contribute to a more sustainable tourism sector. Identifying and integrating such indicators into the framework is a key next step.

Existing approaches for measuring attractiveness are too often limited to the national level

Table 1.1 highlights some of the pre-existing initiatives that set out to understand the push and pull levers of investment, talent migration and tourism activity across the world. Most initiatives compare and/or rank places at the country level, which masks the within country disparities in terms of the endowed assets available to subnational regions to attract foreign targets. Some extensive work on competitiveness and innovation by the European Commission stands out (see Table 3.1) albeit the focus is confined to innovation and competitiveness. Some indices provide insight into both the investment and talent components (e.g. Global Talent Competitiveness Index and European Regional Competitiveness Index), while others focus on specific targets (e.g. EY's RECAI[3] and the WEF's TTCI[4]) (see Table 3.1). Each program is helpful insofar as they present insightful methodologies and groupings of indicators that have informed some of the selection of the OECD's methodology for rethinking regional attractiveness. That said, the limited of data at the subnational dimension has clearly restricted the scope of these initiatives to look at local attractiveness. This is the fundamental inspiration for this exercise, which involved a sweeping scan of the available indicators – and some unavailable but suitable indicators (see 4Annex B) – for assessing regional attractiveness.

Table 3.1. Selected attractiveness measurement indicator sets and initiatives

Measurement Initiative / Indicator Set / Index	Leading Agency or Organisation (Coverage)	Brief description and links	Investors	Talent	Visitors
Global Attractiveness Index	European House - Ambrosetti (Country Level – annual)	Ambrosetti publishes an annual study on the macro drivers of attractiveness across 148 countries. The four pillars of the methodology are *openness, innovation, endowment and efficiency*. Indicators are primarily quantitative in scope; they provide a dual perspective on internal (ability to retain resources) and external (ability to attract resources) attractiveness. The report ranks countries according to their degree of attractiveness (ex. high, medium-high, medium-low, low). Global Attractiveness Index (ambrosetti.eu)	X		
Global Talent Competitiveness Index (GTCI)	INSEAD (Country Level – annual)	In collaboration with partners in the private sector, the GTCI is built based on four input dimensions (enable, attract, grow, retain) and two output dimensions (global knowledge skills and vocational and technical skills) of talent attractiveness. The exercise involves the creation of composite scores for each pillar and sub-pillar and are ranked internationally and categorized according to the level of development of the country. Many of the indicators are as applicable to attracting FDI (investors) as they are talent (migrants), such as education achievement, regulatory quality, ICT infrastructure, etc.	X	X	

[3] Ernst and Young's Renewable Energy Country Attractiveness Index (RECAI).
[4] Word Economic Forum's Travel and Tourism Competitiveness Index (TTCI).

		Global Talent Competitiveness Index | INSEAD			
European Regional Competitiveness Index	European Commission – DG REGIO (NUTS 2 – European Union Countries – 2010, 2013, 2016, 2019l)	The EU's Directorate-General for Regional Policy publishes an annual review of competitiveness based on 70 indicators across three dimensions: Basic (macro variables), Efficiency (market and labour market statistics) and Innovation (technological and business sophistication). A z-score is computed that is then mapped and colour-coded to show regional performance on each dimension as compared to the EU average. European Regional Competitiveness Index - Regional Policy - European Commission (europa.eu)	X	X	
OECD Indicators of Talent Attractiveness	OECD (Country Level, annual)	The indicators included in the set cut across 7 dimensions identified as potential pull levers for talent migrants: (1) quality of opportunities, (2) income and tax, (3) future prospects, (4) family environment, (5) skills environment, (6) inclusiveness and (7) quality of life. They focus on skilled migration at the national level, defining talent as (i) those with the highest educational attainment, (ii) entrepreneurs and (iii) international students. Talent Attractiveness - OECD		X	
Renewable Energy Country Attractiveness Index (RECAI)	Ernst and Young (EY) (Country Level, bi-annual)	EY's index of renewable energy attractiveness is an interesting example of a topic-specific set of indicators focusing on attracting investments in clean energy. It is organised in three core pillars: Macro drivers, Energy market drivers and Technology-specific drivers, drawing data from over 50 datasets. Renewable Energy Country Attractiveness Index | EY - Global	X		
EU Regional Innovation Scoreboards	European Commission (NUTS 2 – 240 regions across 22 EU countries, Norway, Serbia, Switzerland and the UK; Cyprus, Estonia, Latvia, Luxembourg and Malta are included at the country level; 2009, 2012, 2014, 2016, 2017, 2019, 2021)	The RIS is a diagnostic tool that reports performance on 21 (out of 32 indicators from the European version – EIS) indicators that cover four dimensions of innovation: 1) Framework conditions (available human and tech resources), 2) Investments (in R&D, firms, and technology), 3) Innovation Activities (SMEs, patents, and linkages) and 4) Impacts (in terms of employment, sales and the environment). Regional innovation scoreboard | European Commission (europa.eu)	X		
Travel and Tourism Competitiveness Index (T&TCI)	World Economic Forum (Country level – biennially since 2007 – latest report in 2019)	This WEF report focuses on four national dimensions that promote a vibrant travel and tourism sector: 1) an Enabling Environment, 2) T&T Policy and Enabling Conditions, 3) Infrastructure, and 4) Natural and Cultural Resources. Equal weights are allocated to each of the 4 dimensions and 14 sub-pillars, which include 90 indicators; the indicators are combined using a simple average aggregation to compute a score for each pillar. Travel and Tourism Competitiveness Report 2019 - Reports - World Economic Forum (weforum.org)			X

Note: This is a non-exhaustive list of indices intended to illustrate the various approaches to conceptualising attractiveness.

4 The OECD methodology for assessing regional attractiveness

This section presents a methodological approach that includes 55 crosscutting objective and subjective indicators, reinforced by innovative and unique tools that make it possible to position the regions according to their attractiveness profile. These profiles do not aim to produce rankings but rather to provide policy-makers with useful evidence to make informed decisions based on the various levers at their disposal to attract talent, investors and visitors. The indicators are diagnostic and, as such, need to be considered in the context of a region's development priorities, trends and ambitions. A higher score may not always reflect the policy priority of a region – e.g. if a region looks to attract more domestic visitors and reduce the high dependence on foreign visitors in the wake of the pandemic, this needs to be taken into account.

The tool presented in this paper diverges from the aforementioned studies in Table 3.1 insofar as it blends two approaches: reference indicators and composite scores, giving policy-makers a comparative and multi-dimensional assessment of regional attractiveness. The rationale for proposing more than one means of representation is to serve users with a diagnostic tool. One that considers a wide body of evidence available at the regional level (TL2 and TL3, when available) to assess attractiveness extensively and transversally, recognising the utility of many data points in monitoring a regions' attractiveness towards multiple targets (see examples in Figure 4.4 and Figure 4.6 and a full list of indicators in Annex A).

Methodological framework

Table 4.1. Profiles of attractiveness targets

Talent	Investors	Visitors
• Low, medium and high-skilled • Entrepreneurs • International Students and Researchers	• Foreign Direct Investment • Export Promotion	• International tourism • Business tourism • Sustainable tourism (not mutually exclusive)

This section presents a dashboard for the diagnosis of regional attractiveness. This tool makes it possible to compile 55 multi-dimensional indicators of attractiveness, based on work by the OECD and a review of existing theoretical literature on the attractiveness of regions towards international targets. While synthetic indices can be helpful insofar as they provide a comparable and interpretable classification of regions, a dashboard does not agglomerate data and allows a multidimensional reading of attractiveness that gives the policymaker detailed data that can support agenda setting and policy evaluation. The 'ranking' of regions is not the primary objective of the dashboards and promotes a nuanced approach. The three attractiveness 'targets' (see Table 4.1above) are the inspiration for the fourteen 'dimensions' covering six 'domains' of attractiveness (see Figure 4.1 below) which are conceptualised here as the 'levers' that can be used and strengthened to attract talent, investors and visitors. As indicated above, these targets do not always take the same form – visitors, for example, can be foreign or domestic, travelling for business,

health or cultural purposes and, in addition, be participating in sustainable tourism activity. The dashboard of the 55 indicators that fall under these 14 dimensions indicates whether each indicators targets one, two or all three targets (see Figure 4.1). This diagnostic approach is designed to support policy-making, illustrating to decision makers where strengths and weaknesses exist in order to incite public investment and action. Moreover, it takes inspiration from the OECD Regional Well-being dashboard and some of the existing approaches outlined above. The premise of the approach is based on the OECD's proposed definition for regional attractiveness: the ability to map, promote and improve a territory's economic, social and environmental assets in order to attract and retain talent, investment and visitors.

