Chapter 1.

Regional development trends and statistics

This chapter provides a diagnosis of the main subnational trends in Peru. The analysis focuses on the performance of Peru's regions in respect to each other and OECD countries. The first part of the chapter focuses on the key macroeconomic challenges and opportunities facing Peru. The second part goes beyond these national averages to describe the main characteristics of the country at a subnational level. The third part evaluates the performance of Peru's regions, and assesses growth enablers and bottlenecks at a regional level.

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

Key findings and recommendations

Key findings

- Peru is experiencing a transition away from a growth dynamic driven by increasing commodity prices. The country benefited from the global commodity boom, and sound macroeconomic policies have delivered high rates of growth with low inflation. In turn, this has enabled significant reductions in levels of poverty.
- The decline in commodity prices presents downside risks for Peru. Levels of productivity are low due to the legacy of political and economic instability, and the majority of the economy is stuck on a low productivity and value-adding pathway. Low innovation levels reduce the scope for diversification and the capacity to participate in higher value-adding activities within global value chains.
- This transition generates a number of interrelated structural challenges that will need to be addressed. These challenges include a low level of skills in the workforce and high rates of informality, and comparatively poor infrastructure and innovation performance. Peru is territorially diverse and these growth dynamics are playing out differently across the country.
- Cities will be the key to lifting the productivity performance of the services sector. The metropolitan region of Lima-Callao is the leading economic region of the country, and a centre for high-value professional services. Although these trends are positive, they also indicate weaknesses in other regions of the country, and most likely the underperformance of second-tier cities.
- Many of Peru's rural areas are rich in assets but the people living there are generally poorer. Mining and agriculture account for 74% of Peru's exports but 50% of rural people live below the poverty line. Getting the framework conditions right in rural areas – including investment in social and transport infrastructure, and fostering the development and effective use of the skills needed (such as entrepreneurship) – will be a key to realising the growth potential of the national economy.
- Improving the system of regional statistics would enable a better understanding of these issues at a subnational level. Peru's regional taxonomy is a very basic (binary) one, which defines rural in terms of non-urban status. National ministries and agencies have different definitions of urban and rural areas, and there is a lack of common platforms to integrate data and its use in policy development. The multiplicity of actors involved in the production of regional statistics results in a diversity of standards, concepts, definitions and in several cases in discrepant statistics.

Recommendations

1. Develop harmonised statistical definitions of urban and rural areas by:
   - undertaking a stocktaking of existing regional definitions across national ministries and developing harmonised statistical definitions for urban and rural areas
   - advancing rural definitions to take into account the physical geography of the country (coastal, highlands and rainforest), areas of strong interaction with urban centres, population density/size and accessibility/remoteness
   - advancing urban definitions with journey to work and travel time data which enable the creation of an agreed definition of functional urban areas within the system of national statistics

Key findings and recommendations (*continued*)

- developing indicators aligned with the OECD regional typology to allow for international comparability.

2. Expand the system of territorial statistics by:
   - developing a framework and set of indicators for measuring multi-dimensional well-being at a regional level that aligns with the OECD Better Life Index
   - incorporating the measurement of gross domestic product (GDP) at the scale of regions and functional urban areas into Peru's national accounts
   - developing an agreed set of environmental and land-use indicators at the regional level, which would include the National Institute of Statistics and Informatics (Instituto Nacional de Estadística e Informática, INEI) linking existing datasets into a single data portal to improve access to data.

Peru's macroeconomic performance

This section summarises the main macroeconomic trends and challenges of the Peruvian economy. This macroeconomic analysis provides the general framework for the regional analysis which follows. Macroeconomic reforms which began in the 1990s have resulted in a stable monetary and fiscal framework, and a commitment to economic openness.

Peru's recent growth performance has been impressive. In the past ten years, gross domestic product (GDP) per capita growth was, on average, close to 5% annually, much higher than in previous decades. Peru's export performance has benefited from rising commodity prices and increased production of key mineral resources. Poverty rates have more than halved since 2001, to a level of around 24% in 2013, and extreme poverty rates have also fallen, from close to 25% to around 5% in the same period.

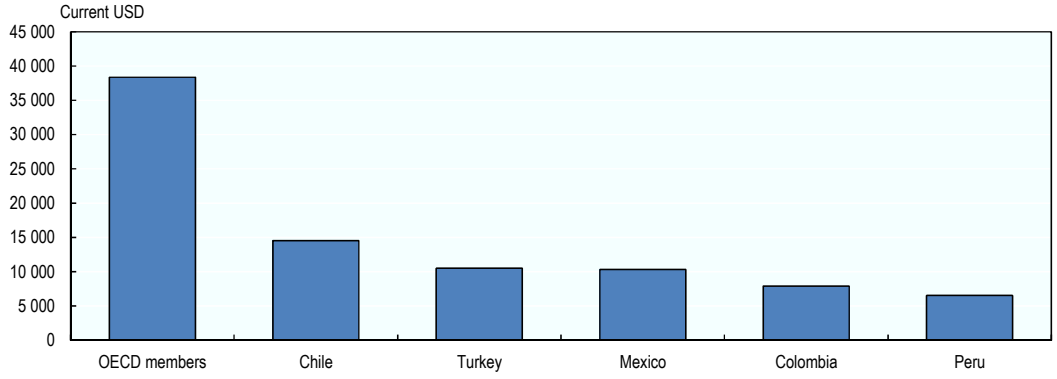
There is now a transition underway as commodity prices fall, and the key challenge for Peru is to improve productivity and maintain this growth trajectory. The country's stronger performance and rising terms of trade limited the scope to develop new export markets and value-adding opportunities. Despite recent improvements in productivity, many parts of the economy are impacted by Peru's historically slow productivity growth. There is a large informal sector, at close to 70% of the total employment, which shows particularly low levels of productivity (OECD, 2015e). This includes 25.8% of the labour force employment in agriculture compared to the OECD average of 5.6%.

There is now a strong imperative for structural reforms that can lift productivity and generate new value-adding opportunities. A regional approach will be the key to giving coherence to the implementation of these structural reforms. Peru's regions are diverse and each of these regions has different sources and potential for growth. Realising this regional growth potential will require integrated policies that are tailored to the unique circumstances of these places and can simultaneously improve skills, innovation, infrastructure and the business environment.

After a long period of underperformance Peru's recent macroeconomic performance has been strong

Peru's performance in terms of per capita income growth over the past 50 years has largely been modest with recent improvement over the past two decades (OECD, 2015e). Over the past 50 years the annual average growth rate of GDP per capita in Peru has been 1.6%. This is below the OECD average of 2.2%, and well below the performance of upper middle-income (3.7%), and middle-income (3.2%) countries. Peru's GDP per capita in 2014 was USD 6 541 and it is defined as an upper middle-income economy (World Bank, 2015e). This is significantly below the OECD average of USD 38 388 and similar to Colombia (USD 7 904). It is 37.8% below the GDP per capita of Turkey (USD 10 515) and 36.7% below the GDP per capita of Mexico (USD 10 326).

Figure 1.1. **GDP per capita, select countries and the OECD average, 2014**



Source: World Bank (2015c), "GDP per capita (current USD)", http://data.worldbank.org/indicator/NY.GDP.PCAP.CD.

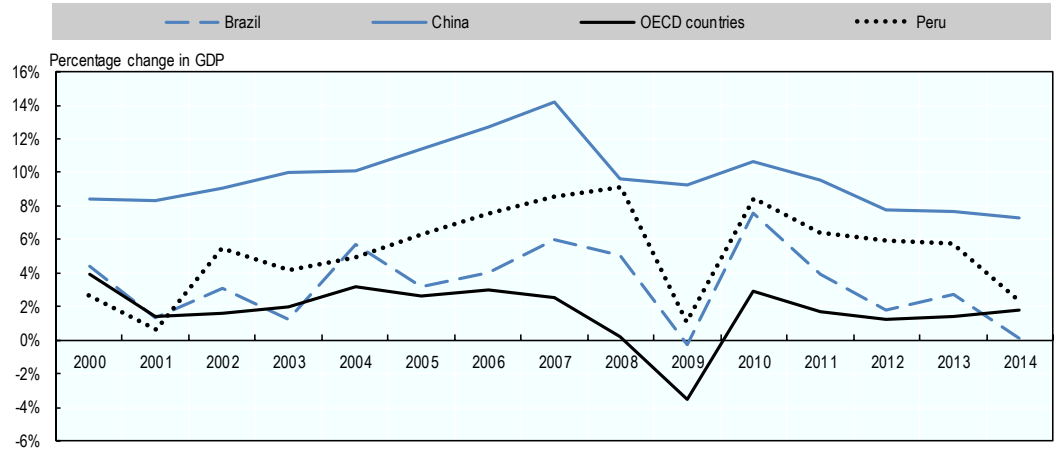
Since 2000 Peru's GDP growth has averaged 5% per annum compared to the OECD average of 2% per annum. The growth trajectory of the economy has followed the growth of the Chinese economy, which in part reflects for mineral resources. There was a period of strong growth from 2002 to 2008, a sharp slowdown associated with the crisis, followed by a rebound in growth from 2010. The rate of growth in the economy declined sharply again in 2013-14 from 6% to 2%. In the period 2002-14, inflation was steady and averaged 2.8%.

Despite this recent slowdown Peru has performed better than other benchmark countries such as Brazil. The implementation of structural reforms such as trade openness and sound macroeconomic management has played a key role in this strong performance (Diaz in Perales and Morón, 2010). Peru has been able to attract investment to exploit its mineral resources as global commodity prices began to increase from the early 2000s.

Productivity performance has been poor

Increases in per capita income and living standards in Peru since the early 2000s have been associated with rising commodity prices. However, sustainable and inclusive growth in Peru over the long term will depend upon increasing productivity (OECD, 2015e). Productivity growth will enable Peru to move up the value chain from activities driven by low-skilled labour toward higher value activities. It will also enable Peru to maintain international competitiveness and adjust to changes in external market conditions.

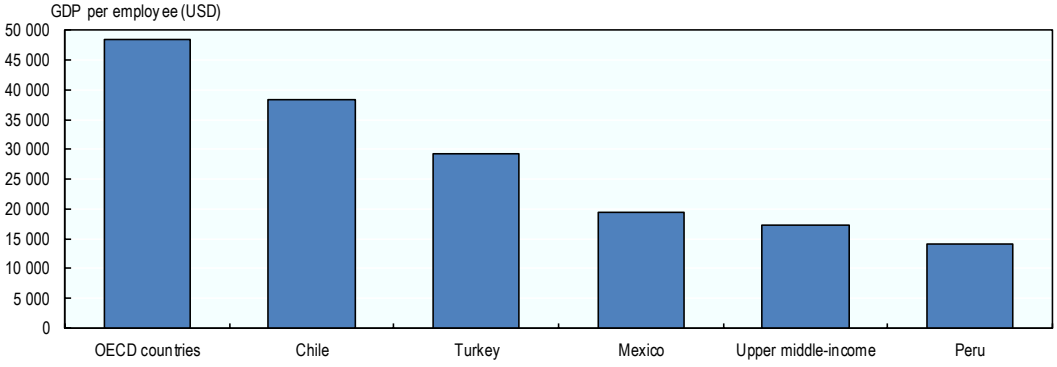
Figure 1.2. **Annual GDP growth, Peru compared to the OECD average and select countries**



Sources: World Bank (2015c), "GDP per capita (current USD)", http://data.worldbank.org/indicator/NY.GDP.PCAP.CDW; World Bank (2015b), "GDP at market prices (constant 2010 US$)", http://data.worldbank.org/indicator/NY.GDP.MKTP.KD/countries?display=graph.

Low productivity has been an important contributing factor to the historically poor performance of the Peruvian economy. Peru's level of labour productivity (USD 14 043) is more than three times lower than the OECD average (USD 48 449), and more than half of the level for Turkey (USD 29 342).

Figure 1.3. **Labour productivity: Peru compared to select averages and countries, 2014**



Source: World Bank (2015d), "GDP per person employed (constant 2011 PPP $)", http://data.worldbank.org/indicator/SL.GDP.PCAP.EM.KD.

Low levels of productivity are apparent across much of the economy (OECD, 2015e). Mining, finance and telecommunications have relatively high productivity whilst lower levels of productivity are evident in agriculture and other service sectors where most of the labour force is employed. Over a quarter of the labour force is employed in agriculture, compared to the OECD average of 5.6%. These are also sectors affected by high levels of informality. Although this is a challenge, it also represents a significant opportunity to lift productivity and transition workers to higher value market segments and activities.

Box 1.1. **Productivity trends and policy recommendations for OECD economies**

Labour productivity growth is considered a key indicator to assess competitiveness and an essential driver of change in living standards. Living conditions are raised by continued gains in labour productivity, along with an increase in labour utilisation. In fact, only economies that manage to simultaneously sustain employment and productivity growth will increase their gross domestic product (GDP) per capita and maintain it in the long run.

Productivity gains have been decelerating over recent decades in most advanced economies. This productivity slowdown, which reflects a mixture of structural and cyclical factors, is fuelling concerns of persistent low global growth and has ignited a spirited debate on the future of productivity. One view posits that the low-hanging fruit of the recent technological explosion have already been picked, whilst the contrary position holds that the IT revolution is continuing apace, fuelling disruptive new business models and enabling a new wave of productivity growth across the economy.

The period 1950-95 saw some degree of convergence in labour productivity performance between the United States, where the level of productivity was the highest, and other advanced economies. Those economies whose productivity levels started the furthest behind the United States saw relatively faster productivity growth. While for some economies this phenomenon partly reflected the rebuilding of war-ravaged capital stocks, it was also likely the result of technology and knowledge spillovers from the global productivity frontier which facilitated the adoption of more advanced technologies and better practices (Aghion and Howitt, 2006).

Yet the catch-up effect was short lived. From the mid-1990s, many countries, particularly in Europe, were not able to keep pace with the acceleration of productivity growth associated with rapid diffusion in ICT in the United States and the gap in productivity levels between the United States and other advanced economies started to widen again. Moreover, from 2004, the benefits from the ICT revolution began to wane in the United States. Overall labour productivity slowed in a number of OECD countries before the crisis.

Since the crisis, the further slowdown in labour productivity growth in the OECD was driven by a – possibly partly temporary – decline in the contribution of capital per worker. Indeed, the weakness in capital deepening is stark and the recovery in investment is sluggish compared with previous cycles (OECD, 2015e). For 40% of OECD countries in 2014, the estimated capital per worker contribution to trend productivity growth was less than 0.25% per annum, while this was true for only two countries in 2000 and 2007. The post-crisis weakness in tangible investment reflects a number of structural but also cyclical factors. It notably reflects soft aggregate demand, in line with a typical accelerator-type model. Impaired financial systems and elevated levels of uncertainty likely also play a role. Therefore, more balanced global demand and less uncertainty could be expected to propel investment to a higher level equilibrium, particularly if accompanied by market reforms.

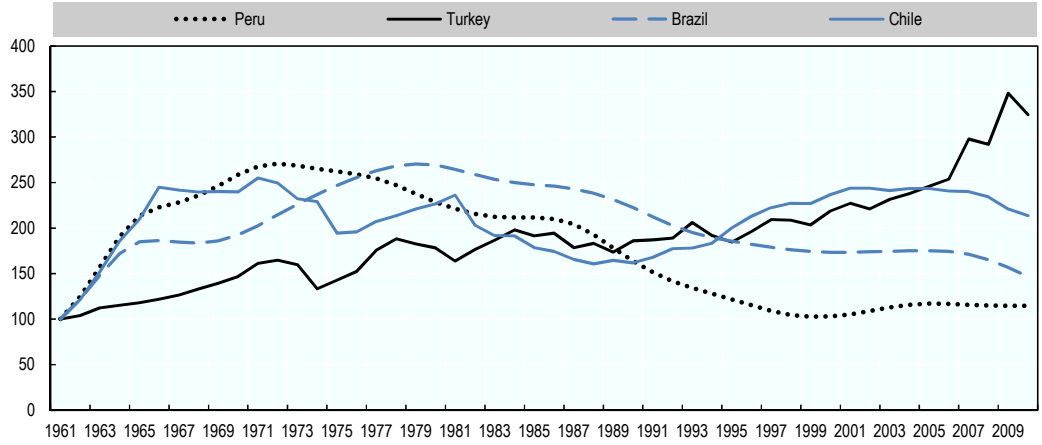
Research from the OECD (2015d) points toward several policies that are important in sustaining productivity growth, which include:

- improvements in public funding and the organisation of basic research
- innovation policies, including R&D fiscal incentives, collaboration between firms and universities, and intellectual property rights protection (which do not favour particular market players)
- lifting barriers to trade and easing services regulation to facilitate participation in global value chains
- well-functioning product, labour and risk capital markets as well as policies that do not trap resources in inefficient firms
- reforms to policies to increase labour mobility and address skills mismatches (e.g. funding for lifelong learning).

Sources: OECD (2015d), *The Future of Productivity*, http://dx.doi.org/10.1787/9789264248533-en; OECD (2016b), "The productivity-equality nexus: A concept paper", 7th New Approaches to Economic Challenges (NAEC) Group Meeting.

Productivity growth is determined by human capital, physical capital, natural resources and innovation. Poor productivity performance in Peru is due to differences in the quality of human capital and how efficiently factors are combined in processes of production. Total factor productivity is used to identify how efficiently resources are used by identifying the portion of production not explained by increasing the amount of inputs (capital and labour) used in production. Peru's total factor productivity has grown at an annual rate of less than 2% over the past two decades, and growth has been lower than benchmark countries such as Brazil, Chile and Turkey (OECD, 2015e).

Figure 1.4. **Total factor productivity in Peru and selected benchmark countries (base 100 = 1961)**



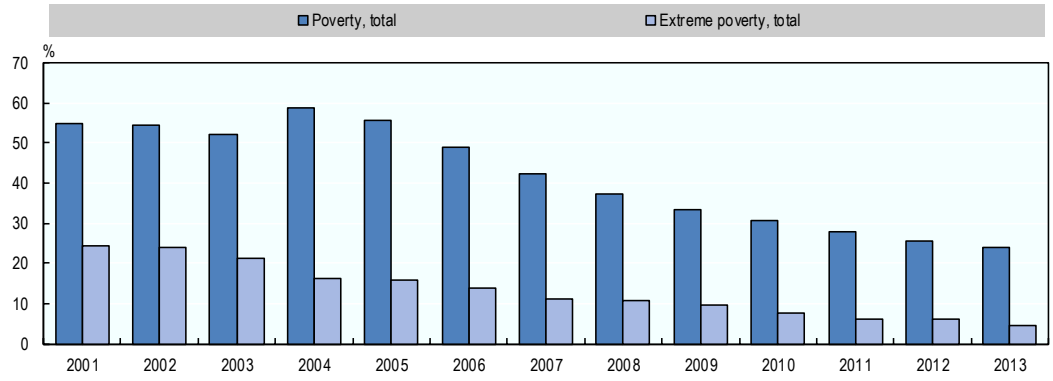
Source: OECD (2015e), *Multi-dimensional Review of Peru: Volume 1. Initial Assessment*, http://dx.doi.org/10.1787/9789264243279-en.

There has been progress in addressing poverty but inequalities are still high

Peru's recent economic performance has enabled significant reductions in poverty, with more than 20% of the population lifted out of poverty since 2000 (World Bank, 2015e). This progress is typical of many developing countries which have improved per capita incomes. However, poverty still remains a challenge with levels above 25% and extreme poverty above 5% (OECD, 2015e). As Peru's economy continues to develop, relative rather than absolute differences in income and well-being will become a more important policy issue.

In sum, Peru is experiencing a transition from a growth dynamic driven by increasing commodity prices. The country benefited from the global commodity boom, and sound macroeconomic policies have delivered high rates of growth with low inflation. In turn, this has enabled significant reductions in levels of poverty. Peruvians have experienced rising incomes and job opportunities, are living longer and participating more in education. However, levels of productivity are low due to the legacy of political and economic instability, and the majority of the economy is stuck on a low productivity and value-adding pathway. Peru is lagging in terms of the quality of employment and education, and this growth is also generating environmental costs. The following section will further explore the main drivers and bottlenecks for growth in Peru.

Figure 1.5. **Poverty and extreme poverty in Peru**



Note: 2013 data are estimates. According to INEI, total poverty includes individuals who belong to a household where either income or consumption per capita is less than the cost of a minimum basket of minimum and essential goods and services; extreme poverty includes those where this is below the value of a minimum basket of food.

Source: OECD (2015e), *Multi-dimensional Review of Peru: Volume 1. Initial Assessment*, http://dx.doi.org/10.1787/9789264243279-en.

Box 1.2. **Inclusive Growth**

The OECD's Inclusive Growth (IG) initiative was launched in 2012 in the midst of the crisis, in a context of high joblessness and growing inequalities. Inclusive Growth is about identifying policies that can deliver improvements in the population's living standards with a more even distribution of the benefits of increased prosperity among social groups. In a context of widening worldwide inequalities – in the distribution of income and social outcomes that matter for people's well-being – policy makers in advanced and emerging market economies, alongside their counterparts in developing countries, are examining the potential of inclusive growth policies to kick-start growth by turning equity into a driver of economic performance.

Absolute poverty has fallen worldwide, but relative poverty has risen in many OECD countries and many emerging-market economies. Rising income inequality is often accompanied by greater polarisation in educational and health outcomes, perpetuating a vicious circle of exclusion and inequality. Moreover, growing unequally bears a cost on future economic growth, particularly where inequality of opportunity locks in privilege and exclusion, undermining intergenerational social mobility. Inequalities and the problems to which they give rise have a spatial dimension both within cities, and between rural and urban areas.

There are a number of policy levers that can help achieve more inclusive growth: more progressive tax systems and targeted social protection; competition reforms along with support for groups affected by restructuring; liberalising labour markets along with policies to enable workers to upgrade skills and groups to enter the labour force; and education reforms such as increasing pre-school enrolments and improving low performing schools.

For inclusive growth to work well, appropriate institutions are needed, and citizens must feel that they can trust them. New technologies can play an important role in strengthening inclusiveness in policy making and implementation, by enabling new forms of collaborative and participatory governance. Inclusive policy making and service delivery requires an effective decentralisation of policies which allows for better targeted place-based approaches.

Source: OECD (2015c), *All on Board: Making Inclusive Growth Happen*, http://dx.doi.org/10.1787/9789264218512-en.

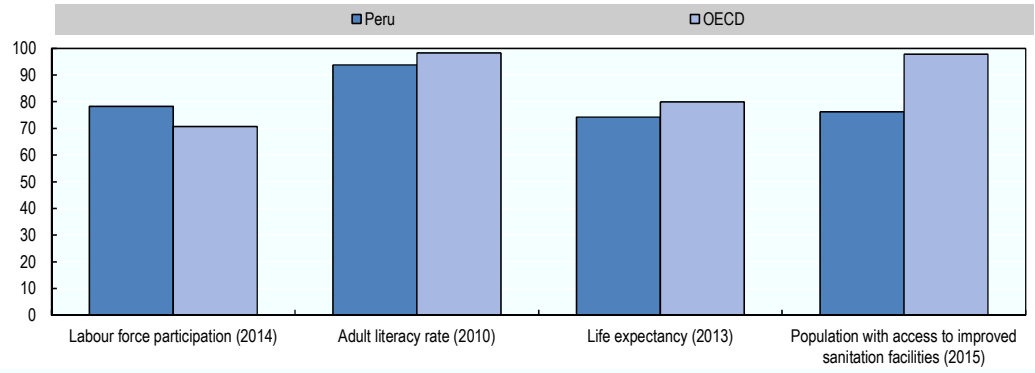
Box 1.3. **Measuring well-being for Peru**

Economic prosperity is only one among several pillars that supports an individual's well-being and quality of life. The OECD has developed a framework for measuring well-being in OECD countries which encompasses two broad pillars (OECD, 2011b). The first pillar, material conditions, comprises the dimensions of consumption possibilities, work, housing conditions and infrastructure. The second pillar, quality of life, comprises health status, education and skills, social connections, empowerment and participation, vulnerability, and life evaluations, feelings and meanings.