Figure 4.1. Fourteen dimensions representing six domains of territorial attractiveness towards three core targets: investor, talent and visitors.



Attractiveness dashboard

Box 4.1. Selection of indicators – Methodology

An indicator may specifically reflect the expectations of one or more of the aforementioned targets. For example, logistics activity is of particular interest to investors, while access to airports will meet the expectations of the three target groups of investors, talent and visitors. In order to propose a graphic representation of regional attractiveness in the form of the radar graph in Figure 4.6, a selection of key indicators – one from each of the fourteen dimensions – was necessary. The selection of indicators used to develop the graphic representation was based on the following criteria:

- the selection of one indicator per dimension (one indicator for each of the fourteen dimensions) in order to cover the entire spectrum of attractiveness in a visually accessible manner;
- as the objective of the graphical representation here is to compare regions within a country with each other and with other OECD regions, preference is given to indicators with sufficient geographical coverage to allow for such comparisons;
- in addition to official data: non-conventional data and subjective data were considered where available:
  - Non-conventional data to provide information in a more timely manner;
  - Subjective data to understand whether changes affecting society have an impact on the population – and to integrate this feedback into the planning and evaluation processes;
- Each indicator is also selected based on its practicality for designing, implementing and monitoring policy progress.

It is important to note that the selection of indicators to feed each dimension is guided by the availability of data and may not necessarily be predicated on the most conceptually relevant indicator. For example, for the **land** dimension, it would be desirable to have regional data on the availability and cost of land specifically earmarked for economic development purposes. Or, for **social cohesion**, levels of resident participation in sports, leisure and recreational activities. Additional, ad-hoc research is required to complement this framework with available data on a case-by-case basis.

The graphical representation in Figure 4.5 allows regions to compare their 'attractiveness' against the average of the country regions and the average of OECD regions, based on the following 14 dimensions and 6 domains of indicators (see the list of suggested indicators in Annex A, a performance table of French regions in Annex C and correlation matrix in Annex D). The purpose of comparison is not to rank regions, one against the other, but to understand their relative availability of certain types of capital: human, natural, economic or social. This needs to be 'diagnosed' in the specific regional (socio-economic and environmental) context and aligned with existing strategies and ambitions for regional development.

Below, reference indicators for each dimension are listed to illustrate the rationale for selecting certain indicators and how they exemplify a measure of attractiveness – albeit they are only one of numerous indicators under a dimension and are used to show a representative example of performance in that policy area.

Economic Attractiveness

Economy - *GDP per capita*: measures the wealth produced per capita expressed in constant purchasing power parity (reference year 2015) in order to make international (spatial) comparisons and at constant prices to eliminate the effect of inflation when making temporal comparisons. It is a central indicator for

monitoring the economic development of the region and can be used as a selection criterion for comparing the performance of regions with similar levels of GDP per capita. To note, PPPs are calculated at the level of the total economy and so serve only as proxies for PPPs at the sub-national level (similar challenges also emerge in calculations of GDP deflators at the sub-national level).

This indicator tells us relatively little on its own and needs to be considered together with other variables to paint a fuller picture of the economic structure and economic drivers of a region's development. Various correlations, outlined below, provide further context as to what does – and doesn't – help explain contributions to GDP per capita. Among them, productivity are research and development are key while sectorial diversity shows less relevance. Going beyond GDP, creativity, environment, health, and well-being tend to be associated with higher levels of GDP per capita:

GDP per capita and Gross Value Added per worker are very strongly correlated indicators (correlation coefficient of 0.86 for the European regions, with a 95%[5] confidence interval, noted hereafter *). GDP per capita is weakly correlated with the sectoral diversity of employment indicator at the level of the European regions (0.30*). GDP per capita is very strongly correlated with innovation indicators, such as the 'share of personnel employed in R&D', as well as 'patent demand per million inhabitants' (respective coefficients 0.68* and 0.57*), suggesting that innovation activity goes hand in hand with strong levels of regional economic development. Among other indicators of attractiveness, GDP per capita is also strongly correlated (from 0.50 to 0.57) with various aspects of well-being, such as 'share of employment in culture and creative industries', 'waste recycling', 'life satisfaction', and 'perception of health care services'.

Innovation and entrepreneurship – *Share of personnel employed in R&D*: the number of people employed in R&D is directly linked to the public and private investment effort in R&D. This indicator highlights the favourable climate for innovation in the region, an important factor for investors and talent. This indicator can be used by regions to communicate their dynamism in the innovation sector.

Within this dimension of the framework, a subjective indicator measures the percent who agree that the region is a good place for starting new businesses and is strongly correlated with the indicator measuring the number of patent applications (0.50*); innovation and entrepreneurship are therefore linked as far as these indicators are concerned.

Labour market - *Employment rate*: the ratio of the number of people aged 15 to 64 in employment to the total number of people in the population of the same age group, which is derived from labour force surveys and measured according to International Labour Organization recommendations. This indicator provides an essential look at the health of the economy and economic opportunities for people of all ages which, when few, can lead to intergenerational poverty and weaken social cohesion.

Visitor Appeal

Tourism - *Number of overnight stays in tourist accommodation per 1000 inhabitants:* The tourism sector is important in its own right in terms of economic supply and employment. Measuring overnight stays as a share of the population gives a sense of the weight of tourism on a region and can – when very high – be indicative of mass or over tourism (e.g. TL2 regions like Balearic Islands and Veneto). At the same time, a low score (e.g. North Rhine-Westphalia) poses the question of whether there exists more opportunity for growth in the tourism sector and an opportunity to create more geographical dispersion of visitors within a country. Beyond this, more work is needed to qualify the sustainability of tourism activity across regions to

[5] Measuring relationships between variables: Several tools exist to test the strength of associations between variables, the most commonly used being the Spearman correlation coefficient. For a strong association between two variables, the non-rejection of the null hypothesis that the Spearman coefficient is equal to 0 - which implies no association - is adopted at the 5% significance level, i.e. the correlation is statistically significant at the 95% level.

reduce the environmental footprint of this sector and to help alleviate some of the pressures on local resident well-being.

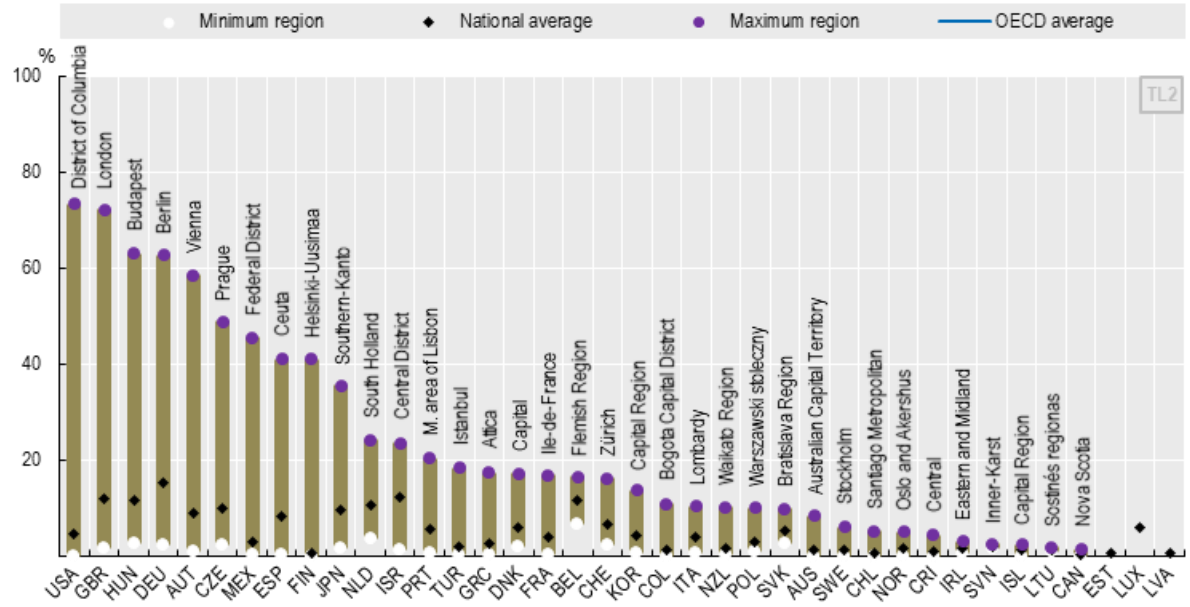
Cultural capital - *Share of employment in culture and creative industries*: the cultural and creative sectors are important in their own right in terms of economic footprint and employment. They also stimulate innovation in the economy and contribute positively to other realms of society (well-being and health, education, inclusion, urban regeneration, etc.). This indicator makes it possible to evaluate the contribution of the cultural sector to economic development, an asset for regions to communicate with potential visitors, as well as to attract talent and investors who wish to have a dynamic sector in this field.