This framework has also been adapted to measure well-being in non-OECD countries, taking into account the literature on measuring development outcomes, and the socio-economic and institutional conditions in these countries (OECD, 2015e). This framework has been applied to Peru and a number of key strengths and weaknesses have been identified. These assessments are based on international benchmarks for these different dimensions, and in particular outcomes expected for Peru at the country's level of development.

The assessment of Peru against this well-being framework presents mixed outcomes for the country (OECD, 2015e). In terms of the economic dimension, Peru compares well in relation to income and labour force participation. However, it is weaker in terms of the quality of employment due to informality and vulnerability in the labour market. Peru ranks strongly in some social dimensions, in particular life expectancy, personal security, life satisfaction and educational attainment. But in terms of the quality of education, the country ranks poorly in relation to scores for reading, maths and science. In terms of the environment, Peru underperforms in relation to air and water quality, and reasonably well in relation to deforestation and emissions.

Figure 1.6. **Peru compared to OECD average: Select well-being indicators**



Source: World Bank (2015e), "Peru", http://data.worldbank.org/country/peru.

There are also significant inequalities across socio-economic groups in relation to some of these well-being outcomes, in particular for indigenous communities (OECD, 2015e). However, there currently is not a clear framework or set of indicators for measuring multi-dimensional well-being at a regional level. This is an area for future policy and statistical development for Peru.

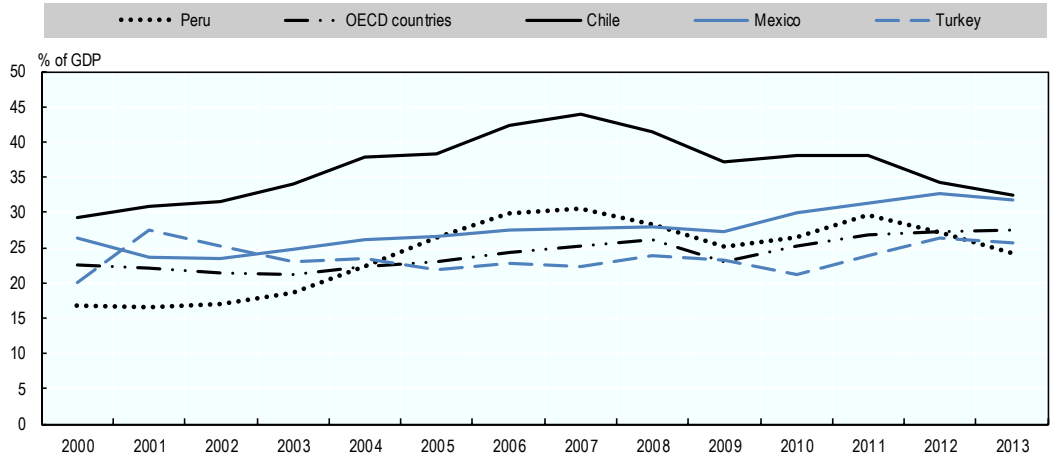
Growth drivers and bottlenecks at a national level

Export commodities have been important to growth and there are downside risks

Exports have historically been an important driver of growth for Peru. As global commodity prices increased from the early 2000s, exports as a proportion of GDP nearly doubled, from 17% in 2000 to 30% in 2007. The financial crisis resulted in a levelling of

exports before a sustained decrease from 2011. These export peaks pushed Peru slightly above the OECD average but below that of Chile, which is another commodity exporter.

Figure 1.7. **Exports as a proportion of GDP: Peru compared to the OECD average and select countries**

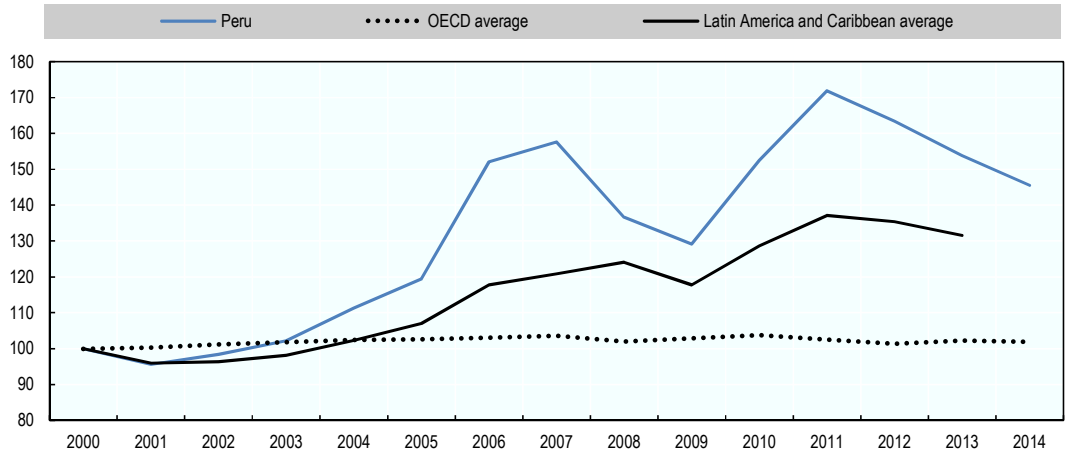


Source: World Bank (2015a), "Exports of goods and services (% of GDP)", http://data.worldbank.org/indicator/NE.EXP.GNFS.ZS.

Extractive industries have been a key component of this export growth and now account for 12% of GDP and only 1.3% of employment. Mining contributed 52% of total export revenues for Peru in 2014. This proportion of export revenues is lower than other commodity-based economies (Australia, Colombia and Norway) but higher than the OECD average (18.5%). Peru has large reserves of different mineral resources and is a leading producer of silver, copper, gold, zinc and tin. Copper and gold accounted for more than 76% of its mineral exports in 2014. This will continue to be a key comparative advantage for Peru due to the quality of its resource endowments and low production costs (OECD, 2015e).

This increase in exports is similar to many other commodity-based economies over the past decade. Increases in Chinese demand led to higher metal prices from the early 2000s. In turn, this translated into substantial investment and increases in supply. The combination of increasing export revenues and investment to increase production capacity has led to an appreciation of the exchange rate. Peru achieved trade surpluses between 2002 and 2012. As metal prices have dropped, Peru has experienced declining terms of trade, and trade deficits since 2013. These movements have affected the growth performance of the national economy, and present risks to future growth performance. Growth in the Peruvian economy has historically been related to movements in the terms of trade and the prices of metal products (Hausmann, 2008).

Figure 1.8. **Terms of trade (2000-14): Peru compared to the OECD and Latin America and Caribbean averages (base 100 = 2000)**



Sources: OECD (2015e) *Multi-dimensional Review of Peru: Volume 1. Initial Assessment,* based on *OECD Terms of Trade Indicators* (database), https://data.oecd.org/trade/terms-of-trade.htm; BCRP (2015), *Annual Series database*, https://estadisticas.bcrp.gob.pe/estadisticas/series/anuales; and OECD calculations based on export data from WITS/UN Comtrade.

Box 1.4. **The relationship between tradeables and non-tradeables**

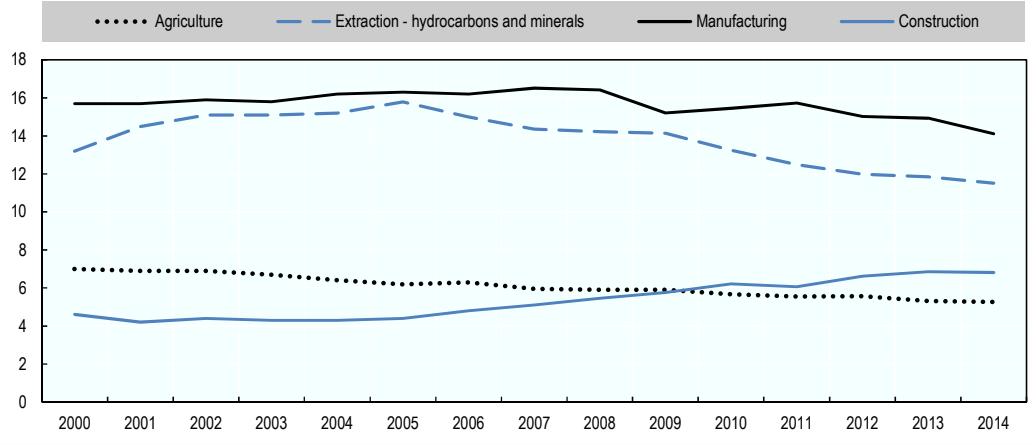
Resource booms can have various impacts on the broader economy by inducing an appreciation of the exchange rate. A higher nominal exchange rate reduces the competitiveness of other tradeable sectors particularly agriculture, mining and tourism. Increasing prices for commodities attracts labour and capital from these tradeable sectors to the mining industry. Increasing income also generates spending effects within the domestic economy which primarily benefits the non-tradeable services sector. However, this also increases prices in the services sector and the domestic economy, and leads to an appreciation of the real exchange rate.

These effects are commonly known as "Dutch Disease", which is characterised by structural decline in tradeable sectors outside of resource extraction. Growth can be sustained in a resource-based economy in a number of ways: taxing resource rents and using this for debt relief and lowering general taxation; implementing regulatory reforms to reduce barriers to business start-ups and growth; and innovation and export facilitation policies to encourage diversification of the tradeable sector (Ahrend, 2006).

There is a lack of strong evidence that this is an issue at an aggregate level in Peru. Peru's real exchange rate increased from the early 2000s until the crisis in 2008, and declined to below 2009 levels since then (see Chapter 2). Extractive industries as a proportion of GDP rose quickly between 2000 and 2005, and have declined since then. Agriculture experienced a decline over this period, which may indicate reduced competitiveness. The largest growth has been in the services sector, including construction. This may be due to the investment cycle in the mining sector during this period. Manufacturing has experienced a decline since 2008, which is probably shaped by the crisis.

Box 1.4. **The relationship between tradeables and non-tradeables** (*continued*)

Figure 1.9. **Compositional shift in GDP by sector**



Source: INEI (2016), "Economía", www.inei.gob.pe/estadisticas/indice-tematico/economia.

There is some evidence that some of the impacts of extractive industries are also localised through indirect effects associated with increased public expenditure on infrastructure (Natural Resource Governance Institute, 2015). As local municipalities increase expenditure on public works this may have the effect of drawing labour away from the local agricultural industry. These localised impacts warrant further investigation.

Source: INEI (2016), "Economía", www.inei.gob.pe/estadisticas/indice-tematico/economia.

The rate of informality is high

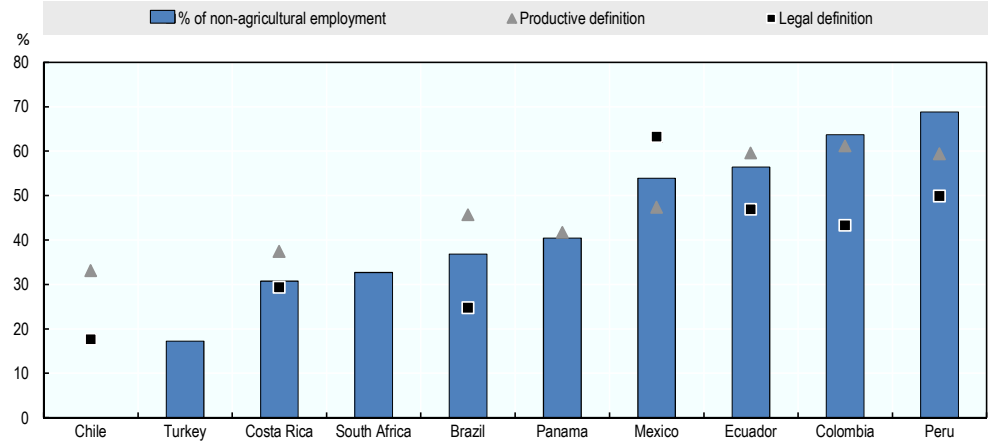
Labour force participation is high in Peru at 73.3% in 2013, compared to the OECD average of 65.7%. The employment rate in Peru has increased by 8.2% since 2004.[1] An important feature of the labour market is the prevalence of informal (not officially registered) activities. Although the existing estimates of the size of the informal sector vary considerably, there is no doubt that the informal sector is an important contributor to the national economy (INEI, 2014a). The relevance of the informal sector is particularly large when measured in terms of employment. There appears to be some agreement on the fact that three out of four jobs are not captured by formal employment statistics. However, estimates of value added generated by the informal economy vary largely (from a low of about 20% to as much as 70% of total GDP). INEI puts the contribution of the informal economy to the national GDP at about 20%, suggesting that although relevant in terms of employment, the labour productivity of the informal sector is extremely low.[2]

Human capital and innovation are key bottlenecks

Improvements to education and skills are critical to the performance of firms within global value chains (GVCs) (see Chapter 2), and inclusive growth. Human capital indicators are relatively poor in Peru and the country lags behind the OECD in terms of quality of education:

- Participation rates in school education are similar to other Latin American countries (OECD, 2015e). However, scores for Peru on the Programme for International Student Assessment (PISA) are generally amongst the lowest for participating countries. In the 2012 survey Peru ranked last in terms of scores for mathematics, reading and science (OECD, 2013a). An average 15-year-old student in Peru is behind the average Latin American student by the equivalent of eight months of secondary schooling, and around three years behind the average OECD student (OECD, 2015e). Due to this gap in quality it can be argued that a year of schooling in the OECD is not equivalent to a year of schooling in Peru. This quality gap is apparent when average years of schooling are adjusted by quality based on the 2012 PISA scores (OECD, 2015e).
- Overall, Peruvians have become more educated over time. The share of the population with no schooling has fallen, from 17% in 1980 to close to 5% in 2010. The largest increase was in the proportion of the population who completed secondary education, which increased from 14% to 37% in the same period. The proportion of the population with a tertiary degree increased from 7% to 12% (OECD, 2015e).
- In terms of workforce skills there are a number of issues related to skills gaps and whether the higher education and vocational training systems are matched to demand in the labour market. In Peru, about 28% of firms report that they cannot find workers with the right skills, which is lower than the average for Latin America and the Caribbean countries (LAC) (36%) but higher than the OECD average of 17% (OECD, 2015e). Participation in the vocational education system is low due to quality issues, and this is likely to be impacting on the capacity to develop technical skills within the workforce (OECD, 2015e).

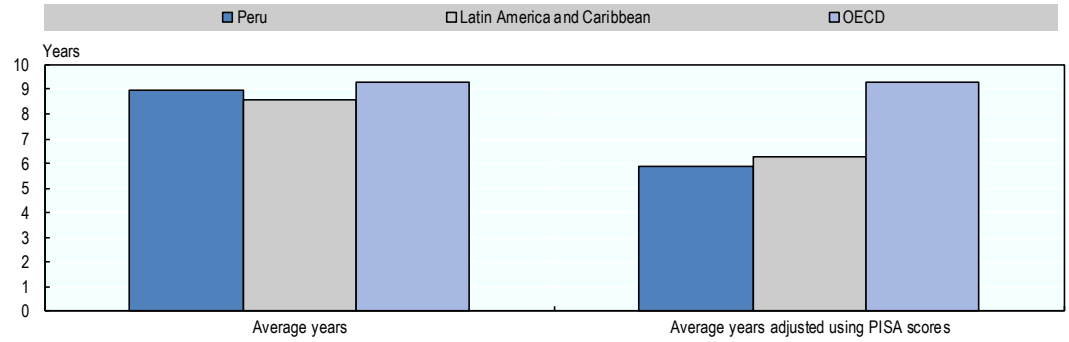
Figure 1.10. **Informal employment in benchmark countries and among socio-demographic groups in Peru**



Notes: The non-agricultural employment rate is based on 2013 data for Brazil, Colombia, Costa Rica, Mexico, Panama, Peru and Turkey; 2010 data for Ecuador and South Africa. No data available for Chile for that indicator. Productive and legal definitions are based on 2011-12 data.

Sources: OECD (2015e) *Multi-dimensional Review of Peru: Volume 1. Initial Assessment* http://dx.doi.org/10.1787/9789264243279-en , based on CELDAS and World Bank (2014c), *Socio-Economic Database for Latin America and the Caribbean* (SELDAC) (database), http://sedlac.econo.unlp.edu.ar/eng/index.php for legal and productive definitions and ILO (2014), *Key Indicators of the Labour Market* for non-agricultural definition, http://dx.doi.org/10.1787/888933265385.

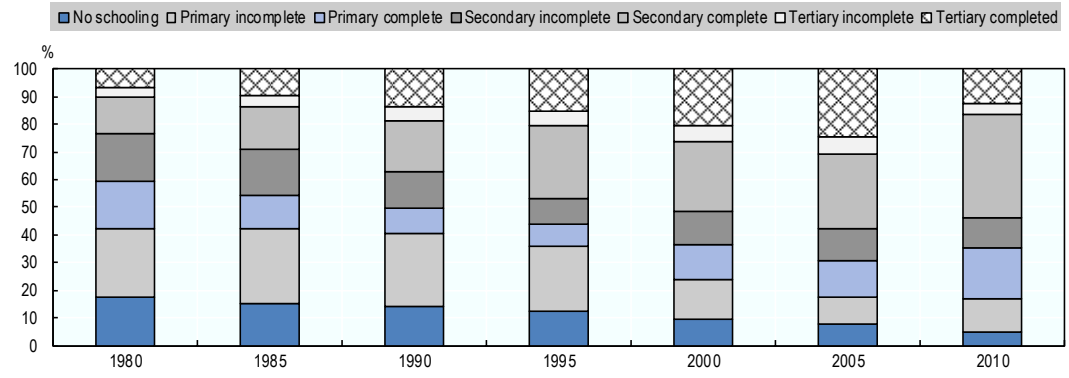
Figure 1.11. **Average years of schooling (ages 15-19), unadjusted and adjusted for academic achievement using PISA scores**



Note: Latin America and Caribbean here comprises Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru and Uruguay, which are the countries in the region that participated in the PISA test in 2012.

Sources: OECD (2015e), based on OECD calculations based on *OECD/PISA 2012 database* and UNESCO/UIS (2015), *UNESCO Institute for Statistics Database*, www.uis.unesco.org/Pages/default.aspx.

Figure 1.12. **Educational attainment for total population over 15 years old, Peru**

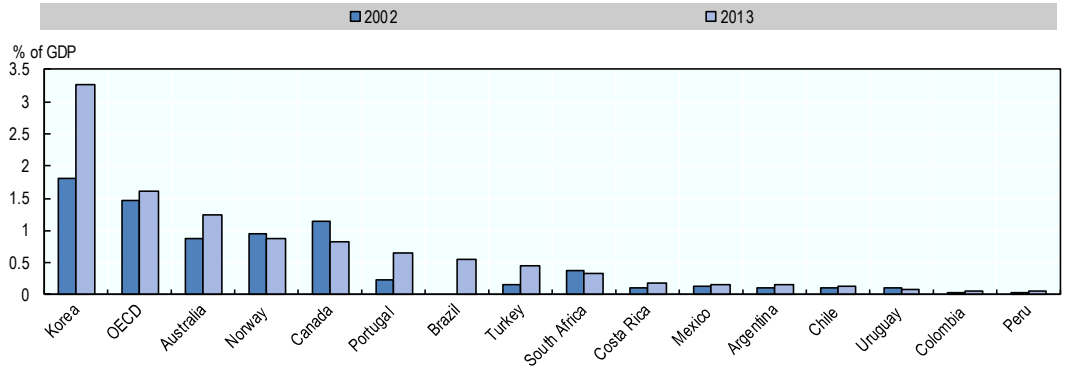


Source: OECD (2015e), based on OECD calculations based on Barro and Lee (2010), dataset, http://dx.doi.org/10.1787/888933265234.

Technological innovation and development will be central to enabling a shift to higher value activities by encouraging product diversification and increasing productivity. Peru performs poorly in relation to key input and output measures of innovation in comparison to OECD and other benchmark countries. Expenditure on research and development (R&D) remains low and patent applications are below all benchmark countries and LAC averages (Figures 1.13 and 1.14).

There are a number of factors contributing to this poor performance. There is a lack of domestic science and technology infrastructure that can generate new research linked to areas of comparative advantage for the country (OECD, 2011b). Businesses also face a number of barriers, including aversion to risk and long-term investment, weak competitive pressures and underdeveloped value chains, and weak interactions between firms and higher education and research institutes (OECD, 2011b). Low workforce skills are also a binding constraint and impact on the capacity of firms to absorb new technologies.

Figure 1.13. **Business expenditure on research and development, 2002 and 2013 (or latest available year)**

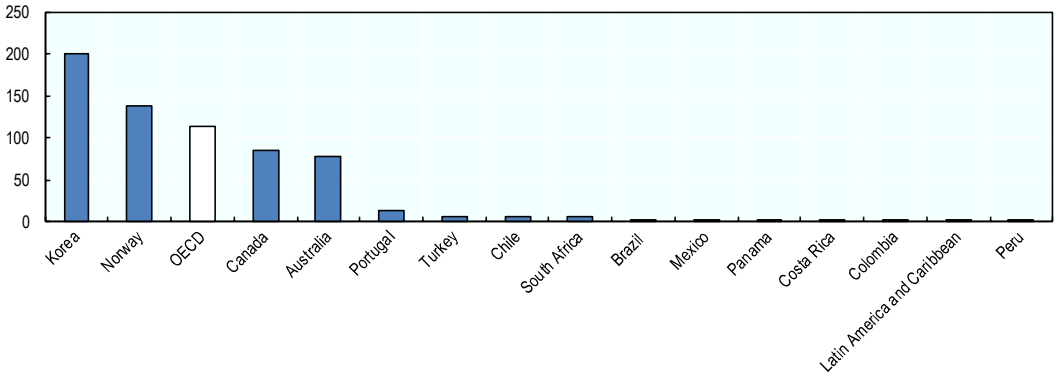


Notes: Latin American economies (excluding Argentina, Brazil, Chile and Mexico): 2012. Argentina and Chile: 2013. Australia and Mexico: 2011. Brazil: 2010.

Sources: OECD (2015e), *Main Science and Technology Indicators Database*, www.oecd.org/sti/msti; and OECD calculations based on RICYT (2015), Red de Indicadores de Ciencia y Tecnología – Iberoamericana e Interamericana website, www.ricyt.org/homeenglish.

Figure 1.14. **Patent applications per million people, comparing Peru and select benchmark countries and averages**

Number of Patent Co-operation Treaty patents, 2010-11 average



Notes: Data based upon 2010-11 averages. No values available for Ecuador from given source thus excluded from Latin American and Caribbean and benchmark countries.

Source: OECD (2015e), based on *OECD Patent Database* (database); www.oecd.org/sti/inno/oecdpatentdatabases.htm.

Infrastructure performance will need to improve

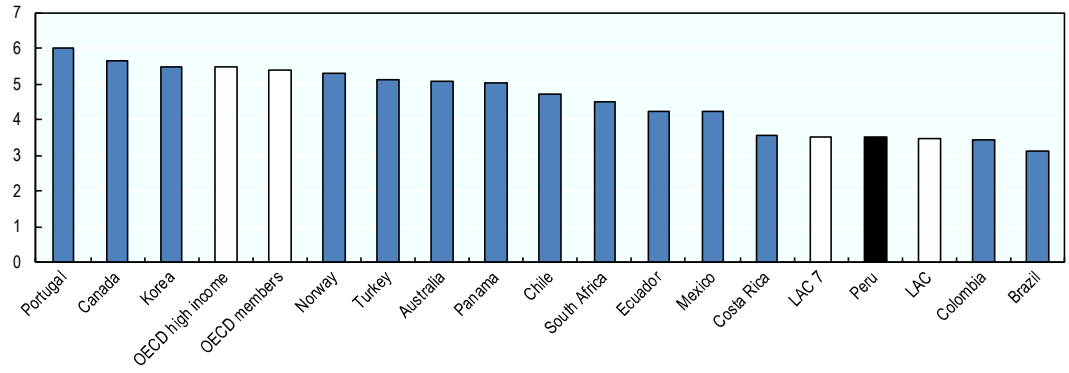
As a country with a large land mass and trade-exposed economy, the quality and efficiency of infrastructure is central to Peru's economic competitiveness. Improvements to water, energy, telecommunications and transport infrastructure are also important to addressing challenges associated with inequality and poverty in Peru (OECD, 2015e; Webb, 2013).

Quality and quantity of infrastructure has also been identified as one of the main binding constraints to both diversification and productivity in Peru (Haussmann, 2008; Webb, 2013). The investment requirement to cover the gap in infrastructure of the

country has been estimated to be USD 68.8 billion over the next five years, or 8.4% of the country's projected GDP over that same period (AFIN, 2015). The largest infrastructure gaps are in the energy (37.5% and transport (23.8%) (OECD 2015e).

Peru has a similar ranking to other LAC countries for international standards in the perceived quality of infrastructure, despite some significant improvements (WEF, 2014). However, it still lags behind other benchmark countries and the OECD.

Figure 1.15. **Perceived quality of overall infrastructure, 2014**

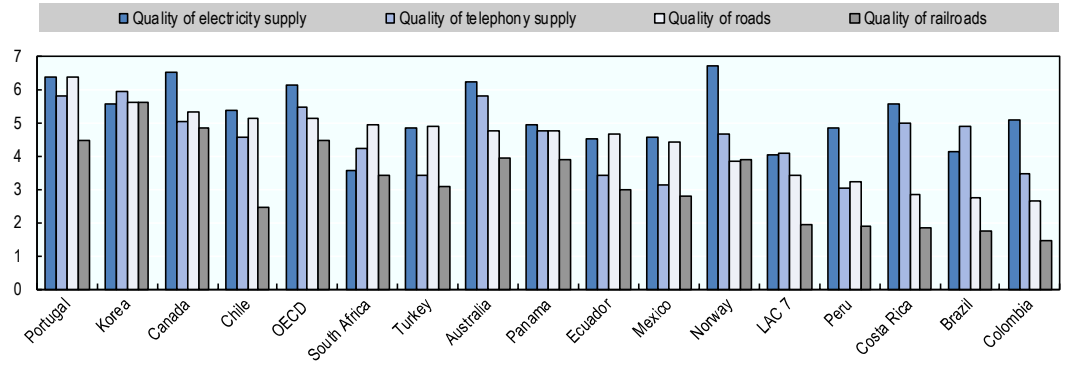


Note: This indicator uses a scale from 1 to 7 where a higher score means a better quality of infrastructure. Latest available data for Ecuador are for 2013. LAC: Latin America and Caribbean.

Source: OECD (2015), based on WEF (2014), *The Global Competitiveness Report 2014-2015*, www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf.

Peru ranks particularly low in terms of the quality of different types of infrastructure that facilitate connectivity (roads, railroads, telephone and electricity). This poor quality of connecting infrastructure would be a constraint for Peruvian firms effectively participating in GVCs.

Figure 1.16. **Quality of public service infrastructure, 2014**

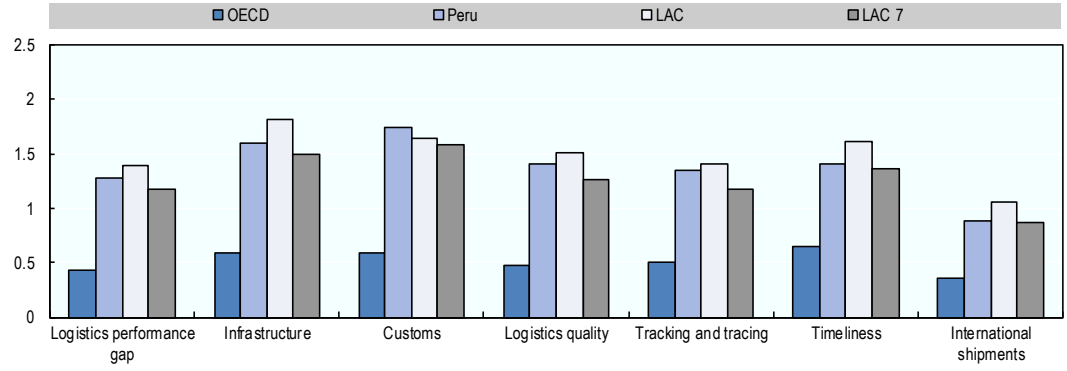


Notes: The indicator for quality of telephony supply corresponds to the weight on the electricity and telephony infrastructure component corresponding to mobile telephone subscriptions and fixed telephone lines. This indicator uses a scale from 1 to 7 where a higher score means a better quality of infrastructure. LAC: Latin America and Caribbean.

Source: OECD (2015), based on WEF (2014), *The Global Competitiveness Report 2014-2015*, www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2014-15.pdf.

Improving logistics services is particularly important for GVC participation by reducing transport-related costs (OECD, WTO and World Bank, 2014). This is important for a number of reasons including: the long-term cost competitiveness of agriculture and mining, creating opportunities for economic diversification, and supporting the role of secondary cities. The World Bank's Logistics Performance Index (LPI) provides a way of measuring logistics performance across seven components (Figure 1.17) (OECD, 2015e). Figure 1.17 indicates the gap in performance between Peru and the best-performing country within each domain, in addition to comparisons with the OECD and other LAC countries.

Figure 1.17. **Logistics performance gap to the best-performing OECD country and other Latin American countries, 2014**



Note: The Logistics Performance Index (LPI) has a scale of 1 to 5, where 5 represents the best logistics performance. The gap refers to the difference for each logistics component with the best-performing OECD country, which is Germany for the overall LPI, infrastructure and tracking and tracing; Norway for customs and logistics quality; and Luxembourg for international shipments and timeliness. LAC 7 refers to the seven largest economies in Latin America and the Caribbean as measured by GDP: Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela.

Source: OECD (2015), based on data from World Bank (2014b), Logistics Performance Index 2014, http://lpi.worldbank.org.

In sum, the Peruvian economy is going through a transition from the commodities boom. The mining sector is dominated by large multinationals, which are globally integrated, and employment in mining is low. As a result, the benefits to other sectors of the economy in terms of intermediate inputs, and increased household incomes and consumption, are not as significant as its share of GDP and exports would suggest. The decline in commodity prices presents downside risks for Peru. Although its sound macroeconomic policies and open economy will stand it in good stead, there are a number of interrelated structural challenges that will need to be addressed.

The first is challenges associated with human capital and informality. The quality of human capital is not adequate, it is insufficiently developed and not effectively used by firms, and widespread informality in the labour market reduces incentives for firms and individuals to invest in it. The second is the low innovation performance of businesses, universities and other actors within the innovation system. This reduces the scope for diversification and the capacity to participate in higher value activities within global value chains. The fourth is poor infrastructure performance, which also reduces competitiveness within GVCs, and the productivity of the non-tradeable sector. Peru

faces a challenge to design structural policies that can deliver sustained improvements to human capital, innovation and infrastructure in an integrated way.

Peru is territorially diverse and these growth dynamics are playing out differently across the country. Regions matter in terms of how the Peruvian government can give coherence to sectoral policies and achieve national policy objectives. This first requires an understanding of the growth dynamics and drivers of different regions. The following section will develop a framework for assessing the economic performance of Peru at a subnational level.

Regions, cities and rural areas: Moving beyond averages

When observing the geography of Peru a number of key features are apparent. The physical geography of the country is shaped by a thin coastal region, the Andes and the Amazon forest in the interior. Accessibility to international markets via sea ports is constrained by the Andes, and the major international airport is located close to Lima. Lima dominates the urban structure and population of the country with 8.5 million inhabitants (approximately 30% of the national population). Accessibility to Lima is an important factor in shaping economic performance. Accessibility to the Andes and rainforest regions is further made difficult by the extreme topography and weather conditions (such as landslides, amongst others). Coastal regions tend to have better socio-economic conditions than uplands and rainforest regions in the interior of the country. The economies of these areas are more diversified, with manufacturing, commerce and services activities. Rural economies are resource dependent and specialise in different mineral and agricultural commodities. Within these broader patterns each region has its own particular socio-economic and ecological features. When assessing regional growth trends in detail, it is apparent that the economic geography of the country is also marked by heterogeneity, which emphasises the importance of taking a place-based approach to policies.

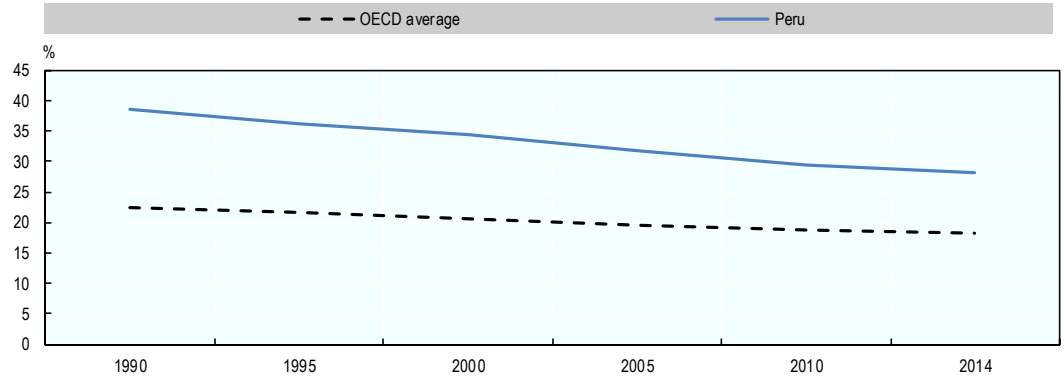
Peru has a young and growing population, which is increasingly concentrating in cities

Peru has a population of 31 million people, which would make it the 13th largest country within the OECD. Peru is the 19th largest country in the world with a total surface area of 1.29 million km^2 (World Bank, 2015e). Only four OECD countries (Canada, the United States, Australia and Mexico) have a larger land mass. Population density is low at only 24 people per square kilometre, which is similar to relatively low-density OECD countries such as Chile and Sweden.

Peru also has a relatively young population when compared to many OECD countries and has the potential to reap a "demographic dividend" in terms of increased growth that comes from increasing numbers of people in the workforce. Peru's population growth rate is currently 1.32%, compared to the OECD average of 0.65%. Peru also has a higher proportion of people aged 0-14 of the total population than OECD member countries, although this gap is closing over time.

Taking full advantage of this demographic dividend is an enormous opportunity for Peru. This will require improvements in a number of key strategic areas such as lifting the quality of education, reducing informality and improving how cities function. In the longer term Peru will also need to consider how to financially support and provide adequate services for an ageing population, particularly in rural areas.

Figure 1.18. **Proportion of the population aged 0-14, Peru and OECD average**

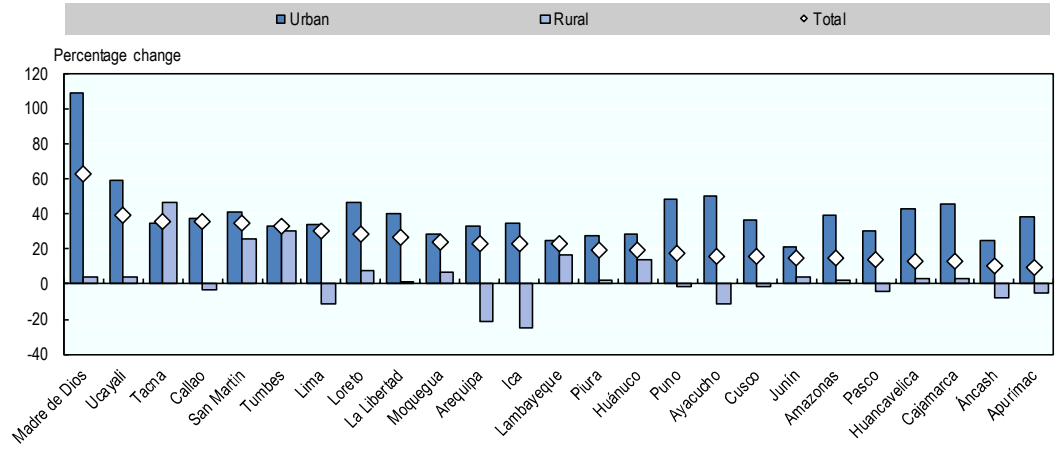


Source: World Bank (2016). "Population ages 0-14 (% of total)", http://data.worldbank.org/indicator/SP.POP.0014.TO.ZS.

In each of the 1961 to 2007 intercensal periods, although all departments reported long-term demographic gains, 12 departments generally recorded higher population growth than Peru: Lima, Amazonas, Arequipa, Huánuco, Ica, Lambayeque, Madre de Dios, Moquegua, San Martín, Tacna, Tumbes and Ucayali. Lima (including Callao) has maintained a population growth rate above the national average, but the pace of growth has decreased over time, from 70% during the intercensal period 1961-72, to 27% during the period 1993-2007 (nearly on par with the national overage of 25%).

Population changes over the most recent intercensal period, 1993 to 2007, indicate that most the population growth of each department is paralleled by a process of rapid urbanisation. Figure 1.19 shows the population growth of urban and rural areas between 1993 and 2007 (using INEI's definition of urban and rural), sorted by total population growth over the same period. It is clear from the figure that with the exception of Tacna and Tumbes, most of the population growth of each department is taking place in urban areas; moreover, 10 out of 25 departments reported a decline in the rural population.

Figure 1.19. **Population growth by urban and rural areas (INEI regional type), 1993-2007**



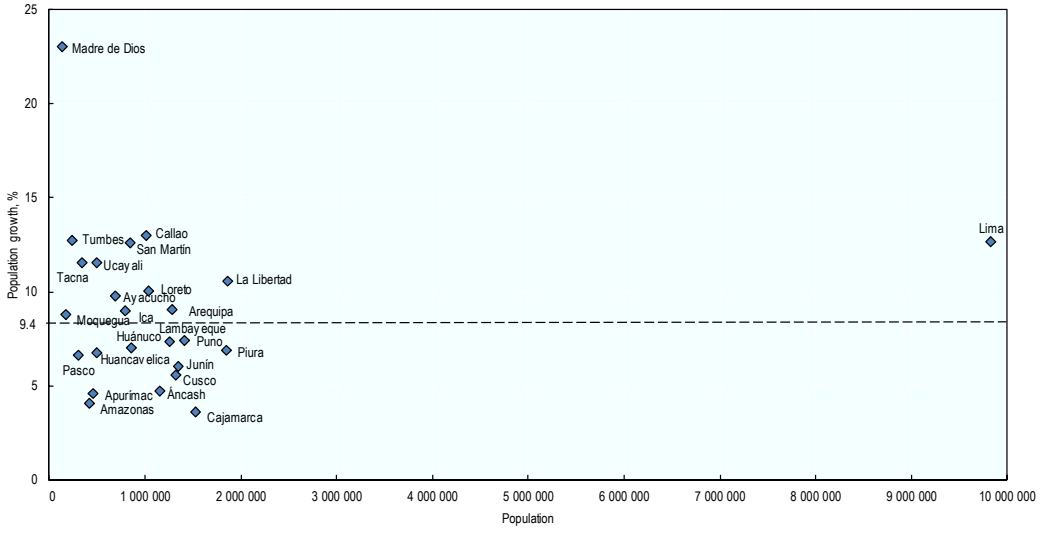
Notes: 1993 and 2007 are the last two census years. Changes computed in this figure might also reflect some reclassification of areas (particularly rural areas being reclassified as urban due to rapid development between the two census periods).

Sources: INEI data, http://www.inei.gob.pe.

Population estimates over the period 2007-15 confirm this pattern, showing a group of departments with a population growth rate higher than the national average. Over this time period, the population estimates suggest that Lima and Callao have maintained high population growth (12.6% and 13.0% respectively). A number of other provinces have also recorded higher than average population growth: Madre de Dios, Tumbes, San Martín, Ucayali, Tacna, La Libertad and Loreto. These trends provide support to the recent research on migratory flows across departments, which show that small to medium-sized cities are absorbing more population growth.

In contrast, a group of 12 departments reported lower population growth (less than 8% over the period 2007-15). Most of them are departments that are also lagging on a number of socio-economic dimensions as it will be discussed in the following sections, which suggest that comparative demographic dynamics remain an important indicator of well-being of a region. These departments are Puno, Lambayeque, Huánuco, Piura, Huancavelica, Pasco, Junín, Cusco, Áncash, Apurímac, Amazonas, and Cajamarca (with the lowest population growth at 3.6%).

Figure 1.20. **Population size (2015) and population growth (2007-15) by department**



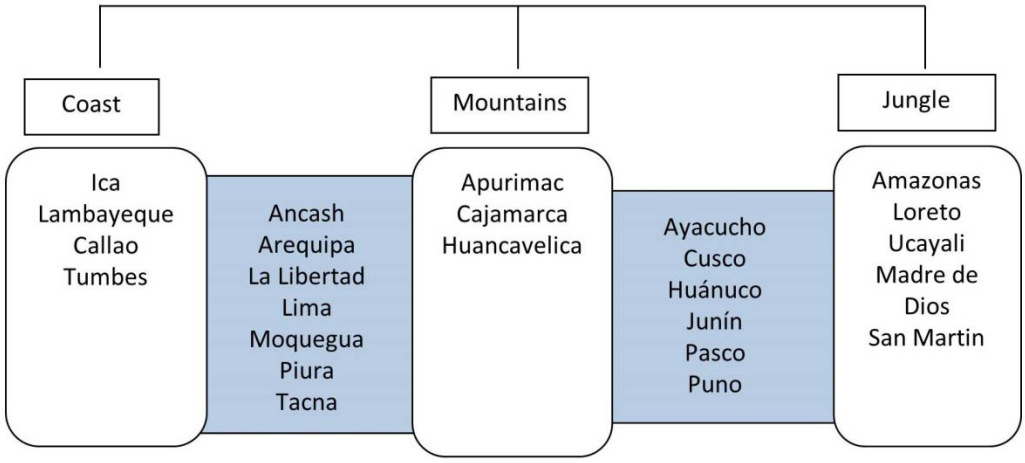
Note: The horizontal line represent the population growth of Peru (9.4%) over the period 2007-15.

Source: INEI data, http://www.inei.gob.pe.

Administrative areas

Peru has two levels of government at a subnational level: a regional level (department), with a subdivision at the municipal level between provinces and districts. Provinces include a number of districts and generally play a co-ordinating role amongst them. There are 24 departments (*departamentos*), and the Constitutional Province of Callao (Provincia Constitucional del Callao), which is given the status of a department. There are 195 provinces (not including the Constitutional Province of Callao), and 1 867 district municipalities. For a summary of these administrative and statistical definitions see Annex 1.A1.

Figure 1.21. **Peru's regions**

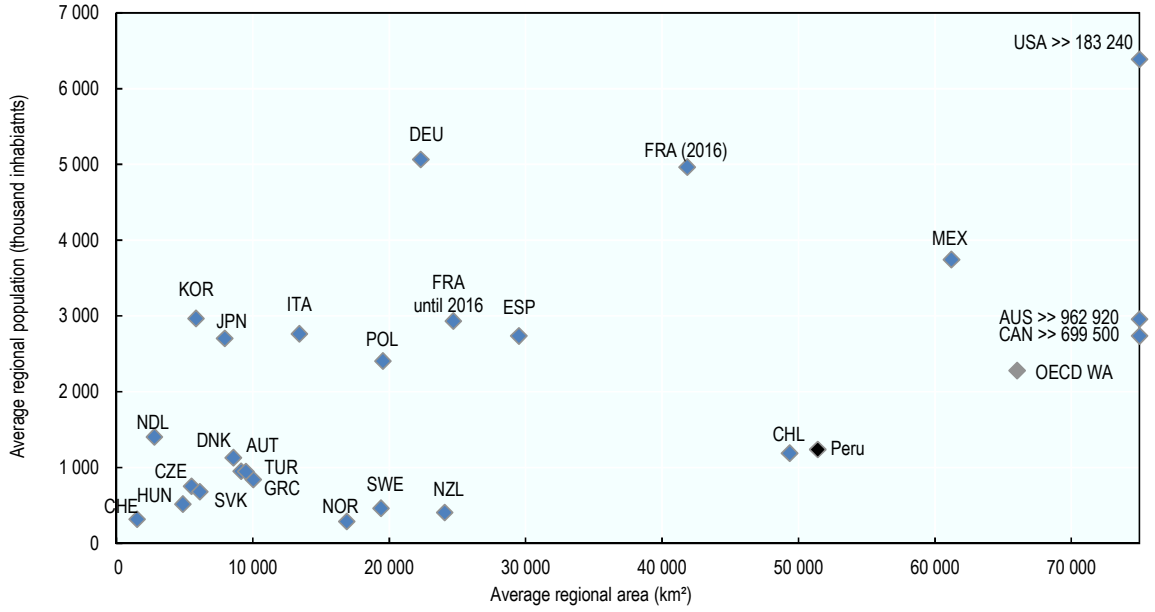


Note: Coast, mountains, and jungle indicate the different physical environments which exist across Peru's national territory. These areas do not have any formal status and reflect the main geographical features of the regions. Some regions have a combination of these physical environments, which is shown in the figure. La Libertad and Ica, both occupy a share of the three regions, but given that in both cases the majority of the territory is in two of these areas, they have been located in the box that best represents this reality.

Source: INEI (n.d.), http://www.inei.gob.pe.

The average geographic size of Peru's regions is relatively high compared to OECD regions and comparable to that of Chile and Mexico. The average population size is low, which is not surprising given the overall surface area of the country and low population densities.

Figure 1.22. **Average demographic and geographic size of OECD regional governments**

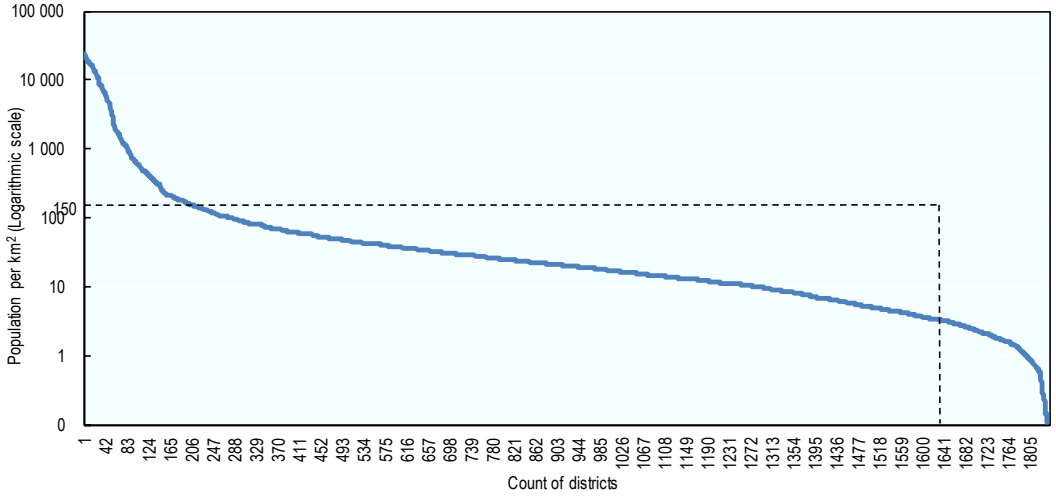


Note: France is without overseas regions and before the 2015 reform. Regional data for Australia, Belgium, Canada, the United Kingdom and the United States are not represented on this graph.

Source: OECD Regional database.

At the local level, the vast majority of municipal districts are located in rural areas and have low population density. Of 1 835 districts for which population density data are available, 1 625 (or nearly 90%) have a population density below 150 inhabitants/km². Many of the largest and mostly sparsely populated municipalities are located in the rainforest areas.

Figure 1.23. **Population density by district, 2015**



Note: The graph highlight the thresholds of 150 inhabitants/km^2, which is the value used in the OECD regional typology to define rural areas.

Source: INEI (n.d.), http://www.inei.gob.pe.