Land and Housing

Land – *Share of land cover converted to artificial surfaces*[6] *(2004-19)*: this indicator is concerned with the development of land for economic activity. While a high score may be illustrative of high economic activity, it may also be explained by a small overall surface area, a highly urbanised and/or capital region and/or point to environmental degradation. Regions should therefore be considered against those with similar geographic and economic profiles. In Figure 4.2 vast differences in the share of artificial land surfaces illustrate this point: capital areas and highly urbanized regions are significantly more developed than the lowest scoring regions in OECD countries that, save a few exceptions, trend close to 0%.

Figure 4.2. Regional land disparities in OECD regions.

Artificial Surfaces (as a % of total land area), 2019



Source: OECD Environmental database.

[6] Defined by the EEA (2018): Continuous and discontinuous urban fabric (housing areas), industrial, commercial and transport units, road and rail networks, dumpsites and extraction sites, but also green urban areas. Defined by the SEEA Central Framework (UN et al., 2014a): Any urban or related feature, including urban parks, and industrial areas, waste dump deposit and extraction sites.

Housing – *Share of the population satisfied with affordability of housing*: this indicator complements objective measures of housing, indicating the extent to which its affordability meets the needs of residents. It can also reveal to policy-makers whether housing affordability is deemed a critical issue when compared to neighbouring and international territories. This measure varies widely inside countries with an average range of 48.5% between lowest and highest performing regions in OECD countries. Moreover, housing is high priority for migrants looking to relocate and thus a critical part of any local talent attraction and retention strategy. While subjective measures like this one are important, this needs to be complemented by measures on the availability and quality of housing.

Resident Well-being

Social Cohesion – *Quality of Government Index (CE):* The index is based on a large European citizen survey where respondents are asked about perceptions and experiences of corruption in the public sector, as well as the extent to which citizens believe that various public sector services are provided impartially and to a good standard. As a perception-based tool, it helps decision-makers to improve service delivery based on the experiences of beneficiaries. It also allows potential talent and investors to assess institutional integrity.

Education – *Access to primary education facilities (km):* This indicator is estimated on the basis of the average road distance travelled by pupils to their school. The distribution of schools and the allocation of pupils to each school is based on a model that takes into account the proportion of pupils who prefer to attend schools further away than the local one. The indicator is expressed in kilometres per primary school pupil and makes it possible to highlight the disparities in access to primary education, depending on the specificities of the territories.

Importantly, indicators on access to education facilities and educational obtainment levels do not tell the entire story and should be complemented by output and outcomes indicators that evaluate the quality of the educational offering. The OECD Programme for International Student Assessment reported for the first time in 2018 scores within countries however, the data is only available in a few country cases. Data on the number of top-tier universities within a region can also illustrate opportunities for advanced education – an important driver for attracting and retaining talent. With this in mind, this framework includes data on regions that are home to universities ranking in the world’s top 500.

Health - *Number of doctors per 1000 inhabitants*: ensuring equitable access is essential for an inclusive society and a well-functioning health system. The number of doctors per capita provides an assessment of access to care, an important measure for those looking to relocate, particularly important for families. Where gaps exist with respect to the national and/or OECD average, it can represent an important area of opportunity for public investment to ensure that essential services are available to residents. Notwithstanding the usefulness of this measure, a closer look should be given to the quality and variety of healthcare services (e.g. specialists, disability services, etc.) and the average distance to key services.

Connectedness

Digitalisation - *Internet download times from fixed devices*: advertised broadband speeds may differ from actual speeds experienced by users. The OECD often relies on external sources to measure "real" broadband speeds as experienced by users to obtain average speeds. One such external source is Ookla. This source provides very granular spatial data on actual broadband speeds, which allows for territorial analysis, however it is desirable that this measure is counted by other sources, as the different data sources (e.g. Ookla, M-Lab, Steam) measure internet connection speeds using their own methodology. This indicator of the speed of the region's internet infrastructure can be useful for investors who look to capitalise on this critical infrastructure to establish and grow their firms. Moreover, it is a fundamental

criterion for talent looking to relocate to a region that meets their needs for remote work and a higher quality of life.

Transportation - *Share of population accessible by road within 90 minutes within a 120 km radius* (Population accessible within 1.5 hours by road as a proportion of the population within a 120 km radius). As road transport is an essential service, this indicator measures the number of destinations that can be reached within a limited time and distance. However, this indicator is not an indicator of network performance (in terms of speed, or flows) as it mainly reflects the spatial distribution of population or destinations and not performance, so it cannot be used to assess or compare transport performance (Annoni and Dijkstra, 2019[53]). This indicator can reveal investment opportunities for public and private actors.

This indicator is quite naturally correlated with the number of passenger flights accessible within 90 minutes by car (0.60* at the European region level).

Natural Environment

Environment - *Share of municipal waste recycled:* Municipal waste management and recycling plays an important role in controlling pollution, in particular helping to reduce greenhouse gas emissions, as well as indicating good governance of public institutions. This sustainable approach to waste management is an example of an ecosystem service that has welfare effects that go beyond the benefits to nature and enhance human/mental well-being (Pearce and Turner, 1990[68]).

Natural capital – *Share of tree cover:* containing deforestation and tree cover loss helps preserve natural ecosystems. Tree cover also significantly reduces surface temperature peaks during heat waves, contributes to the well-being of the population and provides opportunities for those who enjoy nature and outdoor recreation (visitors, talents), while its evolution also represents a key measure of environmental preservation, which is important for all three target groups. That said, a low tree cover rate can be the result of the regional surface topology (a natural phenomenon) and/or industrial development (artificial conversion of surfaces) which may provide significant economic opportunities for regions.

Figure 4.3. Classification of regional attractiveness indicators

For each dimension (e.g. Economy) data are presented accordingly: Indicator; Source; Latest year available

Economic Attractiveness

Economic attractiveness is a way of understanding various indicators such as the level of wealth and performance of the region, its capacity to offer a diversity of industrial activities and a supportive environment for entrepreneurship and research, as well as helping potential investors and talents to assess the dynamism of the labour market.

Economy: GDP per capita (2015 constant PPP); OECD Regional statistics (database); 2020
Innovation: R&D total personnel; OECD Regional statistics (database); 2018
Labour market: Employment rate (%, ages 15-64); OECD Regional statistics (database); 2021

Visitor Appeal

The inspiration for visitors is both the region's tourism infrastructure and its reputation among foreign visitors. It highlights the role of cultural heritage in attracting talent, visitors and tourism-related investment into the region. All these elements are essential for a dynamic tourism sector. At the same time, tourism needs to be assessed for quality more than quantity, ensuring that over-tourism or mass tourism does not subtract from resident well-being and thereby deterring potential talent.

Tourism: Share of overnight stays by foreign tourists; Eurostat; 2020-21
Cultural capital: Share of employment in culture and creative industries; OECD Regional statistics (database); 2018

Land and Housing

Land and housing allows regions to assess whether the cost of living remains an attractive feature or whether it needs attention. The availability of turnkey industrial estates would allow investors and talent to gauge the attractiveness of the territory in terms of industrial and agricultural infrastructure.

Land: Share of land converted to artificial surfaces 2004-2019; OECD Environmental database; 2004-2019
Housing: Share of population satisfied with affordability of housing; Gallup World Poll; average 2016-2020

Resident Well-being

Residents' well-being is an important measure of the vitality and shock resilience of a region. It can indicate to a resident such things as the region's ability to reach out internationally through education, or satisfaction with these services, which are of great importance to those seeking to settle.