Peru's system of territorial statistics requires improvement

The system of territorial statistics has grown rapidly since the early 2000s, along with the impetus on regional decentralisation. Indeed, the statistical system itself remains relatively complex and decentralised across national entities, with a prominent technical role of INEI, and a multitude of statistical offices embedded in various ministries. INEI co-ordinates 27 regional statistical offices, which are also part of regional statistical committees. Various ministries have an active role in collecting, processing and disseminating national and regional statistics, and part of this work is also done with the technical assistance of INEI. Within this decentralised statistical landscape, a new set of public and private users of data are emerging. This is demonstrated by the rapid appearance of online open data portals.

Overall, this system is capable of generating a large amount of territorial statistics and geo-referenced data; however, due to the very nature of this system, coherence, interpretability and accessibility of information remains a concern. The multiplicity of actors involved in the production of regional statistics results in a diversity of standards, concepts, definitions and in several cases in discrepant statistics. Further measures are required to enhance the integration of database infrastructure, statistical process, analytical capacity and effective use of territorial indicators in the policy process.

The official definition of urban and rural areas for Peru is a simple binary one. For the purpose of the census, the urban areas (*área urbana*) are defined as those that have at least 100 contiguous dwellings (resulting in an average of 500 inhabitants), in addition all population centres that are district capitals are classified as an urban area even if they do not meet dwelling count. A rural area (*área rural*) is defined as an area that does not have 100 contiguous dwellings (and is not a district capital), or has more than 100 dwellings which do not constitute a contiguous agglomeration and are geographically disperse.

Various government departments have also established *ad hoc* definitions for policy development and programme delivery. In particular, there are five national ministries that share responsibilities for rural and urban policies: the Ministry of Housing, Construction and Sanitation; the Ministry of Development and Social Inclusion; the Ministry of Agriculture and Irrigation; the Ministry of the Environment; and the Presidency of the Council of Ministers (CEPLAN). Each uses a different definition, which results in overlapping and potentially conflicting perspectives on respective areas of competence and policy delivery. Over time, these definitional differences might require a process of harmonisation in order to ensure coherence and efficiency in the delivery of rural and urban policies.

Applying the OECD typology

Territorial policies will become more important to the development of Peru, and need to be supported by good spatial statistics. Harmonising territorial statistics and better co-ordinating information systems will be instrumental in improving the quality of policy development processes and the delivery of sectoral policies. Harmonising territorial statistics can also improve co-ordination in policy development, investment decision making and service delivery across level of governments, which is required to improve regional development outcomes.

To help improve the system of territorial statistics and improve international comparability, this section applies the OECD regional typology to the case of Peru. For the purpose of comparability with the OECD territorial grid, the following classifications are recommended:

- Territorial Level 2 (TL2) can be properly represented by 25 departments (*departamentos*); these include 24 departments, as such, plus the Constitutional Province of Callao, to which the state recognised a special status, reflected also in most of the statistical reporting.
- Territorial Level 3 (TL3) can be properly represented by 195 provinces (not including the Constitutional Province of Callao).
- Below TL3, the building block of the regional typology is the community level, which in this report is identified with the term of district municipality. Throughout this report the terms "local governments" and "municipal governments" will be used to identify both provincial municipality and district municipality (if not otherwise indicated).

Table 1.1. **Subnational territorial units of Peru (below Territorial Level 1 – National)**

Territorial unit	Count	Proposed OECD classification
Department	25	TL2
Province	195	TL3
District	1 867	x
Population centre	65 535	x

Notes: x: not applicable. The counts of districts and population centres had changed over time. The count of district reported here refers to the 2015 geographic frame. The count of population centres refers to the 2007 census geographic frame. The Constitutional Province of Callao (Provincia Constitucional del Callao) is counted as a department because of its unique and constitutionally recognised administrative status.

Box 1.5. **OECD regional typology**

The OECD regional classification is based on two main territorial levels. Territorial Level 2 (TL2) consists of macro-regions within each OECD country. Territorial Level 3 (TL3) consists of micro regions. Each OECD member country has identified the statistical or administrative geography that provides the best fit for this territorial classification.

The OECD taxonomy defines TL3 regions as predominantly urban (hereafter referred to as urban), intermediate and predominantly rural (hereafter referred to as rural). This taxonomy, established in 1991, is designed for facilitating international comparability of data. With this aim, it applies the same criterion and selects comparable units among OECD member countries. The OECD scheme distinguishes between two levels of geography within countries: a local community level and a regional level. Local communities are defined as basic administrative units or small statistical areas (districts in Peru). They are classified as either rural or urban using a population density threshold. In a second step, TL3 regions, which correspond to larger administrative units or functional areas, are defined as predominantly urban, intermediate or rural with a criterion measuring the share of population living in rural communities.

The first step in the OECD territorial typology is that of classifying "local units" (administrative entities at a geographical level lower than TL3) as rural if their population density is below 150 inhabitants per km^2. In a second step, the local units are aggregated into TL3 regions and classified as "predominantly urban", "intermediate" and "predominantly rural" using the percentage of population living in rural local units. A third step takes into account possible reclassification of predominantly rural and intermediate units based on the population size of their main agglomeration.

When applied to the Peruvian data, the OECD classification yields the results outlined in Table 1.2. There are 12 provinces (TL3) that are classified as predominantly urban (PU) regions, which include approximately 14.4 million people or nearly half of the Peruvian population. In addition, 19 provinces are classified as intermediate regions (IR). These regions encompass 3.9 million inhabitants or approximately 12% of the total population. The remaining 165 provinces are classified as predominantly rural (PR) regions. Predominantly rural regions include about 12.8 million people (about 40% of the total population). It should be noted that nearly 1.5 million of people living in predominantly rural areas are in fact living in an urban community (district).

Figure 1.24 provides further insights on the distribution of the Peruvian population by department and the OECD regional typology. Not all regional types are present in all departments. The following departments are entirely or largely constituted by predominantly rural provinces: Amazonas, Áncash, Apurímac, Huancavelica, Tacna and Ucayali. There is another group of departments largely constituted by predominantly urban or intermediate provinces: Arequipa, Callao, Lambayeque, Lima, Tumbes and La Libertad.

It is important to note that further work is required to address issues associated with the small size of some municipalities within urban areas and the lack of a "metropolitan area" concept within the statistical system of Peru. For example, Tacna has urbanised districts that are clustered together but none of these individual districts has a population large enough to be classified as "intermediate". This emphasises the importance of functional urban areas for the territorial statistical system and policy development in Peru.

Table 1.2. **Predominantly urban and intermediate regions (TL3), OECD definition, 2015**

Geocode (Ubigeo)	Province (capital city)	Urban population (district)	Rural population (district)	Total population	Rural share
			Units		
Predominantly urban					
1501	Lima (Lima)	8 828 000	67 000	8 894 000	0.7%
701	Prov. Const. del Callao (Callao)	995 000	0	995 000	0.0%
1301	Trujillo (Trujillo)	896 000	61 000	957 000	6.4%
401	Arequipa (Arequipa)	866 000	104 000	969 000	10.7%
1401	Chiclayo (Chiclayo)	747 000	111 000	857 000	12.9%
1201	Huancayo (Huancayo)	450 000	53 000	503 000	10.5%
801	Cusco (Cusco)	448 000	2 000	450 000	0.5%
2111	San Roman (Juliaca)	278 000	15 000	294 000	5.2%
1506	Huaral (Huaral)	162 000	28 000	191 000	14.8%
2209	San Martín (Tarapoto)	159 000	28 000	187 000	15.0%
1803	Ilo (Ilo)	67 000	4 000	71 000	5.4%
2403	Zarumilla (Zarumilla)	46 000	8 000	53 000	14.3%
Sub-total		13 942 000	481 000	14 421 000	3.3%
Intermediate					
2001	Piura (Piura)	482 000	283 000	765 000	37.0%
601	Cajamarca (Cajamarca)	289 000	99 000	388 000	25.5%
501	Huamanga (Ayacucho)	238 000	73 000	311 000	23.5%
2006	Sullana (Sullana)	222 000	96 000	318 000	30.2%
1001	Huánuco (Huánuco)	198 000	119 000	317 000	37.5%
1102	Chincha (Chincha Alta)	170 000	48 000	218 000	22.1%
2101	Puno (Puno)	146 000	103 000	248 000	41.4%
201	Huaraz (Huaraz)	138 000	29 000	167 000	17.4%
2401	Tumbes (Tumbes)	136 000	29 000	164 000	17.6%
608	Jaen (Jaen)	100 000	99 000	199 000	49.5%
1105	Pisco (Pisco)	93 000	42 000	136 000	31.2%
1502	Barranca (Barranca)	82 000	64 000	146 000	43.9%
607	Hualgayoc (Bambamarca)	82 000	21 000	102 000	20.1%
1307	Pacasmayo (San Pedro de Lloc)	71 000	33 000	104 000	31.3%
301	Abancay (Abancay)	66 000	40 000	106 000	37.9%
1304	Chepen (Chepen)	49 000	38 000	87 000	44.2%
2113	Yunguyo (Yunguyo)	38 000	10 000	47 000	20.2%
1209	Chupaca (Chupaca)	34 000	19 000	53 000	36.1%
101	Chachapoyas (Chachapoyas)	29 000	26 000	55 000	48.0%
Sub-total		2 663 000	1 271 000	3 931 000	32.3%
Predominantly rural					
Sub-total	165 provinces	1 475 000	11 348 000	12 823 000	88.5%

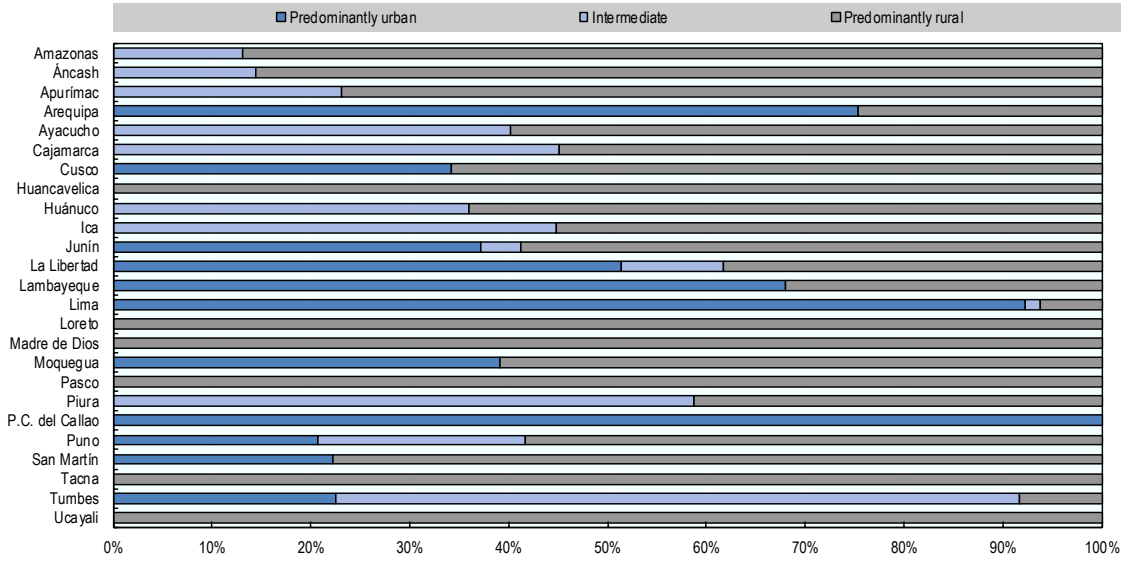
Notes: Population counts refer to 2015 population estimates. Counts might differ slightly from official statistics due to assumptions and different counts used for territorial units that do not have fully specified geographic boundaries. Data are rounded to the closest 1 000; as a result totals might not be the exact sum of their components. In this table, the Constitutional Province of Callao is included among the provinces; as a result, the total number of provinces in this table is 196.

Source: INEI data, http://www.inei.gob.pe.

Population growth estimates by type of region confirm that overall, predominantly urban regions grew the most, but several predominantly rural regions (by OECD standards) also maintained a high rate of population growth. Table 1.3 uses district level population estimates over the period 2007-15 to generate insight on population growth by

type of OECD region. Overall, predominantly urban regions grew 12.3%, intermediate regions 9% and predominantly rural regions 6.4%. However, some of the most dynamic departments, which remain predominantly rural in OECD comparative terms, reported higher than average population growth. Population growth for these regions is likely to have occurred primarily in small towns or departmental capitals.

Figure 1.24. **Population distribution of departments by OECD regional typology, 2015**



Source: OECD analysis based on data from INEI.

These territorial definitions are based on political boundaries and administrative units. The usage of these boundaries does bring disadvantages, such as an arbitrary definition of a territory that often does not correspond to patterns of life, job markets and business flows. For example, the administrative boundaries of a city often do not capture the economic flows and interactions which constitute its functional area. The mismatch between functional and administrative boundaries can result in difficulties in co-ordinating policies from different administrative units and lead to sub-optimal outcomes. As a response to this challenge the OECD has developed a new approach for classifying regions based on functional urban areas.

Currently there are no statistical or administrative geographies that correspond to the concept of functional region or labour market area. With the possible exception of the metropolitan area of Lima (see INEI, 2014d), the concept of functional region is not generally used in statistics reporting or policy development. The analysis of functional urban areas in Peru would support the development of better policies for urban and rural areas.

It is also important to note that Peru collects and disseminates statistics at a municipal level. This is important in providing the building blocks of a revised urban/rural definition, and providing more disaggregated analysis to inform policy design and delivery. However, due to constraints this chapter provides analysis mainly at a regional (or TL2) level.

Table 1.3. **Estimated population growth by department and OECD regional type, 2007-15**

In percent

Department	Predominantly urban	Intermediate	Predominantly rural	Total
Amazonas	...	2.9	4.2	4.1
Áncash	...	9.8	3.9	4.7
Apurímac	...	1.8	5.5	4.6
Arequipa	9.5	...	7.6	9.0
Ayacucho	...	17.2	5.3	9.8
Cajamarca	...	10.2	-1.2	3.6
Callao	13.0	...	...	13.0
Cusco	15.4	...	1.1	5.5
Huancavelica	...	...	6.8	6.8
Huánuco	...	8.7	6.1	7.0
Ica	...	8.8	9.1	9.0
Junín	3.8	-1.8	8.1	6.1
La Libertad	13.4	7.7	7.6	10.5
Lambayeque	7.3	...	7.5	7.3
Lima	13.1	5.4	8.4	12.6
Loreto	...	...	10.0	10.0
Madre de Dios	...	...	23.0	23.0
Moquegua	8.0	...	9.4	8.8
Pasco	...	...	6.6	6.6
Piura	...	10.5	2.1	6.9
Puno	17.9	2.7	5.8	7.4
San Martín	13.6	...	12.3	12.6
Tacna	...	...	11.5	11.5
Tumbes	23.9	9.7	11.6	12.8
Ucayali	...	...	11.5	11.5
Peru	12.3	9.0	6.4	9.4

Note: ..: not available.

Source: OECD analysis based on data from INEI.

Concentration in settlement patterns and economic activity

Lima dominates the urban system of Peru. The second-largest metropolitan area, as well as the second-largest region, is less than one-tenth of Lima in population size. According to the 2007 population census, metropolitan Lima had a population of approximately 8.5 million, with more than 7.6 million people residing in the Lima province and nearly 1 million in Callao, a constitutional province that is part of the same metropolitan area. This represents approximately 30% of the population of Peru, making it the largest metropolitan area of Peru, the fifth-largest urban area in Latin America and one of the top 30 metropolitan areas of the world.[3]

Following the metropolitan area of Lima, the other three largest cities (Trujillo, Arequipa and Chiclayo) are in the order of approximately 700 000-900 000 inhabitants. There are six cities which have a population size in the range of 330 000-700 000 (Piura, Maynas, Huancayo, Cusco, Santa and Coronel Portillo). The remaining cities (*centro poblando*) all have less than 320 000 inhabitants.

Box 1.6. **Methodology for defining functional urban areas**

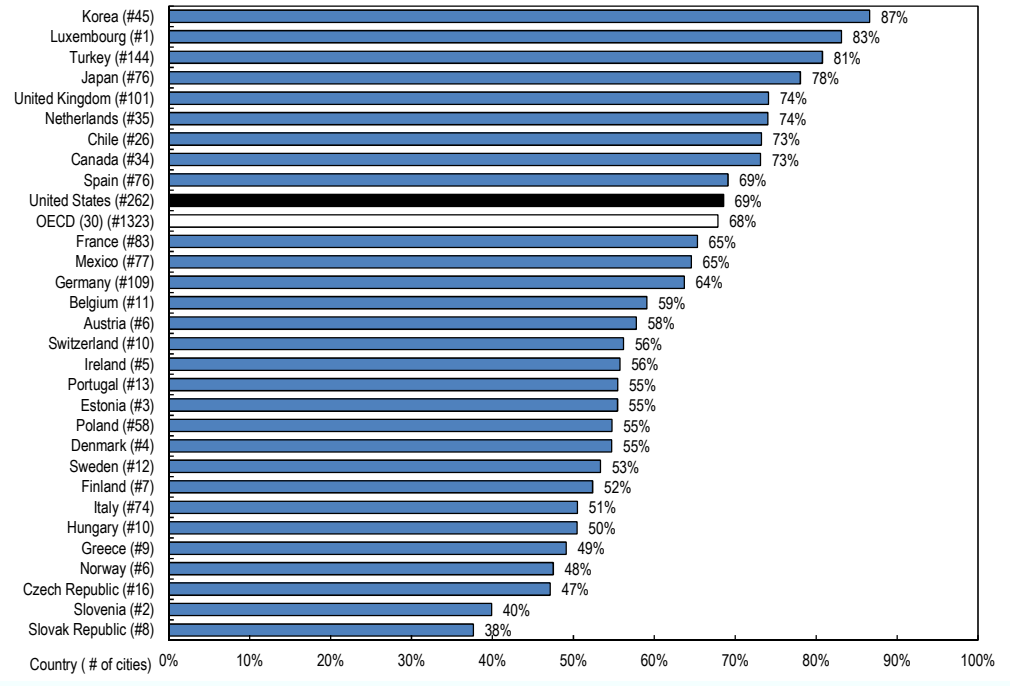
The OECD-EU identifies functional urban areas (FUAs) beyond city boundaries to reflect the economic geography of where people live and work. Functional urban areas as relatively self-contained economic units, characterised by high levels of labour linkages and other economic interactions. Cities are widely accepted as important generators of wealth, employment and productivity gains. Moreover, large agglomerations are key players of transnational flows and work as essential spatial nodes of the global economy. Thus, often metropolitan areas are essential interconnected units in the global economy.

Defining urban areas as functional economic units can better guide the way national and city governments plan infrastructure, transportation, industrial and commercial developments, housing and schools, and space for culture and recreation. Improved planning will make these urban areas more competitive to support job creation, and more attractive for their residents.

The methodology identifies urban areas as functional economic units, characterised by densely inhabited "urban cores" and "hinterlands" whose labour market is highly integrated with the "cores". This methodology is a clear example of how geographic/morphologic information from geographic sources and census data can be used together to get a better understanding of how urbanisation develops. Information on the distribution of the population at a fine level of spatial disaggregation – 1 km² – are used to identify more precisely the centres or "cores" of the urban space, defined as contiguous aggregations ("urban clusters") of highly densely inhabited areas (grid cells). The hinterlands of these internationally comparable urban cores are defined using information on commuting flows from the surrounding regions.

Such a definition is applied to 30 OECD countries and identifies 1 179 FUAs with at least 50 000 inhabitants. Functional urban areas have been identified beyond their administrative boundaries in 30 OECD countries. They are characterised by densely populated urban cores and hinterlands with high levels of commuting towards the urban cores. The share of national population in FUAs ranges from 87% in Korea to less than 40% in Slovenia and the Slovak Republic.

Figure 1.25. **Percent of national population living in functional urban areas, 2012**

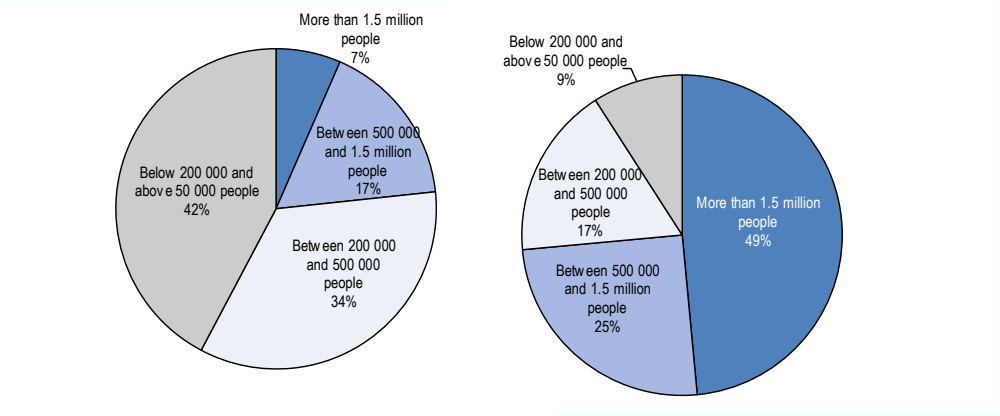


Source: OECD (2013a), *OECD Regions at a Glance 2013*, http://dx.doi.org/10.1787/reg_glance-2013-en.

Box 1.6. **Methodology for defining functional urban areas** (*continued*)

Among the 1 179 OECD functional urban areas, 77 have more than 1.5 million people, 198 between 500 000 and 1.5 million people, both groups concentrate almost 75% of the total urban population. Additionally, 406 were identified with a population of between 200 000 and 500 000 people, and 498 are small functional urban areas with a population below 200 000 and above 50 000 people (see below).

Figure 1.26. **Number of functional urban areas and population share by size, 2012**



Source: OECD (2013b), *OECD Metropolitan Database*, http://dx.doi.org/10.1787/region-data-en.

Source: OECD (2014a), *OECD Regional Outlook 2014: Regions and Cities, Where Policies and People Meet*, http://dx.doi.org/10.1787/9789264201415-en.

Peru has a high level of concentration in population, according to the Geographic Concentration Index across its 25 TL2 regions. Only four OECD member countries record higher levels of concentration (Chile, Israel, Sweden and Canada), and only two enhanced engagement countries (Brazil and the People's Republic of China) also recorded higher levels of concentration. This high level of concentration is driven by the large concentration of population and economic activity in its capital region Lima. For a description of how the Geographic Concentration Index is constructed see Annex 1.A2.

Over the last 25 years, concentration in population has been increasing in Peru as a result of the gradual migration of population to Lima.

When compared to OECD member and non-member countries, the increase has been above the average, but not amongst the highest. It is interesting to note that other highly concentrated countries (Chile and Colombia) have reduced concentration in population over this time period.

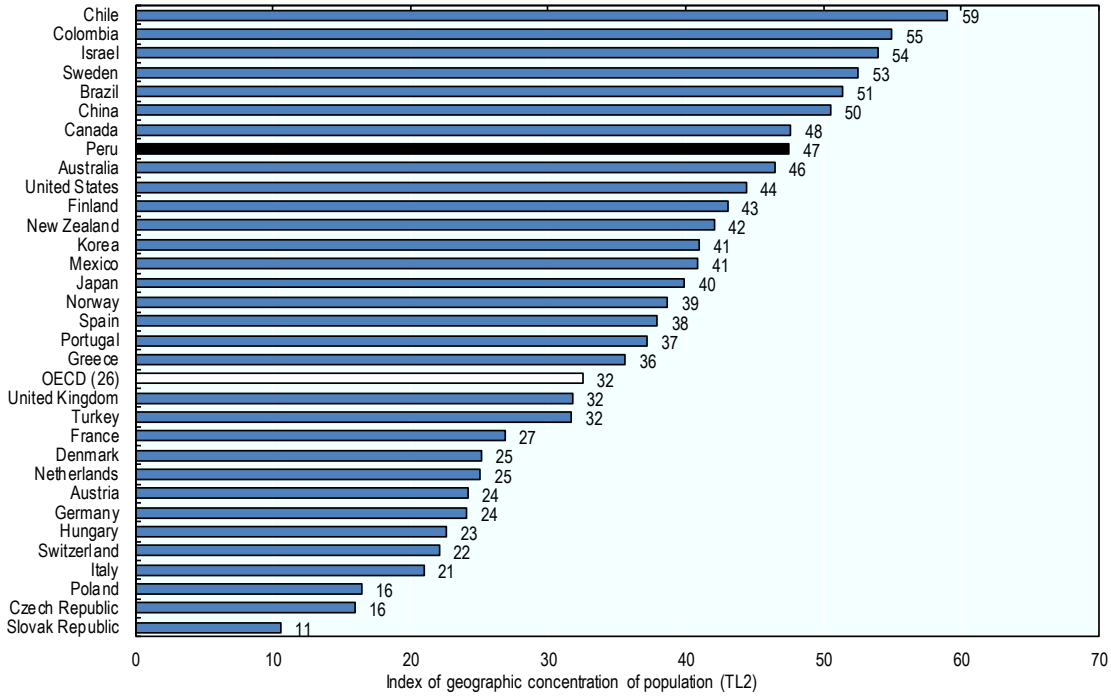
How are Peru's regions performing?

There is diversity in regional performance with some evidence of convergence

Peruvian GDP has grown, in real terms, at an average annual rate of 6% between 2007 and 2013.[4] Over the same time period, however, there was large variation in

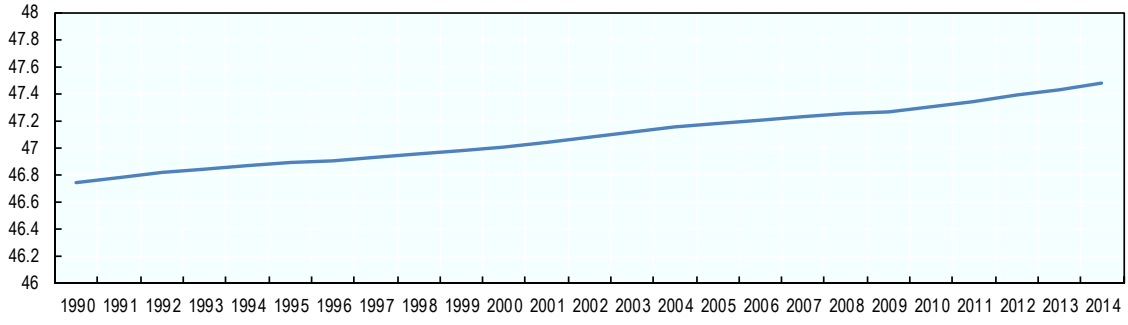
regional economic performance. Regional economic growth, as measured by annual gross value added (GVA), varied largely by department and year.

Figure 1.27. **Geographic Concentration Index in population in select TL2 regions, 2014**



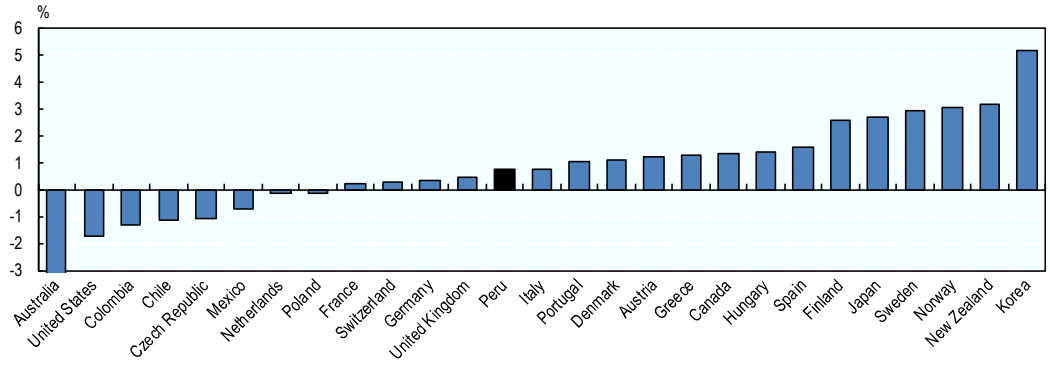
Source: OECD Regional Database.

Figure 1.28. **Geographic Concentration Index in population in TL2 regions, Peru**



Source: OECD Regional Database.

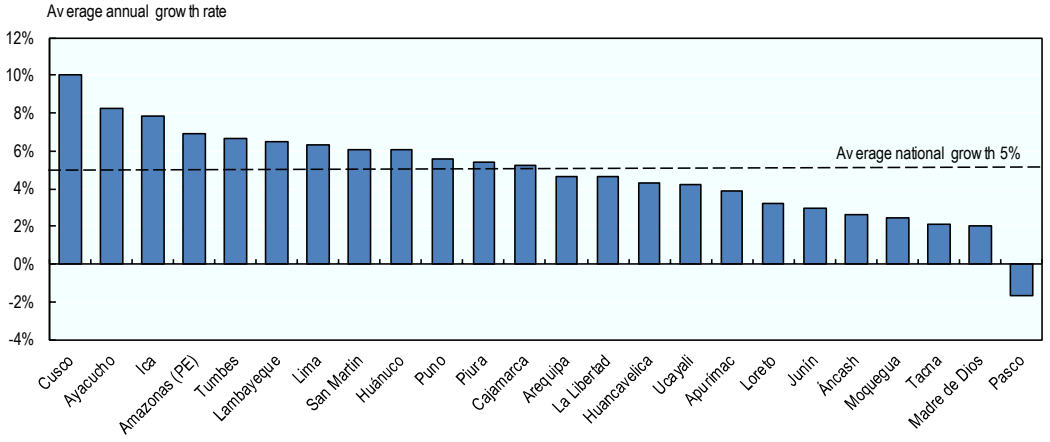
Figure 1.29. **Change in Geographic Concentration Index in population in select TL2 regions, 1990-2014**



Source: OECD Regional Database.

The strongest growth performers were Cusco, Ayacucho and Ica, which all experienced average growth above 8% per annum for this period. There was a cluster of regions that experienced average annual growth rates above the national average in the range of 6-8% (Tumbles, Amazonas, Lambayeque, Lima, San Martín and Huánuco). Another group of regions grew very close to the national of average of 5% (Puno, Piura and Cajamarca). The remaining regions were at or below the national growth average for this period.

Figure 1.30. **Average annual growth rate, gross value added, by region, 2007-13**



Source: INEI (n.d.), http://www.inei.gob.pe.

This average performance masks significant variations within years. In each year, the percentage point difference in GVA growth between the top and bottom performing department was 20% or more, with the largest differential of nearly 33% recorded in 2011/12 between Madre de Dios (-20.5%) and Apurímac (12.4%). This growth volatility is likely to be associated with the impacts that variations in commodity prices and capital investment in mining projects have in smaller rural economies.

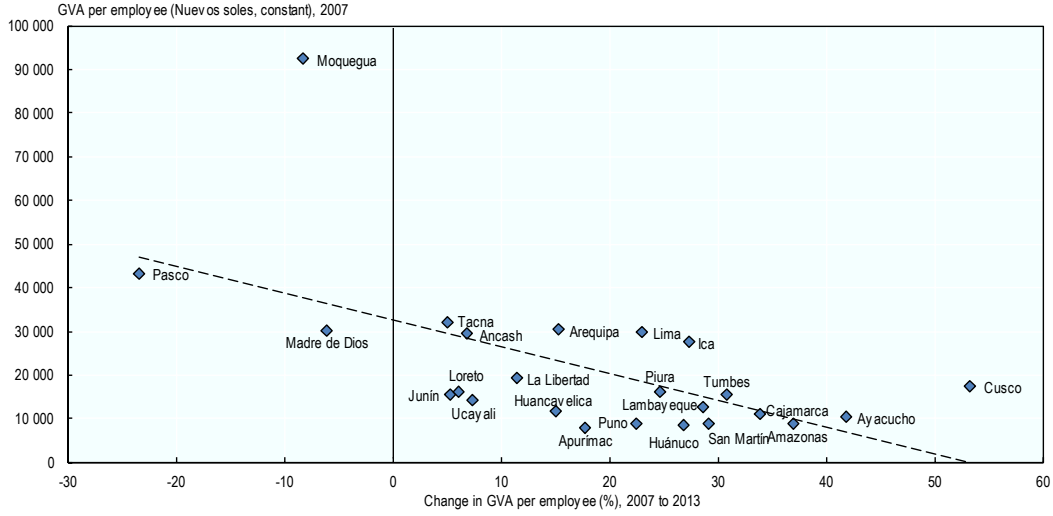
There is some evidence of regional convergence between 2007 and 2013. Moquegua remains an outlier in terms of level of GVA per employee, and recorded a decline of about 8% in this period. Pasco and Madre de Dios also reported a decline in GVA per worker, although their GVA remain in the upper range. Cusco reported a major increase in GVA per employee (over 50%) and shifted toward the upper range of GVA per worker.

Growth has not been inclusive for some high-performing regions. Cajamarca, Amazonas and Ayacucho had high initial levels of poverty and also experienced large increases in GVA per worker between 2007 and 2013. Reductions in poverty during this period were relatively modest (Figure 1.31). In contrast, departments such as Ucayali, Puno, Piura and San Martín (which had a comparable level of GVA per worker) had smaller increases in GVA but substantially larger declines of poverty and improvements in other quality of life indicators.

Contribution of different regions to the national economy

National growth depends upon the contribution of all regions. Among OECD regions, a few large ones contribute disproportionately to aggregate growth whilst many smaller ones contribute only marginally on an individual basis. This pattern is apparent in the Peruvian context. The metropolitan area of Lima contributes to one-third of the country's population and produces almost half of the Peru's industry GVA. The next most economically important region, Arequipa, accounts for 5.4% of Peru's industry GVA. Nevertheless, a majority of Peru's economy is outside of Lima, and there are many regions which account for a small share of the national economy.

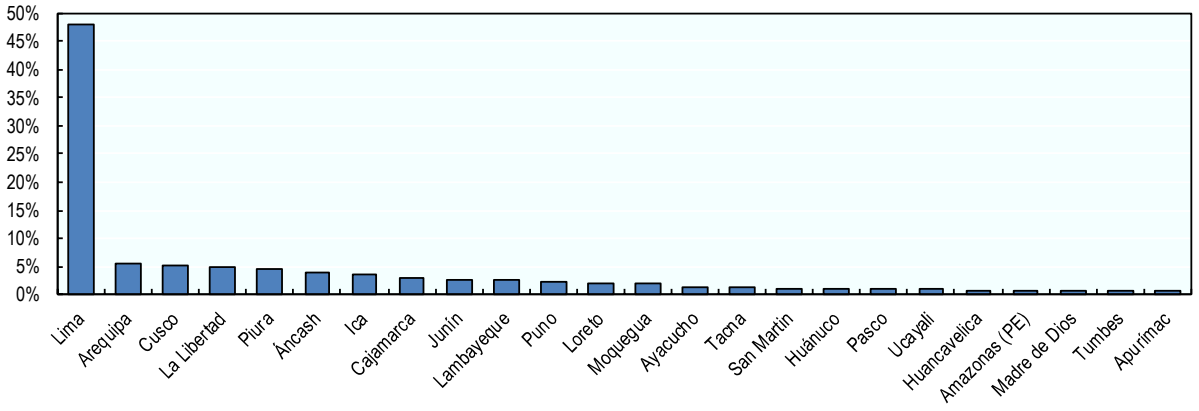
Figure 1.31. **Gross value added per employee: Level and growth by department, 2007-13**



Notes: GVA per employee (vertical axis) is computed as an average for the year 2012 and 2013; the change in GVA per employee (horizontal axis) is computed as growth between the 2007-08 average and the 2012-13 average. Two-year averages are used to smooth the effect of an unusually high or low value for one single year. Callao is included in the department of Lima.

Source: OECD analysis based on data from INEI.

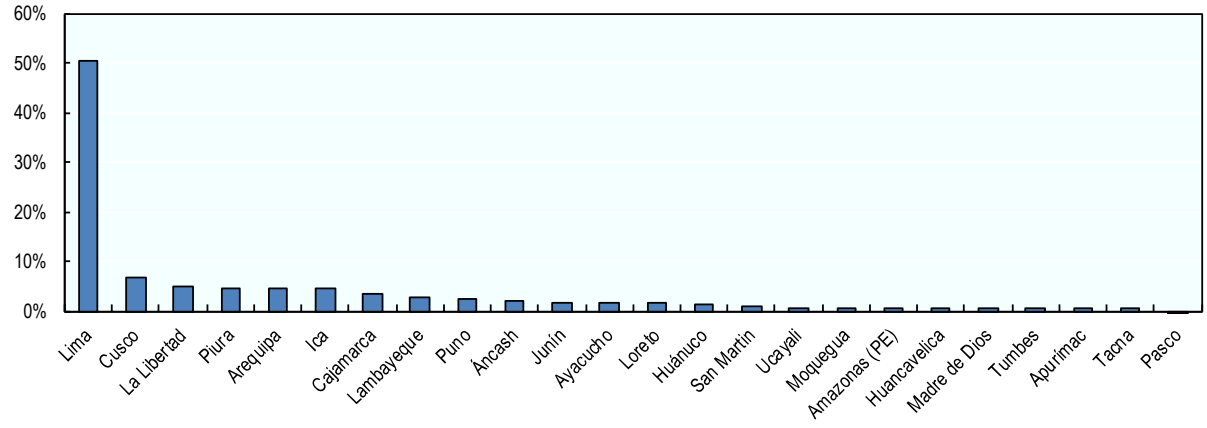
Figure 1.32. **Regional share of industry gross value added, 2013**



Source: OECD analysis based on data from INEI.

There is some alignment between the share of industry GVA and the contribution to growth (2007-13), particularly in terms of the importance of Lima. For some regions, their ranking in terms of contribution to growth is lower than their share of the national economy (Arequipa, Áncash, Moquegua, Tacna and Pasco) whilst some have been higher (Huánuco, Ucayali and Amazonas). There may be a number of reasons for this, including convergence (see Figure 1.33), population size and density, and framework conditions, which will be explored later in the chapter. Industry mix also influences regional performance, and this will be explored further in Chapter 2.

Figure 1.33. **Contribution to growth of industry gross value added, 2007-13**



Source: OECD analysis based on data from INEI.

Poverty and inequality is spatially concentrated within rural areas

Substantial progress has been made over the past two decades in reducing poverty in Peru. However, the rate of reduction in poverty has slowed in recent years and is now around 20%. There are strong urban-rural disparities present in the distribution of poverty, and the most recent statistics show that poverty has increasingly become a rural issue. Using the INEI definition of rural, in 2013 only 25% of the population was living in rural areas, while 75% was living in urban areas (INEI, 2014f). However, nearly half of the individuals in poverty were estimated to live in rural areas, indicating that individuals in rural areas were nearly twice as likely to be poor than individuals living in urban areas. Moreover, about 47% of the poor were living in the region of the Sierra, which also has a higher proportion of indigenous people (INEI, 2014f).

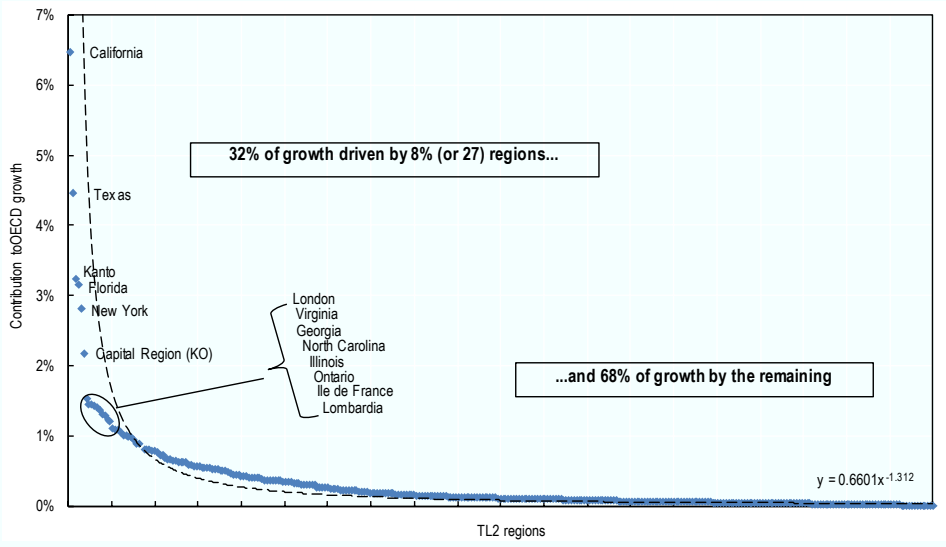
A disaggregation of poverty incidence by department and OECD regional typology shows that predominantly rural regions generally have a higher incidence of poverty. Table 1.6 shows the incidence of poverty in each area relative to the national level in 2013 (the most recent year for which poverty estimates at the municipal level were generated). In this table, values greater than 1 indicate a higher regional incidence compared to the national incidence of poverty. With the exception of Ica, Lima and Tumbes, predominantly rural regions are those with the highest concentration of poverty.

Box 1.7. Contributions of regions to aggregate growth in the OECD

Recent OECD studies examining contributions to aggregate growth find a general pattern among regions. Around one-third of aggregate growth is driven by very few regions. The remaining two-thirds, while not dominated by any single region, stems from the combined contribution.

Among OECD TL2 and TL3 regions, while the distribution in gross domestic product (GDP) and GDP per capita growth rates follows an approximately normal distribution, the regional contributions to aggregate growth follow a power law, with a coefficient around 1.2 (in absolute terms). This implies that Few-Large (FL) regions contribute disproportionately to aggregate growth whereas Many-Small (MS) individual regions contribute only marginally. Nevertheless, because the number of these smaller regions is very large and the decay of their contribution to growth is slow (generating a fat tail distribution), their cumulated contribution is around two-thirds of aggregate growth. For the period 1995-2007, only 2.4% of OECD TL3 regions contributed to 27% of OECD GDP growth, but the remaining 97.6% corresponds to 73% of growth. The distribution of growth rates by size follows a non-monotonic pattern, with the largest concentration of above average regional growth rates being concentrated for middle-sized regions. Overall, the great heterogeneity suggests that the possibilities for growth seem to exist in all types of regions.

Figure 1.34. **Contributions of TL2 regions to OECD growth, 1995-2007**



Functional urban areas (FUAs) also tend to follow this pattern. The 268 largest FUAs contributed on average to over half of the total OECD growth over the period 2000-08. The distribution of growth contribution also follows the shape close to a power-law distribution. The FL FUAs include Seoul Incheon (Korea), which appears in the first position, followed by New York (United States), London (United Kingdom), Los Angeles (United States), Tokyo (Japan) and Paris (France). Just the top 20 OECD FUAs contributed to 25% of the aggregate OECD growth during the period 2000-08. The remaining 92% of the OECD FUAs contributed to almost 75% of the aggregate growth, even if their individual contributions were below 0.5% of the GDP OECD growth (Figure 1.34).

Source: OECD (2011b), *OECD Regional Outlook 2011: Building Resilient Regions for Stronger Economies*, http://dx.doi.org/10.1787/9789264120983-en; OECD (2013a), *OECD Regions at a Glance 2013*, http://dx.doi.org/10.1787/reg_glance-2013-en.

Box 1.8. Territorial definitions and poverty: The case of Chile

The official definition delimiting urban and rural areas in Chile is constructed by the National Statistical Institute (INE). It classifies localities as either urban or rural. Urban localities are considered to be those inhabited by over 2 000 people, or by between 1 001 and 2 000 people when 50% or more of the economically active population is engaged in secondary or tertiary activities. As a special case, tourism and recreation centres which have at least 250 clustered dwellings but fail to meet the required population standard may also be classified as urban. According to the official definition, 87% of the Chilean population lives in urban areas.

There are a number of noticeable characteristics that emerge from this definition:

- the entire territory is classified dichotomously as either urban or rural
- the definition focuses primarily on urban characteristics defining the rural as the residual after urban is defined
- the definition does not differentiate among different types of rural areas in Chile
- it does not recognise mixed areas where there are strong urban and rural interactions.

The main shortcomings of this definition lie in its inability to capture basic elements of a modern rural economy, including: recognising areas of urban and rural interactions, differentiating among different types of rural areas, recognising and defining multiple types of rural towns and settlements, and finally, capturing rural areas attracting inhabitants with adequate human capital and skills – those rural areas which are emerging close to cities through improvements in accessibility and ICT connections that attract high-skilled dwellers wanting access to green spaces close to urban centres.

Poverty in Chile, based on figures employing the official definition of urban and rural areas, has been reported to be higher in rural areas (15%) than in urban ones (10.8%). These figures, however, are driven by the definition itself, which has a low population threshold and restrictive economic definition. Nevertheless re-estimating rural poverty rates based on a revised definition of urban and rural areas drawing on the OECD typology provides a very different picture. Poverty rates in urban areas (14%) are higher than nationally (13.3%) and in rural areas (9.3%).

Table 1.4. **Poverty rates among rural and urban municipalities based on revised definition 1, 2013**

	Rural	Urban	National
Official definition (INE)	15%	10.80%	14.40%
Revised definition (alternative 1)	9.30%	14.40%	13.30%
Change	-5.70%	3.60%	-1.10%

Note: The poverty baseline for rural areas (USD 48 613) is applied to rural households and the poverty baseline for urban areas (USD 72 098) is applied to urban households.

Source: Familia de la CASEN 2011 computations estimated by the Chilean Ministry of Economy.

Poverty appears to be a concern in mixed regions (urban and rural) displaying the highest poverty rates according to the second revised definition. Estimating poverty rates according to the second alternative definition which distinguishes between urban, mixed and rural regions (i.e. a simplified version of it) reveals a much higher poverty rate in mixed regions (16%) than in rural (9.2%) and in urban regions (13.9%). This estimate applies the urban poverty threshold (USD 72.098) to urban areas and the rural poverty line (USD 48.613) to rural and mixed areas.

Box 1.8. **Territorial definitions and poverty: The case of Chile** (*continued*)

Table 1.5. **Poverty rates among rural and urban municipalities based on revised definition 2, 2013**

	Rural	Mixed	Urban	National
Official definition (INE)	15%	..	10.80%	14.40
Revised definition (alternative 2)	9.20%	16%	13.90%	13.62%

Note: The poverty baseline for rural areas (USD 48 613) is applied to rural households and households living in mixed areas. The poverty baseline for urban areas (USD 72 098) is applied to urban households.

Source: Familia de la CASEN 2011 computations estimated by the Chilean Ministry of Economy.

Source: OECD (2014b), *OECD Rural Policy Reviews: Chile 2014*, http://dx.doi.org/10.1787/9789264222892-en.