Social cohesion: Quality of government Index: European Commission; 2017
Education: Access to institutions of primary education; European Commission and OECD; 2011
Health: Number of doctors per 1,000 inhabitants; OECD Regional statistics (database); 2019

Connectedness

The global connectivity of a region lies in the provision of quality transport. In addition, the rapid development of businesses and to some extent the development of teleworking as a result of COVID-19 has increased the need for access to fast and stable internet connections, but to reap the benefits of digitalisation, access to digital infrastructure must also be accompanied by technology adoption.

Digitalisation: Download time from fixed devices as % of national average time; Ookla database; Q1 2021
Transport: Share of population accessible by road within 120km radius; European Regional Competitiveness Index; 2019

Natural Environment

Environmental and natural indicators help visitors and talents to understand the quality of the environment and the importance given locally to environmental preservation efforts.

Environment: Share of recycled waste; OECD Regional statistics (database); 2019
Natural Capital: Tree cover (% of total area); OECD Environmental statistics (database); 2019

Methodological framework for the formation of a vision of attractiveness

Importance of data standardisation

The OECD's attractiveness indicators are expressed in different units, e.g. GDP per capita is expressed in USD while access to primary schools is estimated on the basis of the average road distance in kilometres travelled by pupils to their school. In order to compare the indicators on the same scale, they have been standardised in two steps:

- The first step consists in converting the indicator value into the ratio of the difference between that value and the minimal value over all regions for this indicator and the difference between the maximal and minimal values for this indicator: (value – min) / (min – max).
- The result is then multiplied by ten to obtain an indexed value between 0 and 10 by dividing the values into percentiles and then the values are scaled from 0 to 200. Regional indicators of attractiveness are compared to averages of the countries, the EU and OECD regions, in order to provide a relative indication of their attractiveness profile. For example, let us suppose that Liguria's poverty rate after taxes and transfers corresponds the 10th centile then that is the value of the indicator superior to at least 10% of values for this indicator. After standardisation, the corresponding value is 20 (200/10 = 20) and 20 is thus the score obtained by Liguria for the poverty rate indicator.
- Finally, in the reference indicator (radar) approach (see Figure 4.6) the regions are compared to an EU OECD and country median which is represented by the same median curve of value 100. In the composite approach (see Figure 4.4), the regions are compared only to the EU median which sits at 100 and is represented by the dotted black line down the middle of the chart.

The goal is not to rank regions. It is as **a diagnostic tool** to assess the facts and their connection to territorial attractiveness for each of the dimensions. For example, the land score for Grand-Est (Figure 4.4) reflects lower prices of LAND; less land recently converted to artificial surfaces yet a larger built-up area than most OECD regions. All this needs to be balanced against the economic and sustainable development goals of the region. **A Higher Score Does Not always Equal a Better Score.**

A composite approach supports a dynamic, transversal dashboard based on all 55 indicators

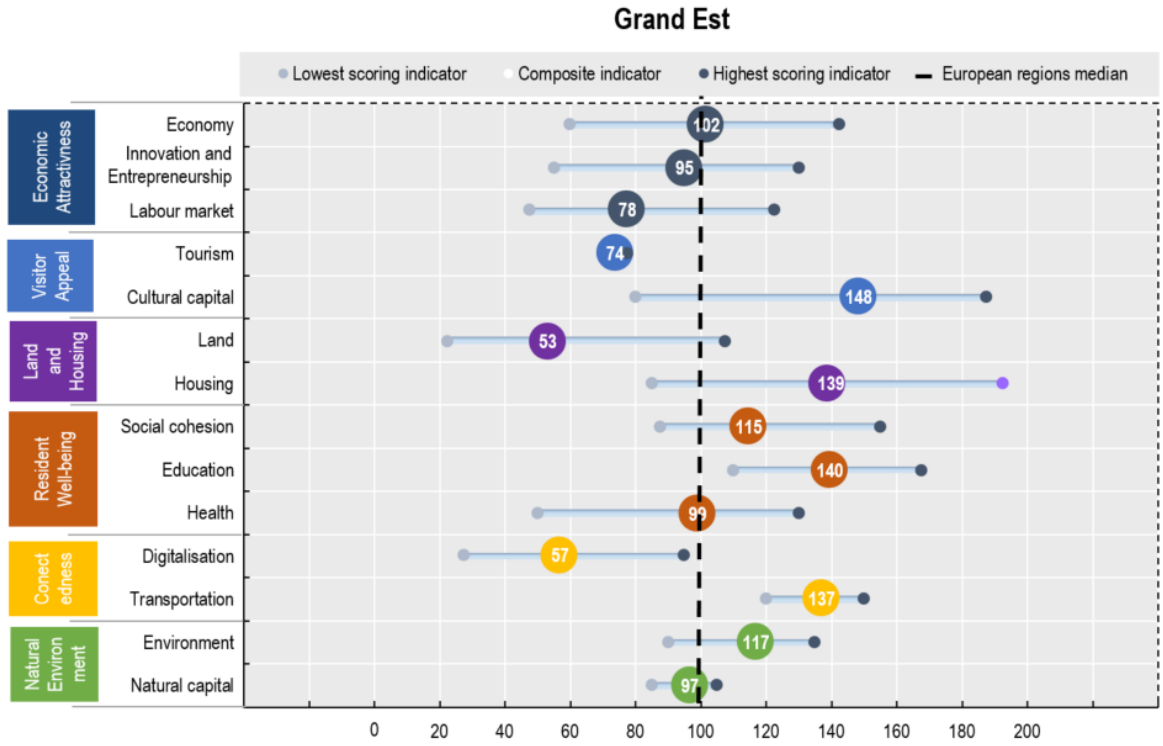
The OECD guidelines for constructing composite indicators makes the case that doing so can help to disseminate complex and multi-dimensional information in a way that supports decision-making and facilitates communication with key policy stakeholders (OECD, 2008[69]). The desired advantage of composite indicators is to obtain a limited number of indicators that can be better visualised and grasped without losing information or having modified their interpretation. That said, it requires that the underlying indicators are robust, frequently disseminated and indicative of overall performance in a policy area. The questions of relevance, availability and frequency informed the basis of selection for the underlying indicators with their compatibility tested using a correlation matrix (see Annex D).

In Figure 4.4 a composite profile for Grand Est, France shows relatively consistent performance to the reference indicators approach plotted in Figure 4.6. While the latter visual provides the policy-maker with

relative performance based on one (albeit representative) measure, the former provides a broader narrative about, for example, the relative strength of *Social Cohesion* in Grand Est, based on 6 underlying indicators and compared with a median of OECD TL2 regions. Furthermore, integrated with these composite indicators, a measure of disparities between underlying indicators allows us to perceive the divergence of scores within the 14 dimensions. This provides an indication of the robustness of these dimensions. It appears that for the example of the Grand Est, connectivity performs well on all the underlying indicators, as they score above the median of the OECD regions.

Figure 4.4. Composite indicators: Grand Est (France)

Composite index (compared to OECD regions median=100)



Note: These composite scores were calculated for each dimension (14) according to the attractiveness indicators mentioned in the dashboard (Annex A). When assessing the Land dimension it is important to understand that a higher score represents higher levels of land development and land prices. While this may be illustrative of economic dynamism, it may also have environmental consequences. By the same token, a low score may indeed illustrate an unexplored economic opportunity and/or a high-quality natural environment. At any rate, this dimension requires further statistical and qualitative analysis to be understood in its local context.

In both approaches – reference indicators and composite scores – the regions are first compared to the medians, in order to position their attractiveness profile in relation to EU regions (as above), the country's regions and to the OECD regions.

The attractiveness indicators of OECD regions are represented below in a radar format. Each region has a curve that compares its performance to the median of country regions, and a curve that compares it to the median of OECD regions. If these curves are above 100, it means that the region's performance is better than the median.