Table 1.6. **Estimated concentration of poverty by department and OECD region typology, 2013**

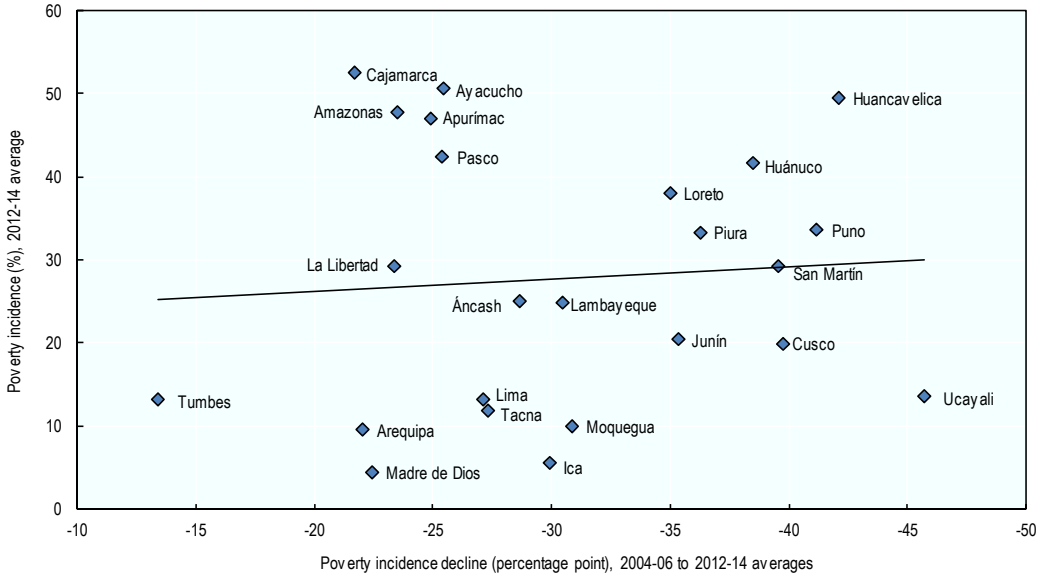
Department	Predominantly urban	Intermediate	Predominantly rural	Total
Amazonas	…	1.2	2.0	1.9
Áncash	…	0.6	1.1	1.0
Apurímac	…	1.2	2.0	1.8
Arequipa	0.3	…	1.0	0.5
Ayacucho	…	1.4	2.4	2.0
Cajamarca	…	1.6	2.6	2.1
Callao	0.7	…	…	0.7
Cusco	0.2	…	1.3	0.9
Huancavelica	…	…	1.8	1.8
Huánuco	…	1.3	1.9	1.7
Ica	…	0.3	0.2	0.3
Junín	0.5	1.0	1.1	0.9
La Libertad	0.7	1.2	2.0	1.2
Lambayeque	0.7	…	1.3	0.9
Lima	0.6	0.5	0.6	0.6
Loreto	…	…	1.4	1.4
Madre de Dios	…	…	0.1	0.1
Moquegua	0.3	…	0.6	0.4
Pasco	…	…	1.8	1.8
Piura	…	1.2	1.8	1.4
Puno	0.7	1.1	1.9	1.5
San Martín	0.9	…	1.3	1.2
Tacna	…	…	0.6	0.6
Tumbes	0.6	0.5	0.5	0.5
Ucayali	…	…	0.5	0.5
Total	0.6	1.1	1.5	1.0

Notes: The concentration of individual in poverty (as measured by INEI) is computed as the percentage of individuals in poverty at the regional level divided by the percentage of individuals in poverty at the national level. Hence, values lower than 1 indicate that the percentage in poverty in the region is lower than the national share; values greater than one indicate that the regional percentage is higher than the national percentage.

Sources: OECD analysis based on data from INEI.

In spite of a substantial reduction of poverty at the national level, some of the departments with the highest incidence of poverty have recorded relatively modest improvements. A group of five departments maintains a relatively high incidence of poverty in the most recent years (2012-14 average), while recording relatively modest decline in poverty incidence over the past decade. These are Cajamarca, Amazonas, Ayacucho, Apurímac and Pasco.

Figure 1.35. **Poverty incidence and change by department, 2004-14**



Notes: Poverty incidence (vertical axis) is computed as the average for 2012-14. The decline of poverty incidence (horizontal axis) is the percentage point difference between the 2004-06 average and the 2012-14 average. Three-year averages are used to smooth the effect of an unusually high or low value for one single year. Callao is included in the department of Lima.

Source: OECD analysis based on INEI data.

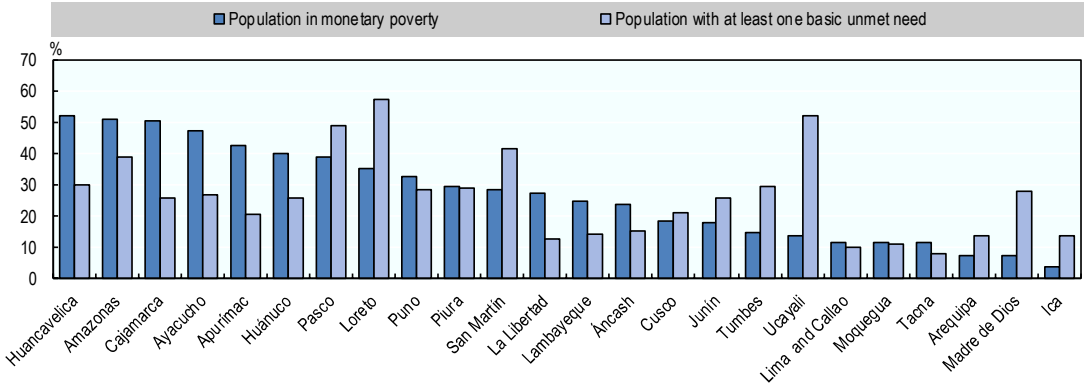
Analysis of poverty also needs to take account of other dimensions of inequality beyond income and consumption possibilities. These other dimensions of well-being include housing, health and education, safety, and the natural environment, which are captured by the OECD Better Life Index. Peru has developed a composite indicator to measure the number of unsatisfied basic needs (UBNss) of the population. Basic needs are defined as the quality of the housing, access to improved water and sanitation, enrolment in education amongst the children of the household, and level of per capita disposable income.

Despite improvements in reducing levels of poverty at a regional level, some areas still lag behind in terms of UBNs. Departments such as Loreto or Ucayali show levels above 50% of the households with at least one UBNss. In contrast, there are nine regions with less than 15% of their inhabitants with UBN. A more detailed look at UBNs per region shows that access to water and sewage are the most prevalent unsatisfied needs.

In sum, regions are central to the development challenges and opportunities facing Peru. Regional economic outcomes have been diverse, which largely reflects the shifts in population toward cities, the relative weight of extractive industries within the regional economy, and levels of poverty, particularly in rural areas. Inclusive growth may be a

challenge for Peru in the medium term. It appears that progress in reducing poverty has diminished as it becomes more spatially concentrated within an overall trend of convergence between regions. A revised territorial definition for Peru will allow policy makers to have a clearer view of these growth dynamics and where they are occurring across the country. The following section will examine the growth factors and bottlenecks at a regional level.

Figure 1.36. **Share of population in monetary poverty and share of population with at least one unsatisfied basic need, 2014**



Note: Basic needs are defined as the quality of the housing, access to improved water and sanitation, enrolment in education amongst the children of the household, and level of per capita disposable income.

Source: OECD elaboration based on INEI data.

Growth factors and bottlenecks at a regional level

Recent OECD analysis identifies several key drivers of growth that are common to all OECD regions. These drivers, also called "framework conditions", are largely endogenous to the region and include agglomeration effects, sectoral specialisation, human capital, accessibility and infrastructure, innovation and institutional factors. Regions vary in their mix of assets and competitive advantages. Nonetheless, the OECD studies find evidence that sustainable growth rates only occur when regions mobilise their endogenous assets instead of depending upon transfers and subsidies.

The fluctuations in economic growth associated with resource-based economies are evident at a regional level. A larger share of GVA in mining (and to some extent in fisheries) is associated with increased GVA growth fluctuations over the period 2007-13. In contrast, a larger share of GVA in agriculture and service sectors tends to have a stabilising effect on the growth trajectory of a department. This pattern highlights the risk associated with some resource-dependent communities, particularly those reliant on extractive industries.

The mining industry is concentrated in few departments where it represents a large share of the regional economy. In 2013, four departments (Áncash, Arequipa, Cajamarca and Cusco) produced slightly over 50% of the national GVA in mining. Although mining was important for regional growth outcomes, it is not a necessary condition for high regional growth performance.

Box 1.9. **Endogenous drivers of regional growth**

OECD analysis examining the determinants of growth at the regional level identifies a number of critical drivers, including infrastructure, human capital, innovation and agglomeration (OECD, 2009). Perhaps the most important findings are, first, that the key factors are largely endogenous, i.e. they are things policy can address (as opposed to natural endowments or physical geography); and, second that these endogenous factors complement each other, suggesting the need for an integrated approach.

- Improvements in infrastructure at the regional level do not automatically lead to higher growth. Such investments need to be combined with improvements in education and innovation. This suggests that it could be useful to co-ordinate policies for building human capital, enhancing innovation and providing physical infrastructure. The effects of infrastructure investment appear to last around three to five years.
- Human capital – both the presence of high-skilled workers in the regional workforce and the absence of low-skilled workers – appears to be the most robust support of growth in all types of regions. The effects of improvements in human capital also appear to last around five years.
- The third critical element is innovation, insofar as it can be measured by focusing mainly on the science and technology components of innovation for which data are available. Innovation appears to produce positive effects over a longer time span, approximately ten years.
- Economies of agglomeration also have a positive impact on growth, although they are neither necessary nor sufficient to ensure sustained growth rates. Both the fact that only 45% of metro regions grew faster than the national average during 1995-2005 and the trend towards divergence among urban regions implies that agglomerations as complex systems work more efficiently in some cases and less efficiently in others.

What is clear in these studies is the importance of endogenous elements for growth at the regional level, instead of depending on transfers and subsidies. A follow-up study (OECD, 2012) combining quantitative analysis and 23 qualitative case studies reinforces the earlier results and in addition it finds evidence highlighting the importance of policy and institutional factors. The evidence gathered in this publication confirms the benefits of the new regional paradigm to OECD member countries:

- Investing in less-developed regions makes good economic sense, given their growth potential. Policies targeted at less-developed regions should not merely be advocated on social grounds; these regions have a great deal to contribute to national growth as long as their own assets are nurtured.
- A pro-growth, rather than a subsidy-based, policy stance is the most beneficial and sustainable approach. In the long run, it also helps build a fairer society. It can avoid dependency, rent-seeking behaviour and high remedial costs in the future.

The combined analysis points to a number of policy levers to enhance the effectiveness of regional policy:

- Policies that increase the skills of low-skilled workers may be as important for growth as policies aimed at expanding higher education. The “drag” effect on growth of a large low-skilled population appears as one of the most critical factors in less-developed regions.
- Infrastructure does not appear to be the binding constraint for the great majority of regions. Thus polices targeting infrastructure are not usually the most effective tools for strengthening growth in underdeveloped regions. Yet, given that, the gains from improvements in infrastructure are higher (at the margin) in important instruments if they co-ordinate with other policies.
- Innovation is not a bottleneck for growth but appears to be a critical pillar for advanced regions.

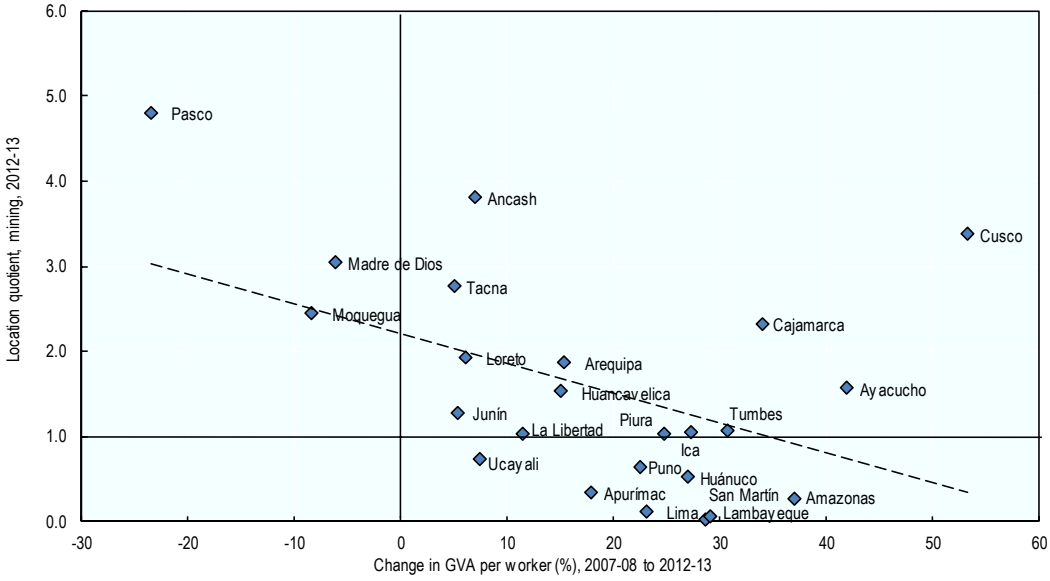
Box 1.9. **Endogenous drivers of regional growth** (*continued*)

- How policy makers frame the challenges they face does matter. The case studies suggest that a self-conscious shift towards a growth-oriented policy framework is very often a part of the recipe for success. As long as policy makers focus on exogenous sources of support for a region ("levelling up" policies), growth is unlikely to take off and actors are likely to focus on the appropriation of rents from external sources.
- Institutional factors are also critical. Formal and informal institutions that facilitate negotiation and dialogue among key actors in order to mobilise and integrate them into the development process are vital, as are those that enhance policy continuity. At times, the challenge is to create institutions that strengthen the region's "voice" in dealing with other regions and countries and those that foster linkages among the private, public and education sectors.

In sum, this study calls for including geography and place-based factors into the structural policy agenda to increase the growth potential of countries. In addition to efficiency, place-based policies also have the capacity to create a more inclusive and fairer society through their ability to mobilise local actors and ensure they are involved and engaged in the development process.

Sources: OECD (2009), *How Regions Grow: Trends and Analysis*, http://dx.doi.org/10.1787/9789264039469-en; OECD (2012), *Promoting Growth in all Regions*, http://dx.doi.org/10.1787/9789264174634-en.

Figure 1.37. **Specialisation in mining and growth in gross value added**



Notes: Mining includes mining oil and gas (*extracción de petróleo, gas y minerales*); specialisation is measured by the location quotient, that is the share of gross value added (GVA) in mining in the region divided by the share of GVA in mining in Peru. A value greater than 1 indicates relative specialisation in mining.

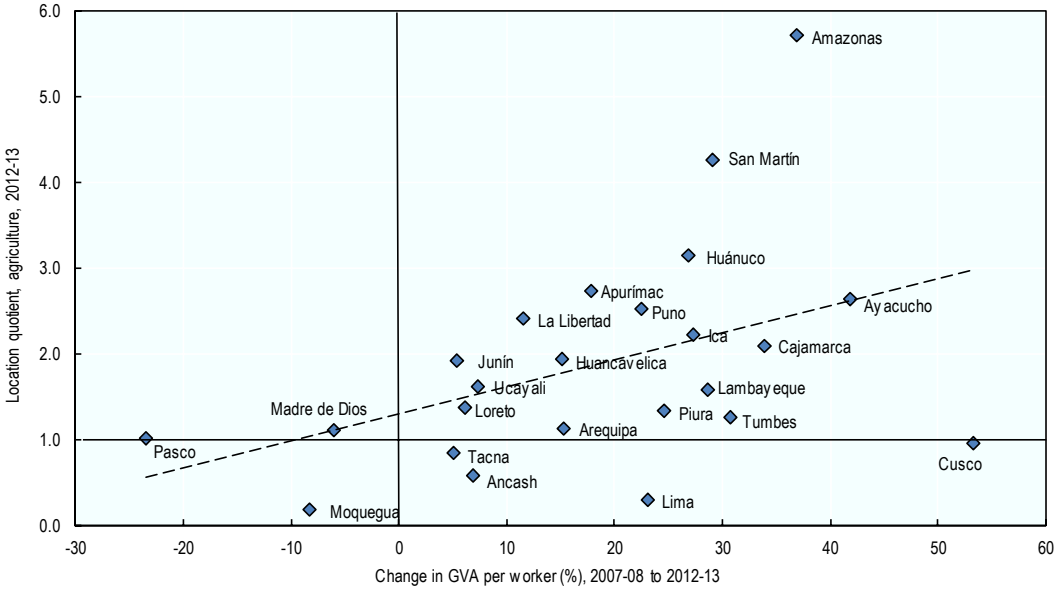
Source: OECD analysis based on data from INEI.

It is important to note that the mining industry is concentrated in fewer regions and is associated with more growth volatility due to different phases (investment and production), and changing market conditions. Some regions have also performed relatively poorly in spite of a higher concentration of mining activity and price increases.

Factors contributing to this might be less diversity in the local economy, the low amount of employment in the mining industry, the negative impact of mining on agriculture (e.g. competition for water resources) and the lack of integration of local firms into resource value chains.

Agriculture constitutes 6% of national GVA and is an important rural export industry. There is a positive relationship between the concentration of the agricultural sector in the regional economy in 2007 and the pattern of growth experience by the department between 2007 and 2013.

Figure 1.38. **Specialisation in agriculture and growth in gross value added**



Notes: Agriculture includes agriculture, livestock, hunting and forestry (*agricultura, ganadería, caza y silvicultura*); specialisation is measured by the location quotient, that is the share of gross value added (GVA) in agriculture in the region divided by the share of GVA in agriculture in Peru. A value greater than 1 indicates relative specialisation in agriculture.

Source: OECD analysis based on data from INEI.

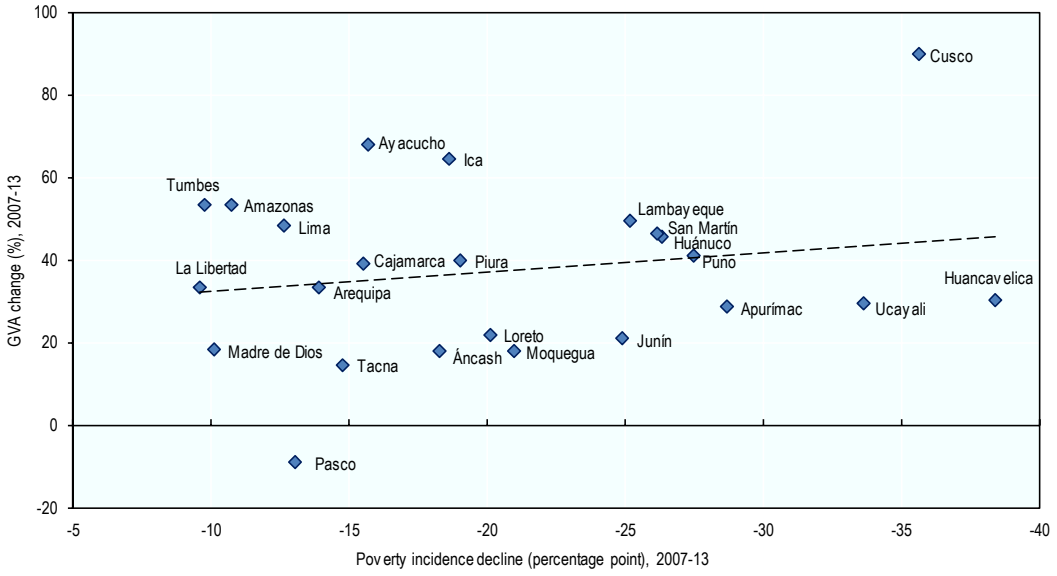
A stronger relationship is evident because agricultural production is spread across a broader range of regions within Peru. Over a quarter of the labour force is also employed in agriculture, which means the local economic impacts would likely be higher. Part of these trends might also be explained by the capacity of this industry to diversify its sub-sectoral composition. Over the last two decades, traditional agricultural commodities (cotton and sugar) have been replaced by an export-oriented non-traditional agriculture sector (comprising horticultural, fruits and specialty crops).

Poverty reduction is becoming more difficult, and the growth is not necessarily diffusing to disadvantaged groups and places

At the departmental level there is not a clear relationship between overall economic performance and change in poverty incidence. High economic growth at the department level does not necessarily translate into declines of poverty incidence. Departments like Huancavelica and Ucayali managed to reduce substantially the incidence of poverty with

a relatively average increase in GVA. In contrast, departments such as Cajamarca, Amazonas and Ayacucho had a substantially smaller reduction in poverty in spite of better GVA growth performance.

Figure 1.39. **Economic growth and poverty change by department**



Notes: GVA growth (vertical axis) is computed as growth of gross value added (GVA) in constant terms between 2007 and 2013. Poverty decline (horizontal axis) is the percentage point difference between poverty incidence in 2013 and 2007. Callao is included in the department of Lima.

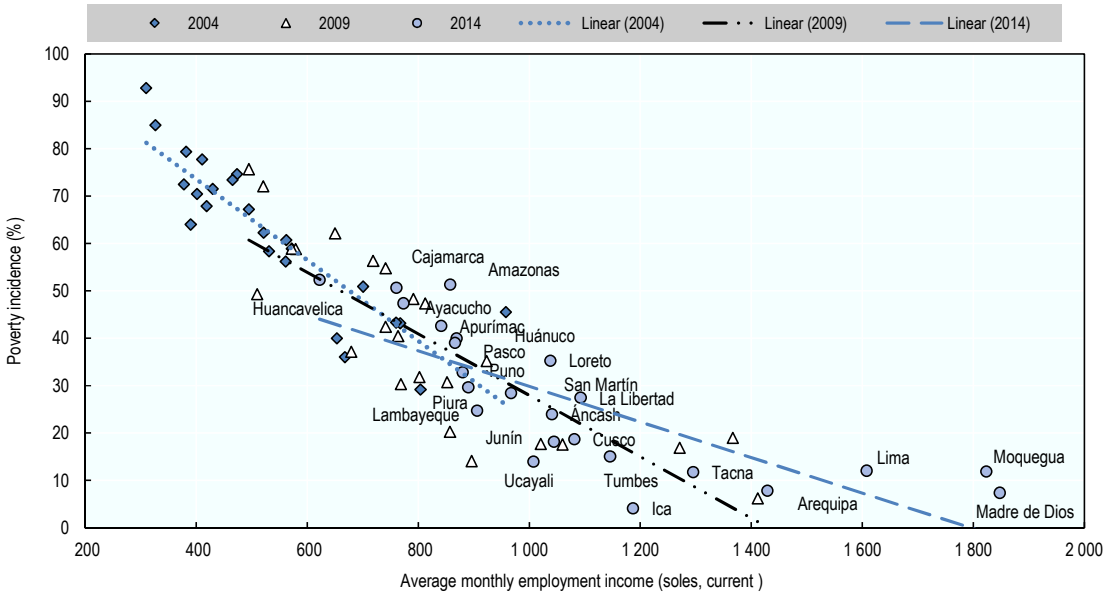
Source: OECD analysis based on data from INEI.

The relationship between increasing income levels and poverty reduction also seems to weaken as average incomes rise. At higher average income level (in current terms), the dispersion of poverty conditions increases, suggesting that beyond a certain limit changes in the average (income) are less likely to be diffuse across the population and specifically to reach the most disadvantage groups. For instance, in 2014, the seven departments with the highest average income (roughly between PEN 1 100 and PEN 1 850) had a poverty incidence fluctuating in the range of 15% to 7%. This may reflect the concentration of extreme poverty in population groups and places, and the complex barriers they face to participating in the economy.

Human capital development will be important for addressing the challenge of inclusive growth

Increasing educational attainment is associated with higher productivity at a country and regional level. Human capital appears to be the most important factor influencing the performance of OECD regions. Both the presence of highly skilled workers and the absence of low-skilled workers have a positive influence on regional growth. Education and skills is also important for inclusive growth and an important element in strategies to reduce poverty and inequality.

Figure 1.40. **Incidence of poverty and average employment income by department**

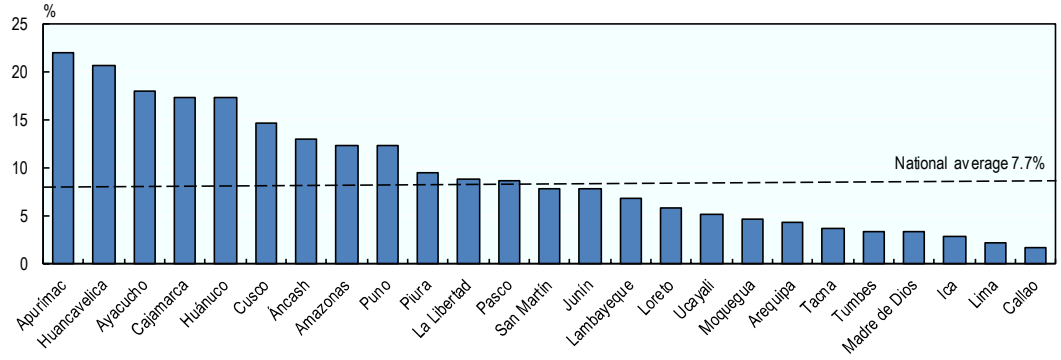


Notes: Departmental names are reported only for the reference year 2014 (blue circles). Lima includes the department of Lima and Callao. Income data refer to "*ingreso promedio mensual proveniente del trabajo*"; income is in current terms.