Figure 4.5. A Reader's Guide to Attractiveness Radars

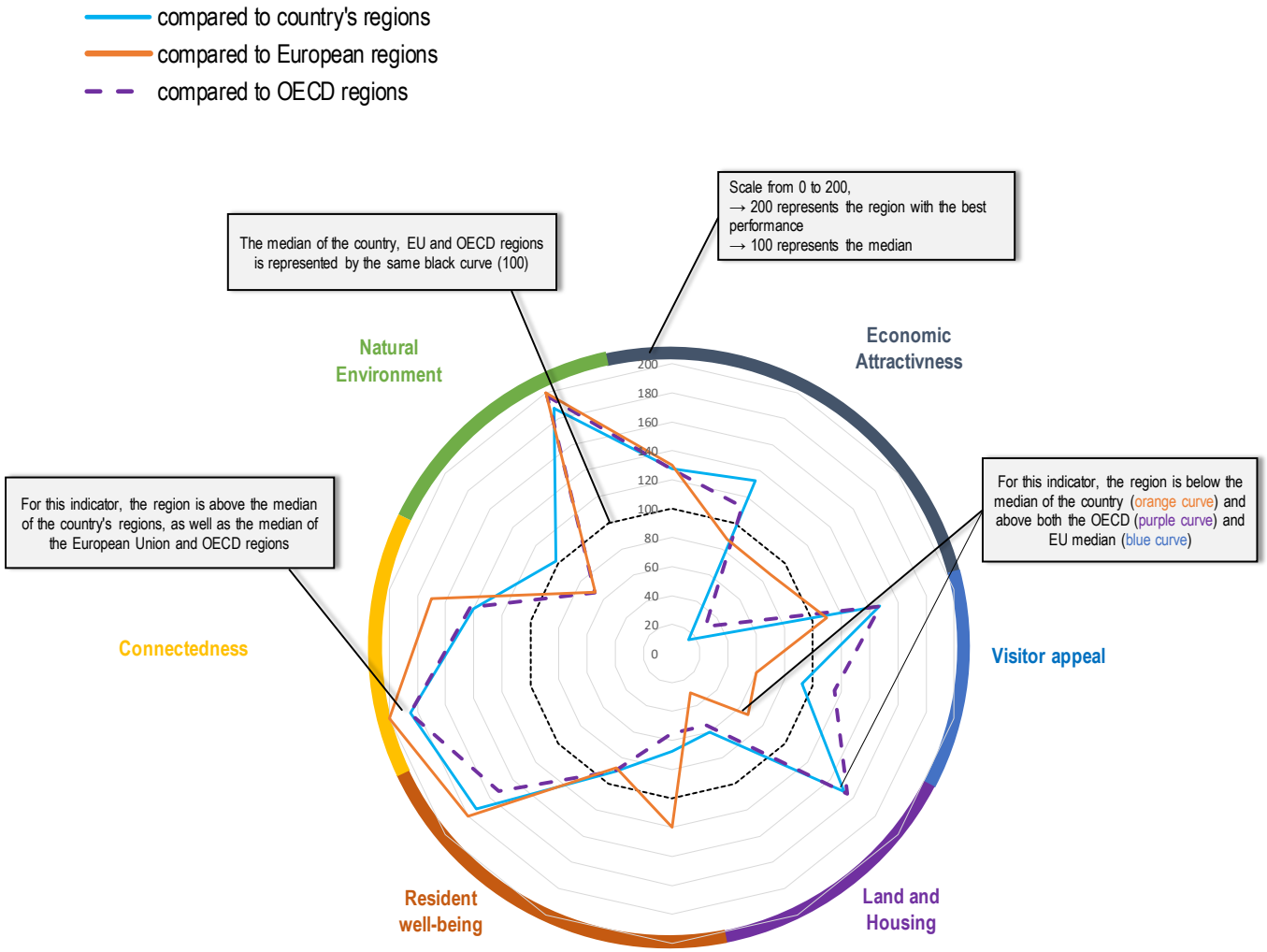
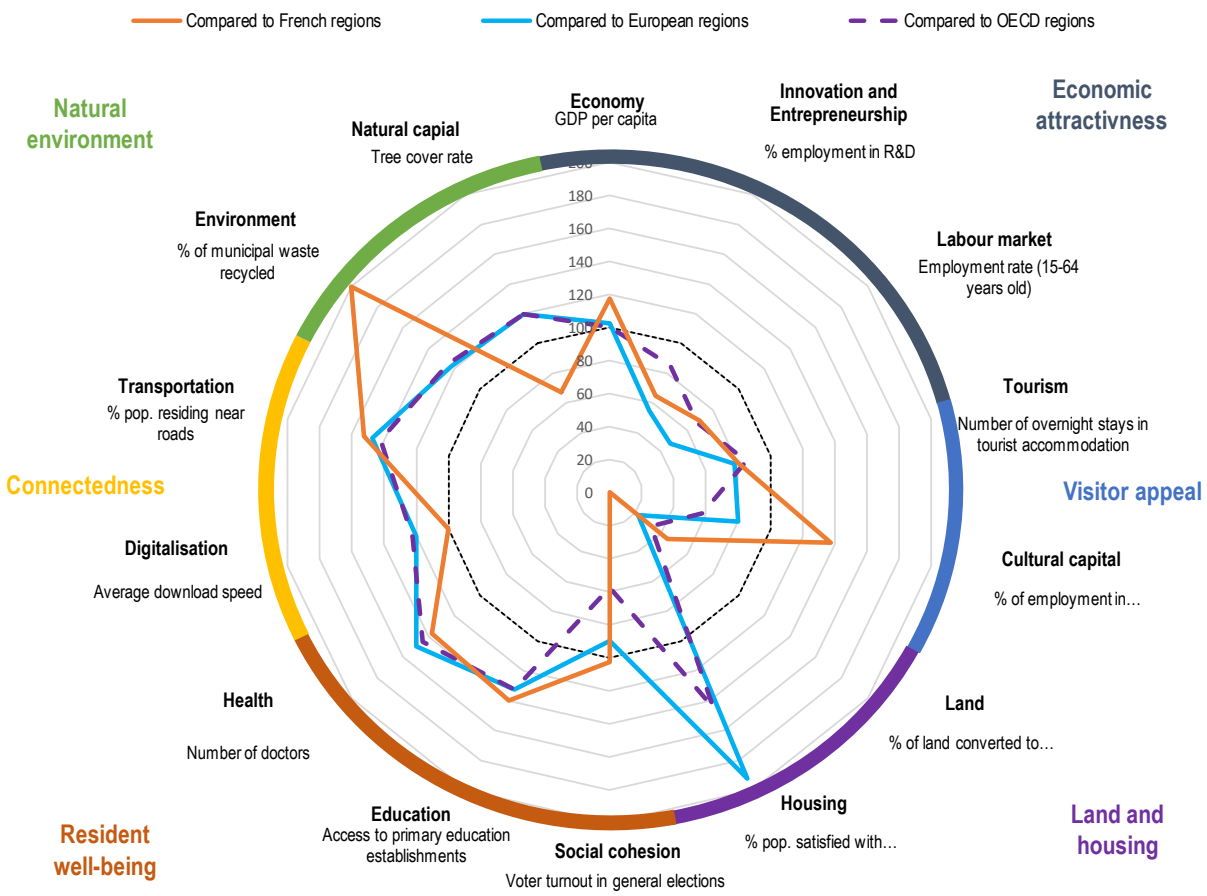


Figure 4.6. Example of an attractiveness profile: Grand Est (France)



Conclusions

Future directions for the OECD attractiveness dashboard

This presentation of attractiveness indicators highlights the existence of different issues and trade-offs in terms of regional attractiveness policies, and the importance of regional and territorial actors in establishing common objectives based on indicators that complement their development strategies. Many actors are involved in this process, such as tourism agencies, universities, chambers of commerce, regional economic development agencies, in addition to all levels of government, and their experience should feed into multi-objective and multi-targeted strategies. For example, a university gets involved in international partnerships to attract foreign students, while a regional economic development or innovation agency participates in international trade fairs to attract investors. Common elements of territorial attractiveness may influence the location decisions of these different targets, which should encourage responsible actors to pool together certain components of their strategies and to develop synergies accordingly. This dashboard can help guide these coordinated efforts by establishing tangible targets and in tracking progress.

Moving forward, the OECD will work to develop the dashboard in accordance with the availability of non-conventional data that can support regions in their development trajectories. Specifically, data from social media and web sources can help to decode the preferences of visitors and migrants looking to new territories. Climate data can shed light on the risks and opportunities for regions amid the forces of climate change and the investments required to respond and adapt. Business surveys, often conducted at the country level, can augment the evaluation of businesses satisfaction with local conditions for doing business and help policy-makers in promoting their territory to new investors, if done regionally. Altogether, the attractiveness dashboard can serve as a diagnostic tool to meet the goals of sustainable and inclusive recovery strategies. In this respect, attractiveness is a means to achieve transversal economic, sustainable and inclusive development rather than a policy goal in and of itself.

Within region inequalities is another area ripe for further analysis, as some of the performance indicators included may mask inequalities within regions, for example on internet access or housing affordability or employment. The OECD looks to develop a diagnostic tool for assessing regional attractiveness at the TL3 level for select countries.

Finally, this methodology only serves its purpose if accompanied by an implementation guide of the dashboard at the regional level. This was at the crux of a recent project with France and will be further developed in pilot studies across 10+ countries in the OECD and beyond.

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Annex A. List of attractiveness indicators

Reference indicators are highlighted in green.

	Dimensions	Description	Indicators	Investors	Talents	Visitors	Sources ; Periodicity ; Latest year available ; Coverage
Economic Attractiveness	Economy	This dimension provides an insight into the level of wealth and economic performance of the region, as well as its capacity to have a diversity of industrial activities.	GDP per capita (constant PPP)	x	x		OECD Regional database ; annual ; 2021 ; OECD regions (TL2, TL3)
			Gross Value Added per worker (constant PPP)	x			OECD Regional database ; annual ; 2020-21; OECD regions (TL2)
			Economic diversity of employment by 10 economic sectors[7]	x			Inverse OECD calculation of the Herfindhal Index based on sectoral employment data by place of work ; annual ; 2019 OECD regions (TL2)
	Innovation and Entrepreneurship	The innovation dimension looks at the region's ability to provide a favourable environment for entrepreneurship and research.	R&D Total Personnel (% of total)	x	x		Eurostat ; annual ; 2019 (2013 for France) ; EU TL2 regions
			PCT Patent applications (per million residents)	x	x		OECD Regional database ; annual ; 2018 ; OECD regions (TL2)
			Birth rate of employer enterprises	x	x		OECD Regional database ; annual ; 2018 ; OECD regions (TL2)
			Subjective: Share of the population who think that their city or region is a good place for people to live for people starting new businesses	x	x		Gallup World Poll ; multiannual ; average 2016-20 ; OECD regions (TL2)
	Labour Market	Labour market indicators help potential investors and talent to assess the dynamism of the labour market.	Employment rate (15-64 years old)	x	x		OECD Regional database ; annual/quarterly ; 2021 ; OECD regions (TL2)
			Youth employment rate (15 -24 years old)	x	x		OECD Regional database ; annual/quarterly ; 2021 ; OECD regions (TL2)
			Employment rate of immigrants compared to the native population	x			OECD Regional database ; annual ; 2020 ; OECD regions (TL2)
Visitor Appeal	Tourism	This dimension covers both the region's tourism infrastructure and its popularity with foreigners.	Number of tourist accommodation beds (per 1000 inhabitants)	x			Eurostat; annual; 2021; EU TL2 regions.
			Number of nights spent in tourist accommodations (per 1000 inhabitants)	x			Eurostat; annual/quarterly; 2021; EU TL2 regions.

[7] The economic diversity of employment index is the inverse of the Herfindhal index calculated according to employment in 10 economic branches (source: OECD regional database).

			Share of overnight stays by foreign tourists	x			Eurostat; annual/quarterly; 2021; EU TL2 regions.
	Cultural Capital	This dimension highlights the role of cultural heritage in attracting talent, visitors and tourism-related FDI[8] (like accommodation) in the region. All these elements are essential for a dynamic tourism sector and the promotion of quality of life.	Share of employment in culture and creative industries	x	x	x	Calculations based on regional data, published in the OECD Policy Responses[9] note ; 2018 ; OECD regions (TL2)
			Number of UNESCO World Heritages Sites		x	x	World Heritage Sites UNESCO ; 2019 ; OECD regions (TL2)
Land and Housing	Land	The land dimension assesses the pressure on agricultural and industrial land in the region.	Built up area (% of total land area)		x	x	OECD Regional database ; 2019 ; OECD regions (TL2)
			Land prices		x	x	OECD land prices database ; 2020 ;
			Evolution of land prices		x	x	OECD land prices database ; 2019-2020 ; OECD regions (TL2)
			Total change in of land cover converted to artificial surfaces 2004-19		x	x	OECD Regional database ; 2004-2019 ; OECD regions (TL2)
	Housing	The housing dimension highlights the availability of housing in relation to the quality of life for residents, visitors and investors.	Housing price index	x		x	OECD Regional database ; T32021 ; OECD regions (TL2)
			Share of housing costs (as % of household disposable income)	x		x	OECD Regional database ; 2018 ; OECD regions (TL2)
			Subjective: % of population without enough money for housing	x		x	Gallup World Poll ; 2016-20 average ; OECD regions (TL2)
			Subjective: % of population satisfied with affordability of housing	x		x	Gallup World Poll ; 2016-20 average ; OECD regions (TL2)
Resident Well-being	Social Cohesion	Social cohesion is an important measure of the vitality and shock resilience of a region. It can indicate to a potential investor, resident or visitor such things as the safety of the area and the general well-being of the local population.	Homicide rate per 100 000 residents	x	x	x	OECD Regional database ; 2019 ; OECD regions (TL2)
			Subjective: % of the population that feel safe walking alone at night		x	x	Gallup World Poll ; 2016-20 average ; OECD regions TL2
			Poverty rate after taxes and transfers (seuil national de pauvreté 60 % du revenu médian national)		x		Eurostat and OECD Regional Database ; 2019 ; OECD regions (TL2)
			Voter turnout in general elections		x		OECD Regional database ; 2019 ; OECD regions (TL2)
			Quality of Government index	x	x		European Quality of Government Index, CE[10] ; 2017 ; EU regions (TL2)
			Subjective: % of population satisfied with the opportunities to meet people and make friends in the city or area where they live		x	x	Gallup World Poll ; average 2016-20 ; OECD regions (TL2)

[8] Tourism Investment Report 2021, FDi Intelligence (2021) Tourism Investment Report 2021 | fDi Intelligence – Your source for foreign direct investment information - fDiIntelligence.com

[9] Culture shock: COVID-19 and the cultural and creative sectors, OECD (2020) https://www.oecd.org/coronavirus/policy-responses/culture-shock-covid-19-and-the-cultural-and-creative-sectors-08da9e0e/

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			Subjective : Satisfaction with life as a whole (from 0 to 10)		x		Gallup World Poll ; average 2016-20 ; OECD regions (TL2)
	Education	The education dimension assesses the region's ability to reach out internationally through education, but also measures the accessibility of institutions for younger people.	Share of international students in post-secondary student population	x	x		OECD calculation based on ETER data ; 2016 ; EU regions (TL2)
			Share of the population with tertiary education	x	x		OECD Regional database ; 2021 ; OECD regions (TL2)
			Ranking of universities in the World's top 500		x		World University Rankings ; 2021 ; OECD regions
			Access to institutions of primary education		x		Access and Cost of Education and Health Services joint EC & OECD report ; 2011 ; EU regions (TL2)
			Access to institutions of secondary education		x		Access and Cost of Education and Health Services joint EC & OECD report ; 2011 ; EU regions (TL2)
	Health	The health dimension considers issues of access to health services, potential health risks and satisfaction with these services, which are of great importance to those seeking to settle.	Share of the population with exposed to an air pollution level above 10 µg/m³		x	x	OECD Regional database ; 2019 ; OECD regions (TL2)
			Active physicians rate (physicians for 1000 population)		x		OECD Regional database ; 2019 ; OECD regions (TL2)
			Subjective : Share of the population satisfied with the availability or quality of healthcare		x		Gallup World Poll ; 2016-20 average ;OECD regions (TL2)
			Access to cardiology services at a hospital		x		Access and Cost of Education and Health Services joint EC & OECD report ; 2011 ; EU countries; TL2 regions
			Access to maternity and obstetrics services at a hospital		x		
Connectedness	Digitalisation	The rapid development of teleworking as a result of COVID-19 has increased the need for access to fast and stable internet connections, but in order to reap the benefits of digitalisation, access to digital infrastructure must also be accompanied by the adoption of digital technologies and a minimum of digital skills and thus improve the digital attractiveness of regions.	% of households with very high-speed access	x	x		OECD Regional database ; 2020 ; OECD regions (TL2)
			% fibre optic coverage of buildings	x	x	x	Data updated on the basis of the OECD Regions at a Glance 2020 publication; 2020 ; OECD TL2 regions
			Download time from fixed devices as % of national average time	x			OECD calculations based on Ookla database ; 2021 ; OECD TL2 regions
			Facebook Social Connectivity Index[11]	x	x		OECD calculation based on data from the Facebook Social Connectivity Index. See details of the calculation in footnote (4).
	Transportation	The transport dimension measures the region's offerings in terms of quality transport networks and various modalities.	*Subjective: % of the population satisfied with public transport, roads and highways*		x		Gallup World Poll ; average 2016-20 ; OECD TL2 regions
			Number of passenger flights (accessible within 90' drive)	x	x	x	European Regional Competitiveness Index 2019 ; 2016 ; EU regions (TL2)

[11] The Social Connectivity Index can be used to measure the intensity of social ties between regions. It covers nearly 2400 regions worldwide across 165 countries. The social connectivity index is the relative probability of a Facebook friendship link between a given Facebook user in location i and a user in location j, weighted to obtain a value from 1 (minimum) to 1,000,000,000 (maximum). The centrality index of this index provides a value per region by identifying the number of times this region is connected to other regions by keeping only the most important Facebook friendship links (here the 10 most important links). The proposed centrality indicator for attractiveness includes links to other regions in the country.