Source: OECD analysis based on data from INEI.

In terms of the low-skilled component of the workforce, the proportion of people aged over 15 who are illiterate varies significantly by region with five regions having twice the national average (Apurímac, Huancavelica, Ayacucho, Cajamarca and Huánuco). These poor outcomes are associated with higher levels of poverty and the proportion of the population living in rural areas. Individuals living in predominantly rural regions were nearly five times more likely to be illiterate than individuals living in predominantly urban regions. Predominantly rural regions in some departments are performing better than the average rural region or even predominantly urban and intermediate regions of other departments (for example, Ica and Tumbes, and to a lesser extent also Arequipa).

Figure 1.41. **Illiteracy rate by department, 2007**



Source: OECD elaboration based on INEI data.

Table 1.7. **Illiteracy rate by department and OECD regional typology, 2007**

Department	Predominantly urban	Intermediate	Predominantly rural	Total
Amazonas	...	8.2%	13%	12.4%
Áncash	...	10.6%	13.4%	13%
Apurímac	...	13.8%	24.6%	22.1%
Arequipa	3.2%	...	7.3%	4.3%
Ayacucho	...	12.9%	21.2%	18.1%
Cajamarca	...	15.7%	18.6%	17.4%
Callao	1.6%	...	...	1.6%
Cusco	4%	...	19.6%	14.7%
Huancavelica	...	...	20.7%	20.7%
Huánuco	...	17%	17.4%	17.3%
Ica	...	2.9%	2.8%	2.9%
Junín	5.9%	8%	9%	7.8%
La Libertad	3.5%	6.7%	16%	8.8%
Lambayeque	4.8%	...	11.2%	6.8%
Lima	1.9%	5.8%	4.2%	2.1%
Loreto	...	...	5.9%	5.9%
Madre de Dios	...	...	3.3%	3.3%
Moquegua	2%	...	6.4%	4.7%
Pasco	...	...	8.7%	8.7%
Piura	...	7.1%	12.8%	9.6%
Puno	5.8%	11.9%	14.6%	12.4%
San Martín	3.6%	...	9.2%	7.9%
Tacna	...	...	3.7%	3.7%
Tumbes	3.8%	3.3%	3.6%	3.4%
Ucayali	...	...	5.1%	5.1%
Peru	2.6%	9.9%	12.5%	7.7%

Notes: ..: not available. Due to the availability of data, this table is based on total population counts instead of population 15 years and over. Hence, percentages are slightly lower than official rates.

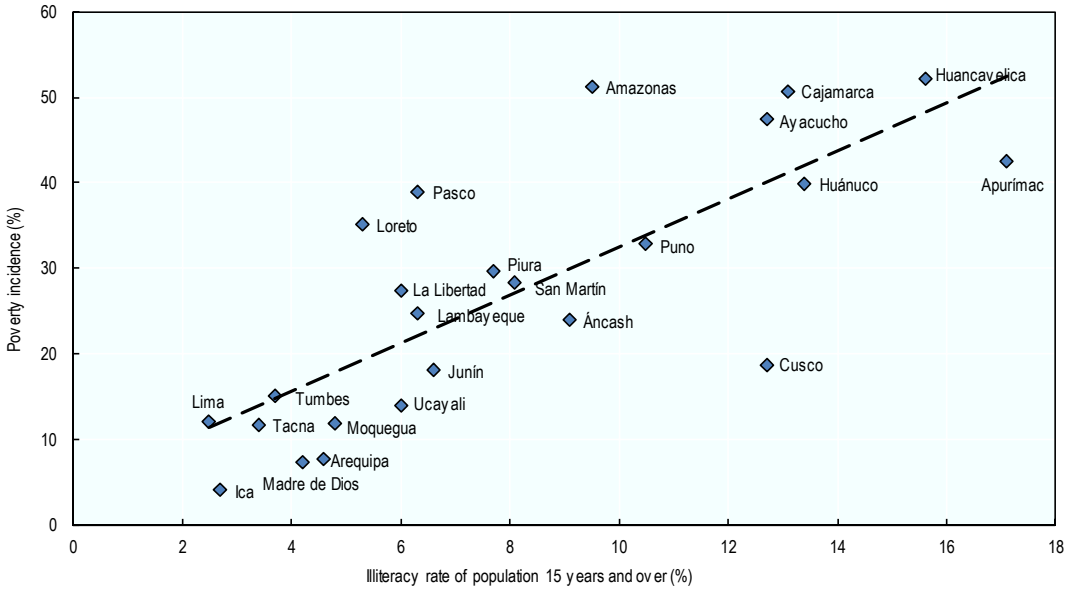
Source: OECD analysis based on data from INEI.

At the departmental level, inequalities in illiteracy rates have persisted, and correlate with the incidence of poverty. The departments with a higher incidence of poverty (over 40%) are those showing the higher illiteracy rates (close to or above 10%). In contrast, departments with lower illiteracy rates generally have less than 20% poverty incidence.

Higher levels of GDP per capita and productivity are usually correlated with the share of highly educated workers. The regions with the highest proportion of people with higher educational attainment are also generally the regions with the highest GVA per worker. This includes the regions of Moquegua, Tacna, Arequipa, Lima, Madre de Dios and Ica. The exceptions are the regions of Pasco and Áncash. Both these regions benefit from other economic drivers, such as specialisation in mining activities and proximity to Lima.

The percentage of people with a higher education is typically larger in predominantly urban regions. This pattern is normally observed across OECD countries. However, the regional educational attainment differentials in Peru are large by OECD standards. Individuals living in predominantly urban regions were approximately three times more likely to report higher educational attainments than individuals living in predominantly rural regions.

Figure 1.42. **Illiteracy rate and poverty incidence by department, 2014**



Source: OECD analysis based on data from INEI-ENAHO.

Box 1.10. **Informality is more prevalent in rural areas**

Peruvian regions generally perform well in relation to key labour market indicators. However, these statistics should be interpreted with caution as they include both formal and informal sectors. As a result, employment rates are high and unemployment is low. Estimated employment rates are generally over 95% across all departments, while unemployment rates are less than 4% in most departments. The exceptions are departments with the lowest shares of informal sector employment, such as Callao, Lima and Moquegua. These are also the departments that are generally performing better on most of the other economic indicators.

At a national level it is estimated that close to three-quarters of the labour force is engaged in informal employment. This percentage varies significantly across regions of Peru, with five departments reporting over 90% of informal employment (Apurímac 90.8%, Cajamarca 91%, Puno 91.3%, Ayacucho 91.6% and Huancavelica 94.6%) and six departments reporting less than 70% (Callao 57.1%, Lima 60.6%, Ica 63.9%, Arequipa 65.4%, Moquegua 66.5% and Tacna 69.4%).[1]

Table 1.8. **Informal employment trends in Peru's regions**

	2008	2009	2010	2011	2012	2013	% change
National	79.1%	77.2%	77.1%	75.0%	74.3%	73.7%	-6.84%
Lima metropolitan	60.4%	56.8%	58.0%	54.3%	54.6%	53.7%	-11.04%
Rest of country	88.6%	87.4%	86.8%	85.7%	84.6%	84.1%	-5.07%
Urban	72.1%	69.6%	69.9%	67.4%	66.8%	66.5%	-7.82%
Rural	96.5%	96.3%	96.1%	96.1%	95.9	95.4%	-1.17%

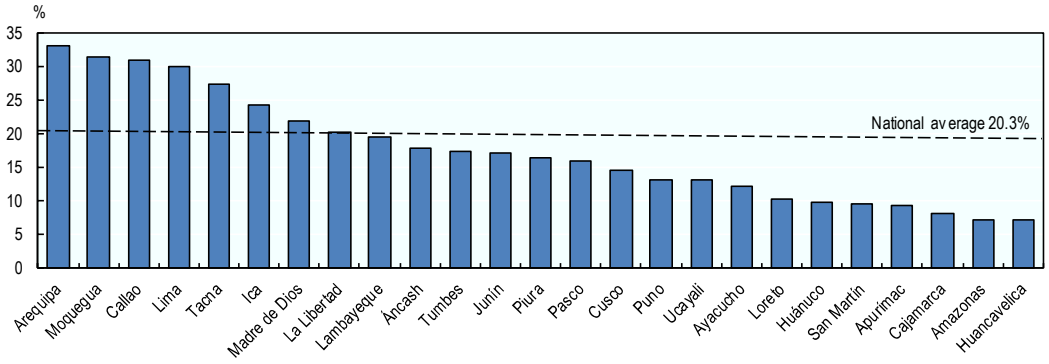
Rates of informality are much higher in rural areas with a higher proportion of the workforce in the agricultural and fishery sectors. The agricultural sector also has low productivity with a comparatively high proportion of the labour force employed in it. Initiatives to lift agricultural productivity and address informality will benefit the country in the longer term.

Note: 1. See: www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1154/index.html.

Sources: INEI (n.d.), http://www.inei.gob.pe; OECD (2015e), *Multi-dimensional Review of Peru: Volume 1. Initial Assessment*, http://dx.doi.org/10.1787/9789264243279-en.

As observed for illiteracy rates, however, some of the departments entirely or largely classified as predominantly rural regions (by OECD standards) outperform many of the intermediate or predominantly urban areas (within the same department or in another department). Ica, Arequipa and Moquegua are examples of this unique regional combination, suggesting that even smaller population centres can lead in terms educational attainments and human capital development.

Figure 1.43. **Proportion of the population with a higher education (*educación superior*) attainment, by department (2007)**



Source: OECD elaboration based on data from INEI.

Table 1.9. **Individuals with a higher education (*educación superior*)**

By department and OECD regional typology, 2007

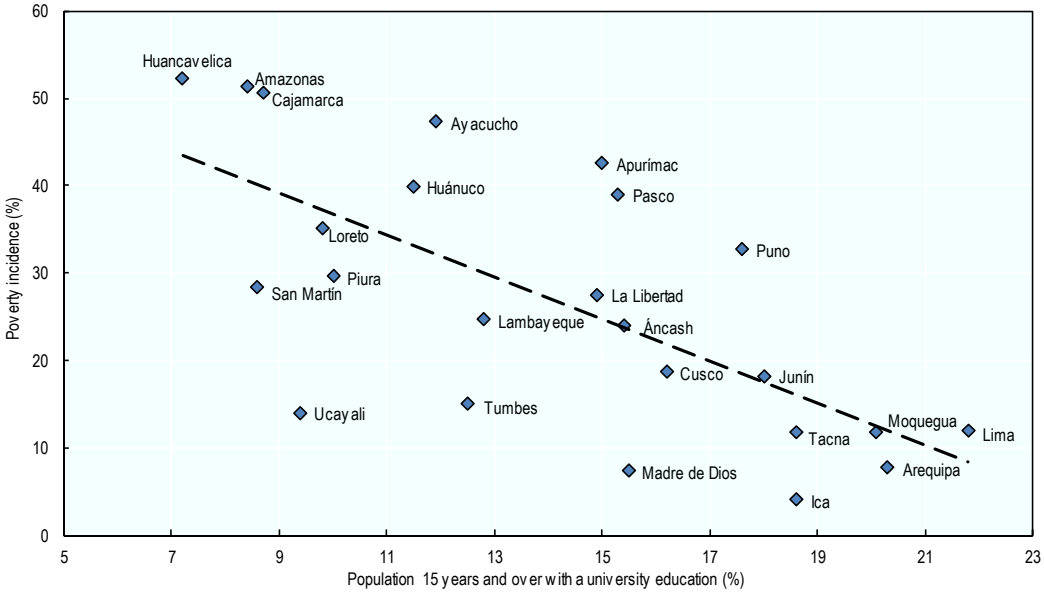
Department	Predominantly urban	Intermediate	Predominantly rural	Total
Amazonas	...	14.8%	6.1%	7.2%
Áncash	...	25.3%	16.7%	17.9%
Apurímac	...	17.5%	6.9%	9.4%
Arequipa	37.2%	...	20.2%	33%
Ayacucho	...	18.8%	8%	12.1%
Cajamarca	...	12.4%	5.2%	8.2%
Callao	30.9%	...	...	30.9%
Cusco	31%	...	7.2%	14.6%
Huancavelica	...	...	7.2%	7.2%
Huánuco	...	15.9%	6.2%	9.7%
Ica	...	20.8%	27.2%	24.3%
Junín	25.2%	16%	12%	17.2%
La Libertad	29.3%	19.5%	9.1%	20.3%
Lambayeque	22.9%	...	11.7%	19.4%
Lima	30.8%	16.2%	20.2%	29.9%
Loreto	...	...	10.3%	10.3%
Madre de Dios	...	...	21.9%	21.9%
Moquegua	33.6%	...	29.9%	31.4%
Pasco	...	...	15.9%	15.9%
Piura	...	20.6%	10.7%	16.4%
Puno	21.6%	20%	7.8%	13.1%
San Martín	18.5%	...	7%	9.6%
Tacna	...	...	27.4%	27.4%
Tumbes	12.8%	19.1%	12.6%	17.3%
Ucayali	...	...	13.1%	13.1%
Peru	30.1%	18.3%	11.6%	20.8%

Notes: ..: not available. Percentages are computed using total population, instead of population 15 years of age or more.

Source: OECD analysis based on data from INEI.

At a departmental level, the relationship between higher educational attainments and poverty incidence mirrors that observed for illiteracy rates. The departments of Lima, Arequipa, Moquegua, Ica and Tacna are those presenting the largest share of population with a university education (above 18%) and are also the regions with a lower incidence of poverty in 2014.

Figure 1.44. **University education and poverty incidence by department, 2014**



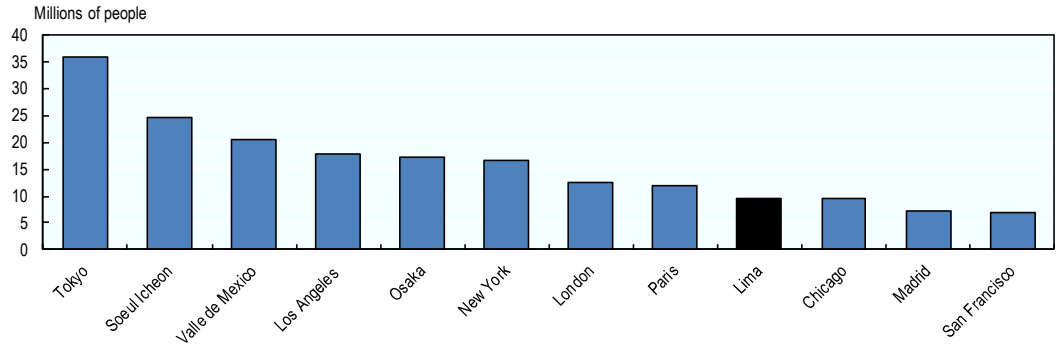
Source: Based on data from INEI-ENAHO.

Human capital development continues to be a challenge for Peru. Illiteracy rates are still high, associated with poverty and concentrated in the rural areas of a small number of regions (Apurímac, Huancavelica, Ayacucho, Cajamarca and Huánuco). These regions have also larger shares of indigenous population, mainly Quechua speaking, who tend to have lower educational attainment. Rural areas are also affected by higher levels of informality. This suggests there is a need to boost the productivity and competitiveness of rural industries, and in combination with strategies to develop skills, address informality and alleviate poverty. Highly skilled workers are a mirror image of these outcomes and are concentrated in predominantly urban areas and associated with higher productivity regions. Making Peru's cities work better will be crucial in delivering a high wage and value-added economy.

Lima is a major contributor to Peru's economy and is performing relatively well in an international context

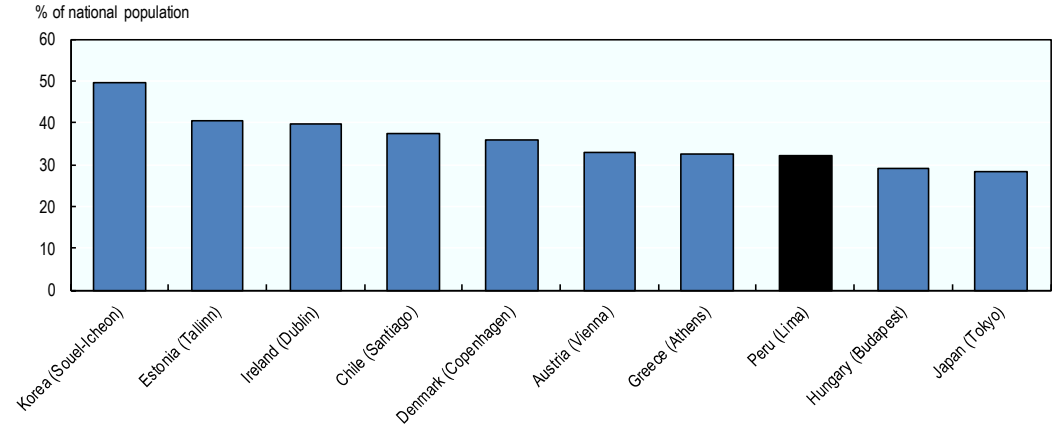
The metropolitan area of Lima[5] dominates the urban system of Peru, and is critical to the performance of the national economy. Lima is a large city by OECD standards and is the ninth-largest when compared with OECD countries. Nearly one-third of the population of the country lives in the metropolitan area of Lima. Some OECD countries have a higher proportion, including Korea (Seoul-Icheon), Ireland (Dublin) and Denmark (Copenhagen), which represent between 49.5% and 40% of their national populations.

Figure 1.45. **Lima compared to the largest OECD metropolitan areas, 2014**



Source: OECD Metropolitan database, http://dx.doi.org/10.1787/region-data-en and World Bank, Population in largest city, http://databank.worldbank.org/data/reports.aspx?source=2&Topic=16.

Figure 1.46. **Percentage of the population of the largest metropolitan area of the national population, Peru compared to select OECD countries, 2014**

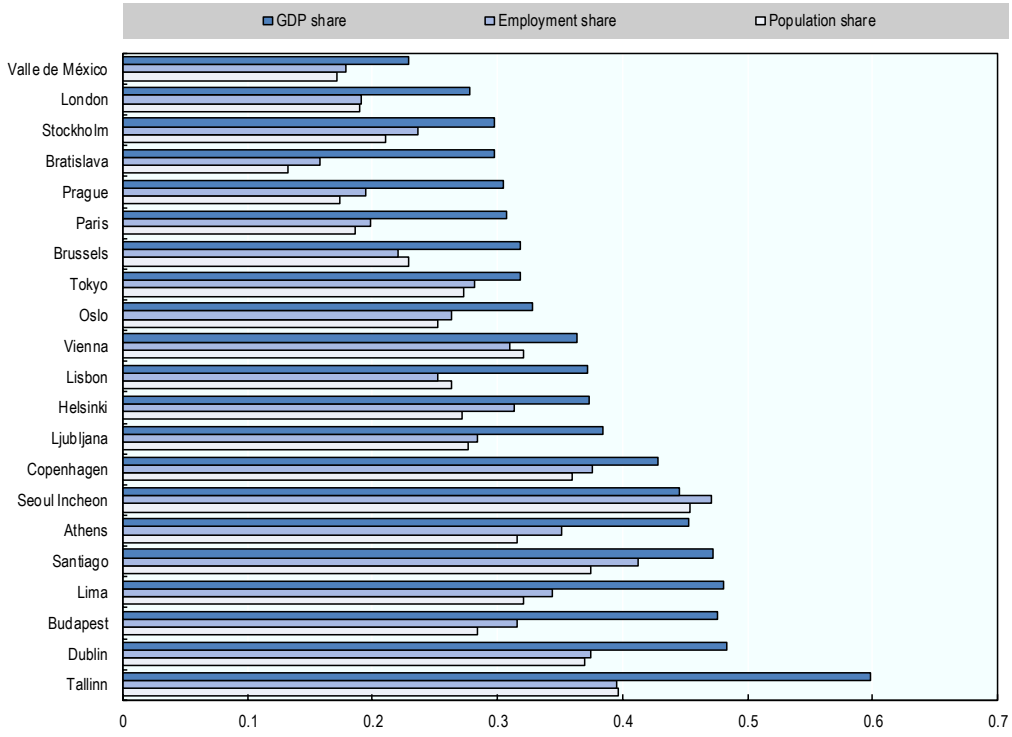


Source: OECD Metropolitan database, http://dx.doi.org/10.1787/region-data-en and World Bank, Population in largest city, http://databank.worldbank.org/data/reports.aspx?source=2&Topic=16.

Given that Lima concentrates a significant percentage of the country's population, it is not surprising that it also plays a significant role in the national economy. Lima has 34.4% of the country's jobs and 48.1% of GDP. This share of national GDP is similar to OECD countries such as Ireland (Dublin), Hungary (Budapest), Chile (Santiago), Greece (Athens) and Korea (Seoul-Incheon). In terms of the major city producing a higher share of GDP compared to the share of national population, Peru is performing better than Chile (Santiago), and similar to countries such as Ireland (Dublin) and Greece (Athens).

The concentration of high-value producer services in Lima is an important factor in explaining its contribution to the national economy. Compared to its share of the national economy (48%), Lima has a higher share of information and communications (68%); professional, scientific and technical (69%); and financial and insurance services (80%). This is reflective of the role that Lima plays in the national economy in terms of high-level business and administrative services, and transport and logistics.

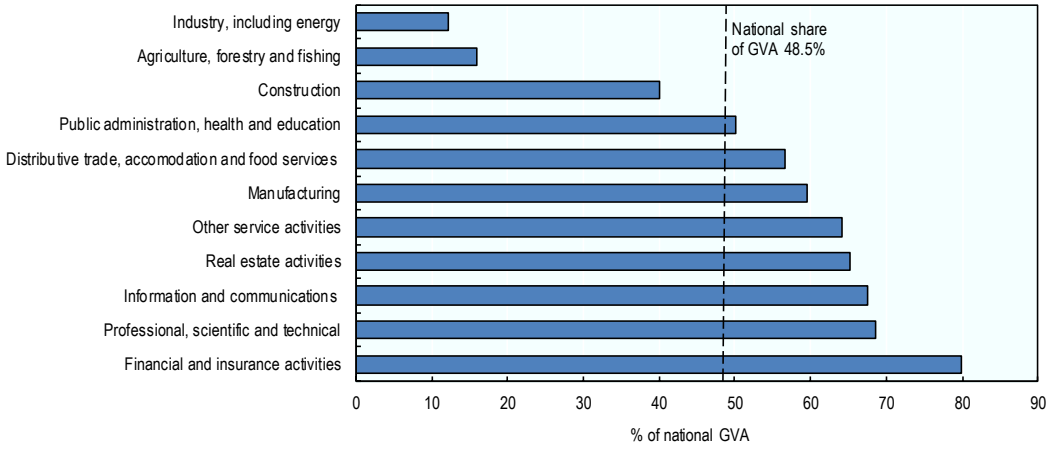
Figure 1.47. **Largest city's percentage of national population, employment and GDP, 2010**



Notes: The data for Lima include the department of Lima and the Constitutional Province of Callao. The data are from 2013 and are gross value added.

Source: OECD Metropolitan database, http://dx.doi.org/10.1787/region-data-en and INEI, http://www.inei.gob.pe.

Figure 1.48. **Proportion of gross value added in Lima (by sector) compared to the contribution of Lima to the national economy**

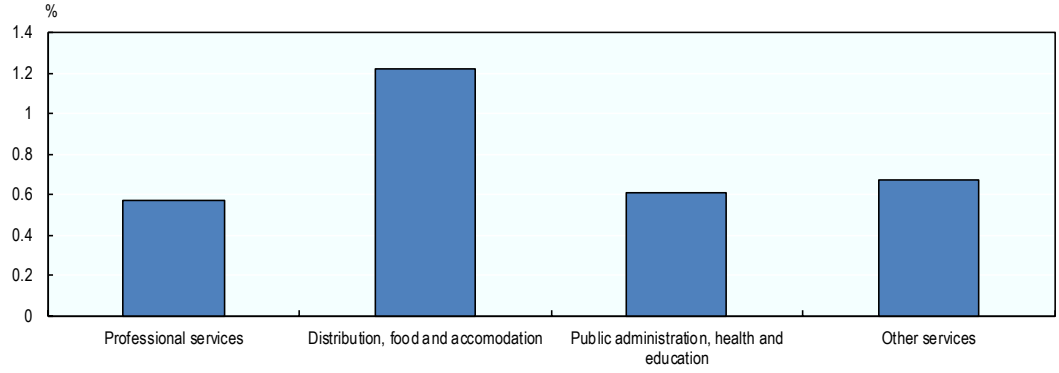


Source: OECD analysis based on data from INEI.