			% of the population in a 120km radius who can reach a train station within 90 mins	x		x	European Regional Competitiveness Index 2019 ; 2016 ; EU TL2 regions
			% of the population within a 120km radius who can reach a highway within 90 mins	x		x	European Regional Competitiveness Index 2019 ; 2016 ; EU TL2 regions
Natural Environment	Environment	Environmental indicators help visitors and talent to understand the quality of the environment and the importance given locally to environmental preservation efforts.	*Subjective: % of the population satisfied with efforts to preserve the environment*		x	x	Gallup World Poll ; average 2016-20 ; OECD regions (TL2)
			Share of municipal waste recycled		x	x	OECD Regional database ; 2019 ; OECD regions (TL2)
			Greenhouse gas emissions produced by the transport industry (per resident)	x	x	x	OECD Regional database ; 2019 ; OECD regions (TL2)
			Share of renewables in electricity production	X	X		OECD Environmental database; 2019; OECD (TL2)
	Natural Capital	Natural capital is important for attractiveness in that those wishing to move to, invest in or visit a region value the quality of the local environment for the activities they carry out.	Tree cover (% of total area)		x	x	OECD Environmental database ; 2019 ; OECD regions (TL2)
			Evolution of the surface area of tree cover		x	x	OECD Regional database ;2004- 2019 ; OECD regions (TL2)
			Share of protected Areas		x	x	IUCN and UNEP-WCMC (2017), the World Database on Protected Areas (WPDA)

Annex B. Suggested dashboard indicators

Below is a description of the indicators that would be desirable to highlight in a diagnosis of territorial attractiveness but for which data is incomplete or missing. At times, the data is available at the national level but not consistently available at the subnational level while in other cases, data is only available in some OECD countries or regions and not in others (ex. indicators on industrial zones and land availability for development). This section provides rationales and definitions of these indicators and presents the value of their inclusion in future OECD regional attractiveness studies. In each dimension of regional attractiveness, there are noteworthy gaps in the availability of data:

Conventional data

Innovation and Entrepreneurship: Territorialized data on innovation clusters, incubators and centres for research and excellence are available on a regional case-by-case basis. These indicators can help policy-makers to map the concentration of sector-specific economic activity at the regional level, and give an indication to investors and talents of the vibrancy of knowledge-intensive sectors.

Land: Information on economic activity zones and the availability of turnkey industrial areas, as well as price indices of available land (including agricultural) give an indication to entrepreneurs and talents of the potential development opportunities. In addition, the net-zero transition increases the need for wind, solar and tidal energy – among other sources – which all represent significant investment opportunities that are dependent on the availability of land/sea area as well as local environmental conditions. ESPON has begun reporting data on potential photovoltaic resource rent by NUTS 2 region which will bring this opportunity to the fore.[12]

Labour Market: Insufficient information exists detailing situations of under-employment (those working part-time, not by choice, and those in precarious employment types) which could support investors and policy-makers to better understand the nuances of local job markets.

Transportation: Data on commute times and mode of transport can help regional policy-makers understand the work-life and urban-rural linkages, as well as the contribution of public transportation – and the lack thereof it – to overall quality of life considerations. More OECD-wide work is needed to map the sustainability of transport modalities across places and the extent to which these modalities respond to the demands of a green-conscious public.

Tourism: The usage of data drawn from booking platforms (ex. Airbnb, VRBO) and sites with user-generated content (ex. TripAdvisor, Booking, and the like) offer the potential to obtain real-time data on the evolution of the tourism sector and the satisfaction of visitors at a very granular, place-based level. The density of tourism offerings (accommodations, but also sites of interest) can also be extrapolated which allows a closer look at the concentration of complementarity of visitor offerings. Altogether, these data points can help actors assess the potential for the development of the sector in addition to informing the creation of sustainable tourism action plans (OECD, 2021[70]).

[12] Access the full ESPON database here: Main Data | ESPON Database Upload

Business Tourism: Data that reflects the number of international conferences, events and forums related to professional travel, as well as frequently-collected data on purpose of travel (ex. Leisure or Business) can help investors and policy-makers assess the international business connections within a region. Coming out of the ongoing crisis, it could also help assess the impact of travel restrictions on the international business tourism sector.

Education: International schools in primary and secondary education play an important role in the decisions made by expatriates to relocate. Data on the number of schools and available spots at the regional level can help inform and promote to investors and talents about the availability opportunities for enrolment in these institutions. Detailed breakdowns of the availability and diversity of technical education and training – at both the upper-secondary and post-secondary level – can also signal to investors and talents what local opportunities for upskilling exist and at what cost.

Social Cohesion: While in many regional cases they exist, more indicators are needed to capture the involvement in clubs and associations (sport, cultural, political, and charitable) as this information paints a picture of community vitality and speaks to the level of trust and overall social cohesion within a territory. Indicators that capture participation in social activities (sports, clubs, etc.) can be utilized to measure social capital in terms of bridging (defined by the existence and strength of connections across networks and populations) vs. bonding (defined by strong links within groups) capital and provide insight on the relationship between social capital and regional economic growth and well-being which make a strong case for investments in those policy areas that foster social cohesion (Muringani, Fitjar and Rodriguez-Pose, 2021[71]).

Environment: Climate change is rapidly transforming the globe rendering some territories nearly unliveable while others may indeed become more suitable for human habitation (Xu et al., 2020[18]). Moreover, places that are emphasizing strategic investments in mitigation and adaptation measures are likely to become more attractive towards future potential residents.

To this end, the identification of suitable regions for wind and solar energy potential can help investors and regional policy-makers to develop the economc and sustainable outcomes of territories in the renewable energy sector. A streamlined OECD-wide regional database on wind and solar would support this effort.

Finally, a critical aspect of the natural environment is its contribution to human well-being (Flood and Laurent, 2021[64]). As such, the inclusion of data that provides insight into *access to* and *quality of* natural amenities can help policy-makers understand their relative performance in this area (Florida, 2000[58]).

Unconventional data sources

Less conventional data sources are added to official ones to build out the attractiveness profile of territories. They allow us to complement conventional data with reliable international comparisons of other types of phenomena, often more survey-based.

- For example, the Gallup World Poll provides internationally comparable subnational subjective indicators, which are already included in the OECD's regional well-being analytical framework, such as life satisfaction ratings and perceived social network support. These data are robust at the regional level as long as they are aggregated over a set of years to ensure a representative sample, and confidence intervals are attached to the estimates to ensure the robustness of the results.
- Another non-conventional source used in the environmental field is satellite imagery, which provides time series data on land use and air pollution.
- Facebook's social connection index measures the extent of friendships between people in different regions and thus helps to assess the attractiveness of a region in relation to other regions of the world.

- Finally, other data sources allow trends to be assessed at a shorter time interval, such as the quarterly data from Ookla, which measures download times from fixed and mobile devices (and is therefore a particularly relevant indicator of the quality of internet access).

Annex C. Performance table: the attractiveness of French Regions for all indicators

high relative performance 200 180 160 140 120 100 80 60 40 20 0 low relative performance

Dimension	Indicator	Positive / negative impact of the indicator before	Scores of regions compared to French regions																
			Île-de-France	Centre - Val de Loire	Bourgogne-Franche-Comté	Normandie	Hauts-de-France	Grand Est	Pays de la Loire	Bretagne	Nouvelle-Aquitaine	Occitanie	Auvergne-Rhône-Alpes	Provence-Alpes-Côte d'Azur	Corse	Guadeloupe	Martinique	Guyane française	La Réunion
Economy	GDP per capita (in $, constant PPP)	+	200	105	80	93	70	118	163	140	128	153	188	175	58	23	45	10	35
	Gross value added per worker (in $, constant PPP)	+	200	118	58	93	128	153	80	35	70	105	188	175	45	163	23	140	10
	Economic diversification (distribution of employment by 10 economic sectors)	+	188	175	105	128	80	93	200	140	153	118	163	70	58	23	45	0	35
Innovation & Entrepreneurship	R&D personnel (in % of total employment)	+	200	98	115	50	15	65	83	133	33	183	165	150	0	..	..	..	..
	PCT patent applications per million inhabitants	+	200	105	128	118	70	140	93	175	80	163	188	153	58	23	35	0	45
	Birth rate of employers firms	+	175	35	0	58	80	10	45	23	105	140	128	153	118	163	70	188	93
	Subjective: Share of the population thinking that their city or region is a good place to be an entrepr	+	15	33	165	83	150	133	65	200	115	50	98	183	0	..	..	..	..
Labour Market	Employment rate (15-64 years)	+	200	105	200	128	58	70	153	128	140	80	200	93	163	35	45	10	23
	Youth employment rate (15-24 years)	+	175	100	163	113	63	88	200	188	75	125	150	138	..	25	38	50	13
	Employment rate of migrants (in percentage difference compared to the one of natives)	+	15	115	165	183	65	83	200	98	150	33	133	65	0	..	..	..	..
Tourism	Number of tourist accommodation beds per 1000 inhabitants	+	70	93	118	105	58	80	128	153	175	188	140	163	200	35	45	23	10
	Number of overnight stays in tourist accommodation per 1000 inhabitants	+	128	70	93	105	35	80	118	153	163	175	140	188	200	45	58	10	23
	Share of overnight stays by foreign tourists	+	200	90	..	..	..	..	18	73	..	108	145	180	163	53	35	125	0
Cultural capital	Share of employment in culture and creative industries	+	200	38	0	25	125	138	48	175	100	88	150	113	188	163	75	13	63
	Number of UNESCO cultural and natural heritage sites	+	145	108	200	53	108	145	..	..	200	200	53	108	18	..	..	..	18
	Number of sport, leisure and cultural venues per 1000 inhabitants	+	0	175	200	150	98	188	163	113	138	125	85	25	50	38	73	13	60
Land and Housing	Land: evolution of the average price of undeveloped land	i-	200	100	145	45	73	158	30	88	58	188	115	0	..	173	130	..	15
	Evolution of artificial surfaces	i-	165	120	130	165	165	130	130	165	73	25	83	60	13	25	48	108	0
	Subjective: % of population satisfied with affordability of housing	+	15	33	133	65	165	98	200	115	150	50	83	183	0	..	..	..	..
Social cohesion	Number of homicides per 100,000 inhabitants	-	83	155	165	83	120	120	178	200	120	60	83	48	38	0	25	13	73
	Subjective: % of population feeling safe walking alone at night	+	65	150	33	183	50	115	0	15	100	165	133	83	200	..	..	..	..
	Poverty rate after taxes and transfers (national poverty line 60% of national median income)	-	88	145	145	115	45	103	188	188	130	73	173	58	30	..	15	..	0
	Turnout in general elections	+	128	140	118	163	70	80	188	200	153	175	105	93	58	23	10	0	45
	Quality of government index	+	38	85	75	163	150	188	138	200	175	50	113	98	125	13	25	0	63
	Sub-regional disparity ratio	i-	0	200	50	168	135	85	150	118	68	35	18	100	185	..	..	..	..
	Subjective: % of population satisfied with life	+	83	33	150	100	15	50	0	183	115	65	165	133	200	..	..	..	..
	Subjective: % of population without enough money for housing	-	15	33	133	65	165	98	200	115	150	50	83	183	..	..	..	..	..
Education	Share of international students in the student population in higher education	+	185	93	40	53	145	133	78	65	120	160	200	105	25	..	0	173	13
	Ranking of universities in the World's top 500 (number of universities)	+	200	..	..	..	..	98	..	98	98	200	98	200	..	..	..	..	..
	Access to primary education institutions (km)	+	200	85	35	68	168	150	135	100	0	18	118	185	50	..	..	..	..
	Access to secondary education facilities (km)	+	200	68	50	85	168	103	135	150	35	18	118	185	0	..	..	..	..
Health	Number of doctors per 1000 inhabitants	+	188	23	80	45	70	118	58	128	163	175	153	200	93	35	105	10	140
	Subjective: % of population satisfied with availability or quality of health care	+	165	0	33	133	183	100	83	50	200	15	150	65	115	..	..	..	..
	Air pollution (average level in µg/m³ experienced by the population)	-	13	95	120	73	25	60	130	178	155	130	48	38	108	165	83	0	200
	Access to hospital cardiology services (km)	+	200	110	75	148	183	93	128	165	55	20	38	0	..	..	..	..	..
	Access to maternity and obstetric hospital services (km)	+	200	118	85	135	185	103	168	150	50	35	68	18	0	..	..	..	..
Digitalisation	% of households with very internet broadband access	+	200	100	75	50	138	100	188	175	138	113	163	163	38	13	25	75	0
	% optic fibre coverage	+	200	125	60	98	175	150	88	38	73	113	138	163	50	13	0	25	188
	Facebook social connectivity index	+	188	140	45	128	0	23	23	45	105	153	80	80	188	128	105	163	80
	Average download speed from a fixed device (national value=100)	+	200	163	93	70	175	153	118	45	80	105	128	140	35	23	10	58	188
Transport	% of population within 120 km with access to railway stations within 90 min.	+	200	133	65	33	183	150	98	0	48	98	115	165	15	..	..	..	..
	Subjective: % of individuals satisfied with the quality of public transport	+	183	0	50	83	33	115	200	100	150	133	65	165	15	..	..	..	..
	% of population accessible by road in 90 min within 120km	+	200	175	35	140	188	118	93	23	58	70	80	163	0	105	128	10	153
	Number of passenger flights accessible within 90 minutes by car	+	200	175	118	163	188	153	93	70	80	105	128	140	45	58	35	10	23
	Land-based logistics: number of storage warehouses of 5000 m2	+	200	100	33	83	183	150	115	50	133	65	165	15	0	..	..	..	..
Environment	*Subjective: % of population satisfied with environmental preservation efforts*	+	65	115	50	150	33	200	98	183	133	15	83	165	0	..	..	..	..
	Share of municipal waste recycled	+	200	153	153	118	153	105	175	188	93	80	163	70	23	35	58	10	45
	Greenhouse gas emissions from the transport industry (tonnes per capita)	-	200	18	35	85	153	68	118	168	50	100	135	185	0	..	..	..	..
Natural capital	Share of tree cover	+	58	45	105	23	35	70	0	10	80	93	118	128	140	163	175	200	153
	Evolution of tree cover area	+	138	175	138	175	138	85	188	200	138	85	175	38	38	..	13	50	0
	Protected areas	+	80	105	65	53	13	93	25	0	40	133	120	160	145	185	200	173	..

For each indicator, a score on a scale of 0 to 200 is assigned to the region, based on the average of French regions (see calculation method Box 2.1). A higher score indicates a better performance of the region for this indicator compared to the average of other regions.

In particular, for negative indicators (-), such as unemployment rate, poverty rate or air pollution, a high score expresses a low unemployment rate, poverty rate or pollution level for the region, relative to the other regions considered.

Some indicators cannot be directly associated with a positive or negative impact (respectively identified by + and - in the table below). They are present for information purposes and must be associated with policy objectives in order to determine their effect. For example, the growth of artificial surfaces may not be considered to have a positive impact in the region if it has little tree cover, but it may be considered positive in regions lacking infrastructure. These indicators are annotated in the table with 'i-' or 'i+' to indicate the orientation with which the score was calculated: 'i-' means that the score is higher when the indicator has a low (or even negative) value, 'i+' means that the score is higher when the indicator has a high value

The table 2.1 shows the consistency of the region's performance between indicators of the same dimension and between indicators of different dimensions. Thus, if for a given region the colours (the score) are relatively uniform within a dimension, this means that its performance relative to other regions is stable.

Annex D. Correlation matrix of attractiveness indicators (in French)