However, Lima also demonstrates higher productivity than other regions in Peru across the services sector. Differences in productivity between Lima and the rest of the

country are apparent for high- and low-value services. In the period 2008-13, annual growth in GVA averaged 7% whilst growth in population averaged 1%, which indicates the relatively strong productivity performance of firms in Lima.

Figure 1.49. **Percentage difference in labour productivity for select services between Lima and the rest of the country, 2014**



Source: OECD analysis based on data from INEI.

The economic performance of the Lima-Callao metropolitan area is critical to the growth of the national economy. It is the location of the vast majority of Peru's high-value services, which reflects its role as an international gateway for the country. The productivity of the services sector is significantly higher in Lima-Callao than in the rest of the country, and the economy of the city is performing relatively well internationally. Although these trends are positive, it also indicates weaknesses in other regions of the country, and most likely the underperformance of second-tier cities.

Infrastructure and accessibility are important for enhancing urban-rural linkages

Improvements to transport and telecommunications infrastructure can reduce transport costs for firms and workers. Infrastructure and accessibility – both internally and to external markets – are important for Peru. The country is large with a challenging topography with export gateways and population concentrated in Lima.

The backbone of the Peruvian transport infrastructure is the road network. The national highway network has improved in recent decades but in terms of quality and coverage still lags behind many other Latin American countries (IADB, 2006). Jorge Chavez International Airport is the main international gateway for passenger traffic with multiple destinations in North America and Europe, and extensive connections to destinations in Latin America. There are 22 other airports with mainly domestic services with key hubs including Arequipa, Cusco, Iquitos and Piura. Callao is the major port for the country with a number of smaller ports along the Pacific coast and the Amazon basin.

Since the early 1990s there has been increased investment by the national government and local municipalities in the road network. The national government has developed a network of paved national highways whilst local municipalities have developed local roads which are mainly unpaved. Between 1999 and 2012 the density of the road network increased by 80%, which has been a significant factor in improving accessibility for rural communities and reducing poverty (Webb, 2013).

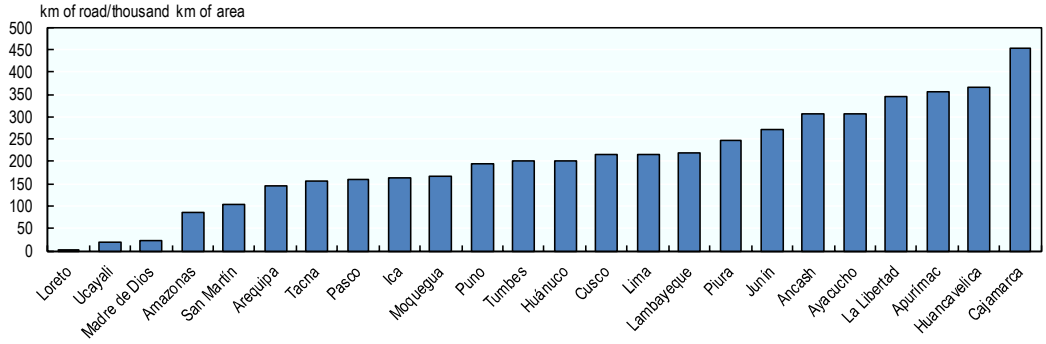
Table 1.10. **Quality of the Peruvian road network**

	Proportion of the road network (%)	Proportion of paved roads (%)
Local roads	69.3	2
Regional roads	15.1	10
National roads	15.6	68

Source: Based on data from CEPLAN.

Improvements to the road network have been uneven, which reflects the size and physical geography of the region and proximity to urban centres. Loreto, Ucayali and Madre de Dios with the lowest level of road density are the three biggest regions of the country. The five regions with the lowest road density are also in the Amazon basin. Regions with high levels of poverty, such as Cajamarca, Huancavelica or Apurímac, have higher levels of road density although most of the network is unpaved.

Figure 1.50. **Regional density of road infrastructure, 2014**



Source: OECD analysis based on data from the Ministry for Transport and Communications (Ministerio de Transportes y Comunicaciones- MTC), www.mtc.gob.pe.

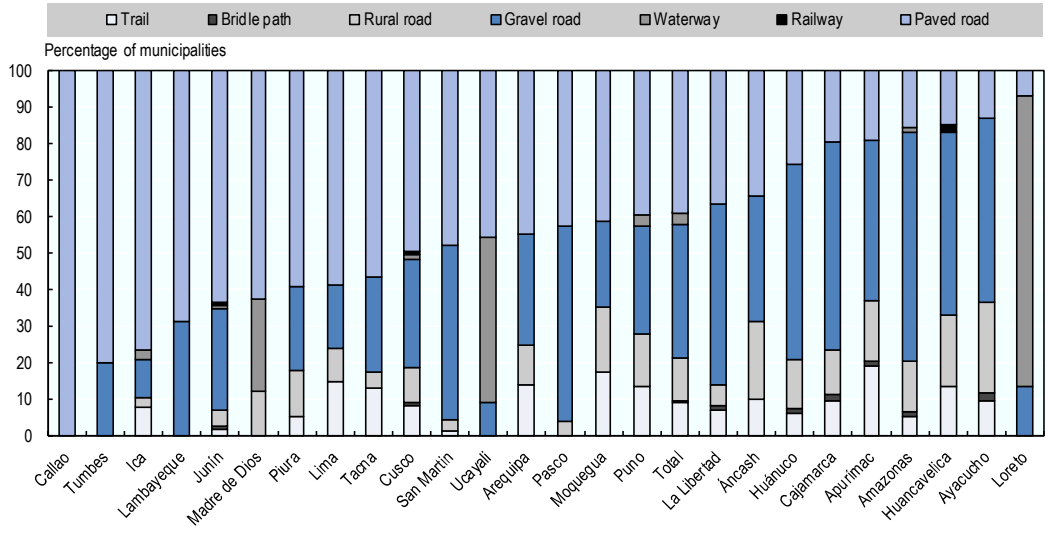
Within the majority of regions, the road network linking district with provincial capitals is still largely made up of gravel roads (*camino carrozable*, or *carretera afirmada*). Only eight regions (excluding Callao) have more than 50% of district-provincial road connections made up of paved roads (*carretera asfaltada*). In the departments of Amazonas, Ayacucho, Cajamarca, Huancavelica, Huánuco and Pasco, gravel roads are still the most common type of road connection between smaller centres.

The quality of the transportation network improves in terms of connections between provincial capitals and departmental capitals. Across Peru, 16 departments have more than 50% of roads between the provincial and departmental capitals paved. Yet, in the departments of Apurímac, Ayacucho, Cajamarca, Huancavelica, Huánuco and Pasco a large part of this primary transportation network is made of gravel roads (*carretera afirmada*).

The quality of local and regional roads is reflected in average travel times and costs. In most departments, the cost (per unit of km) of travelling from district to provincial capitals is about twice as high as the cost of travelling from provincial to departmental capitals. The average speed of travel from district to provincial capital (average of 33 km/hour) is also much lower than the provincial to department travel time (average of

44.6 km/hour). These differences probably reflect the poorer quality of road connections, and less choice and competition in terms of transport modes.

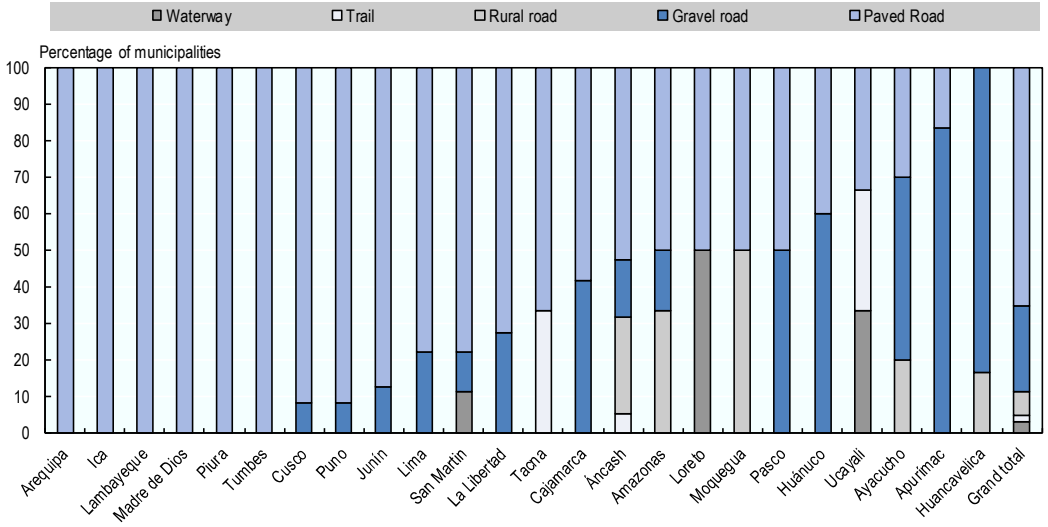
Figure 1.51. **Transportation access between district and provincial capital by department, 2012**



Note: Callao is omitted from the graph (reporting 100% of connection with paved roads).

Source: INEI (2012c), Registro Nacional de Municipalidades 2012.

Figure 1.52. **Transportation access between provincial and department capital by department, 2012**



Source: INEI (2012c), Registro Nacional de Municipalidades 2012.

Since the early 2000s there have been rapid improvements in access to communications technologies. Over the past decade there has been a rapid expansion of cellular phone coverage and use (Webb, 2013). Available statistics confirm that today the majority of Peruvian households have access to a cellular phone. Specifically, between

2001 and 2014, the percentage of households with at least one member having a cellular phone went from less than 10% in all departments to well over 75% in almost all departments (INEI, 2015).

Table 1.11. **Transportation accessibility indicators at the municipal level by department, 2012**

Department	Travel from provincial to departmental capital			Travel from district to provincial capital		
	Municipality reporting	Average cost/km	Average km/hour	Municipality reporting	Average cost/km	Average km/hour
Amazonas	6	0.35	32.1	77	0.58	31.6
Áncash	19	0.15	40.0	146	0.35	28.0
Apurímac	6	0.17	34.2	73	0.25	27.0
Arequipa	7	0.11	50.6	101	0.23	34.6
Ayacucho	10	0.17	34.5	101	0.28	27.6
Cajamarca	12	0.13	41.8	114	0.34	30.3
Callao	…	…	…	5	0.13	39.0
Cusco	12	0.08	50.8	95	0.24	37.2
Huancavelica	6	0.23	33.6	88	0.33	29.3
Huánuco	10	0.24	32.6	66	0.41	32.4
Ica	4	0.06	69.7	38	0.30	38.1
Junín	8	0.16	34.7	114	0.24	32.9
La Libertad	11	0.13	39.0	71	0.26	31.4
Lambayeque	2	0.10	53.8	35	0.16	45.6
Lima	9	0.10	50.9	161	0.22	31.1
Loreto	4	0.25	43.4	43	0.34	25.7
Madre de Dios	2	0.17	46.6	8	0.45	50.9
Moquegua	2	0.07	49.2	17	0.37	36.1
Pasco	2	0.18	29.1	26	0.28	31.6
Piura	7	0.09	53.9	56	0.34	34.7
Puno	12	0.12	56.0	96	0.14	42.5
San Martín	9	0.17	61.5	67	0.36	41.7
Tacna	3	0.10	47.3	23	0.18	40.9
Tumbes	2	0.15	65.7	10	0.21	46.1
Ucayali	1	0.15	64.8	10	0.41	28.9
All municipalities	166	0.15	44.6	1641	0.29	33.0

Notes: ..: not available. The cost is computed from the approximate price of a trip (*precio aproximado del pasaje, Nuevos soles*), using the most common means of transportation. Averages exclude municipalities connected by airplane (*avioneta*).

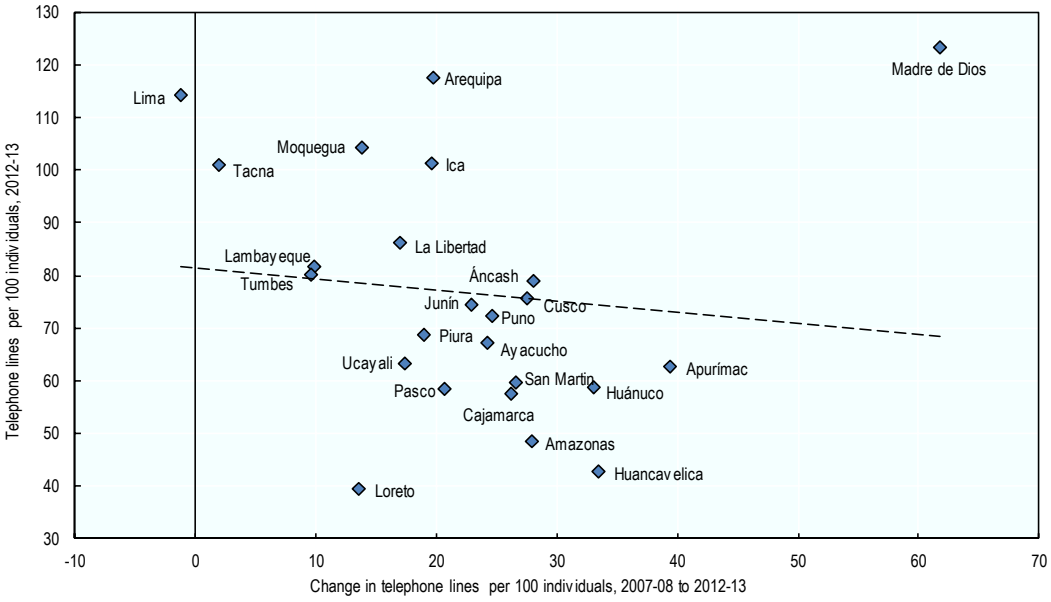
Source: OECD analysis based on INEI (2012c), Registro Nacional de Municipalidades 2012.

Statistics on household Internet services indicates that this technology is still at an early stage of adoption, although it has rapidly expanded in the most urbanised departments and in recent years. In 2013, close to 40% of households in Lima and Callao had Internet services, and most of these households accessed this service between 2007 and 2013. This process of recent adoption is even more evident for the other departments: in each of them the current level of access is nearly equivalent to the change between 2007 and 2013. The current level of adoption of Internet remains particularly low (approximately 10% of households or less) in a group of 12 departments.

Efforts and improvements in that sense are being made. In recent years networks of optical fibre have increased, largely due to the construction of the National Fiber Optic Backbone (NFOB) and regional fibre optic networks, which initially include the connectivity of

all provincial capitals and district capitals later. The NFOB should be completed in June 2016 and cover 180 of the 198 provincial capitals through the regional fibre optic networks, in 21 regions. As for the remaining four regions, it still needs to be completed.

Figure 1.53. **Fixed and mobile telephones per capita in 2013 and change between 2007 and 2013, by department**



Notes: INEI notes that in both 2012 and 2013 approximately 6 million telephone lines (out of approximately 30 million) did not have a geographic code (*código de área de localización*, LAC). These lines are not included in the computations of this graph. Per capita level (vertical axis) is computed as average value for the years 2012 and 2013. Changes (horizontal axis) are computed using the 2012-13 average and the 2007-08 average. Two-year averages are used to smooth the effect of an unusually high or low value for one single year. Callao is included in the department of Lima.

Source: OECD analysis based on data from INEI.

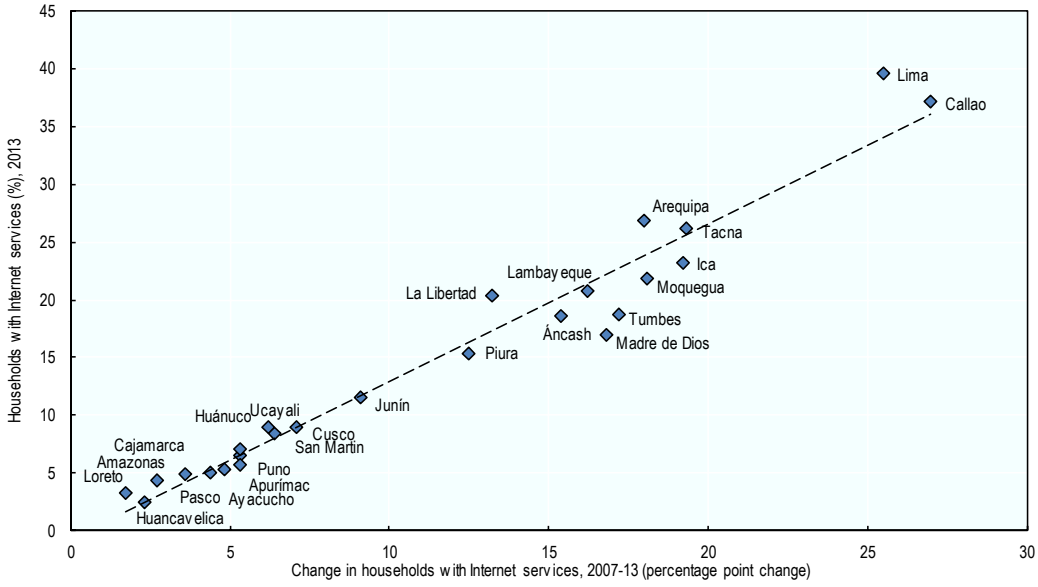
Infrastructure and accessibility have improved significantly in Peru over the past two decades, and this has contributed to increasing economic activity and reducing poverty across different regions. However, these improvements have been uneven between and within regions. Infrastructure and accessibility outcomes are poorer for regions that are sparsely populated with desert and mountainous terrain (such as Pasco, Hanuco, Apurímac and Huancavelica). Rural areas continue to generally have lower quality infrastructure, which impacts on access to services and economic opportunities. Some of the most important development challenges for Peru are located in rural areas, and better connections with urban settlements will help address them. This suggests that a continued focus is required on improving the local road networks connecting rural areas with provincial and departmental capitals.

Innovation will be important for the productivity and competitiveness of tradeable sectors

Innovation is an important driver of regional growth. Indeed, for regions with high levels of income per capita and productivity (e.g. closer to the production possibility frontier), innovation appears to be one of the main determinants of growth. This factor

will be less relevant for regions in Peru. However, innovation will play a role in lifting productivity and promoting economic diversification, particularly within the tradeable sector.

Figure 1.54. **Households with Internet services in 2013 and change between 2007 and 2013, by department**



Source: OECD analysis based on data from INEI-ENAHO.

There are limited data related to innovation at a regional level in Peru. There are some data related to business demography which provide an indication about the type of businesses and their location across the country. The first key characteristic is that the overwhelming proportions of businesses are microenterprises, and these proportions do not vary greatly between departments (for further information see Chapter 2).

Table 1.12. **Proportion of businesses, by size, 2013**

Size of business	Proportion of total businesses (%)
Large	0.55
Medium	0.17
Small	4.6
Micro	94.6

Source: OECD elaboration based on INEI data.

The size of firms has a significant influence over innovation activity (OECD, 2011b). Microenterprises are much less likely to innovate, have short value chains and low-skilled workers with poorer quality products. Larger enterprises are more likely to be integrated into global value chains and are quicker to adopt new technologies and practices. Small and medium-sized enterprises tend to spend less on innovation activities and there seem to be limited spillovers to these firms from larger enterprises in Peru (OECD, 2011b).

Another key structural characteristic of innovation is differences between sectors. The location of these sectors also influences how innovation occurs and the design of policies to promote it. Agriculture and mining are predominantly located in rural areas whilst

manufacturing is predominantly in urban areas. Mining tends to be undertaken by subsidiaries of large multinationals whereas locally owned firms are more important in the agriculture and manufacturing industries.

Table 1.13. **Innovation at a sectoral level in Peru**

Sector	Key characteristics
Agri-business (non-traditional)	– Products such as asparagus, mango, organic coffee and paprika – Strong export growth over three decades (2.5 times traditional agricultural exports) – Development and adoption of latest technologies (e.g. irrigation and crop management) – Characterised by strong interactions between local firms and with universities
Textile and clothing manufacturing	– Exports rose four-fold between the mid-1990s and 2008 – Free trade agreement with the United States (2006) important in terms of opening new export markets, and accelerating the adoption of new equipment and machinery – Government programmes to promote soft technology transfer (training and expert advice about products in international markets) have also been important
Mining	– Leading export industry and source of foreign direct investment – Characterised by subsidiaries of large multinationals using imported technologies and services – Lack of strong relationships with various actors, including local firms and universities

Source: OECD (2011b), *OECD Regional Outlook 2011: Building Resilient Regions for Stronger Economies*, http://dx.doi.org/10.1787/9789264120983-en.

Regional policies will have to account for these structural differences; for example, the development of collaborative networks between firms, universities and research institutes will be different for low-density economies. Efforts to promote innovation will also need to be accompanied by complementary policies to lift workforce skills and improve infrastructure at a regional level.

Citizens generally rate institutions poorly

Institutional factors are important to regional growth across the OECD. Formal and informal institutions that facilitate negotiation and dialogue among key actors in order to mobilise and integrate them into the development process are vital, as are those that enhance policy continuity. This co-operation is easier when citizens trust each other and expect reciprocity, and there is confidence in democratic institutions.

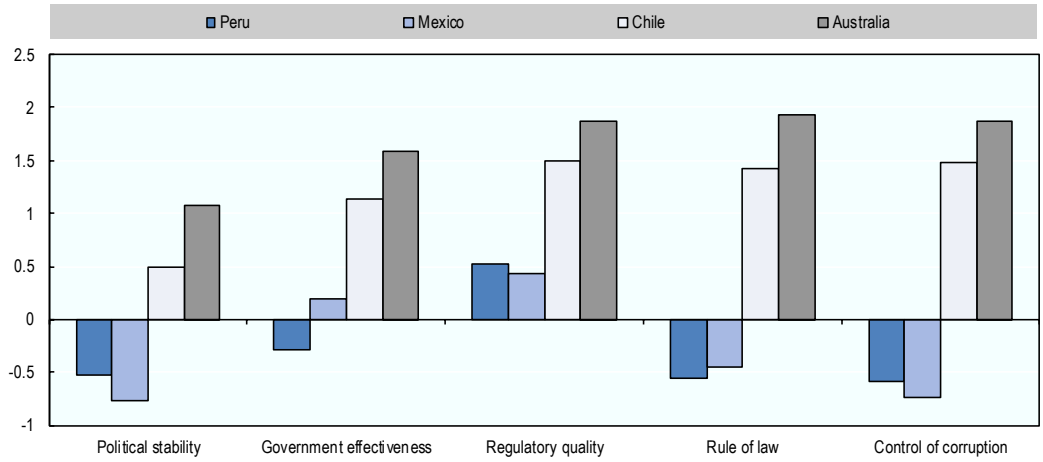
An integrated approach to regional development also depends upon effective co-ordination between levels of government, and different public agencies. Peru lags behind other countries in the co-ordination of public policies (OECD, 2015e). These problems are likely to be exacerbated at a regional and local level where governance capacities are lower (Muñoz, 2010).

The quality of institutions is perceived poorly by Peruvian citizens. Peru scores the lowest in government effectiveness and the rule of law, and marginally better than Mexico in terms of political stability and the control of corruption. The quality of governance is fundamental to creating a sound business environment and will need to be improved at a national and subnational level.

Participation in the democratic process through electoral vote is generally high across all departments of Peru. Voter turnouts from the 2001, 2006 and 2011 national elections show a high (well above 70%) voter turnout in all departments and a growing participation trend in most departments. The departments with the highest voter turnout are generally the most affluent and better performing on various dimensions, such as

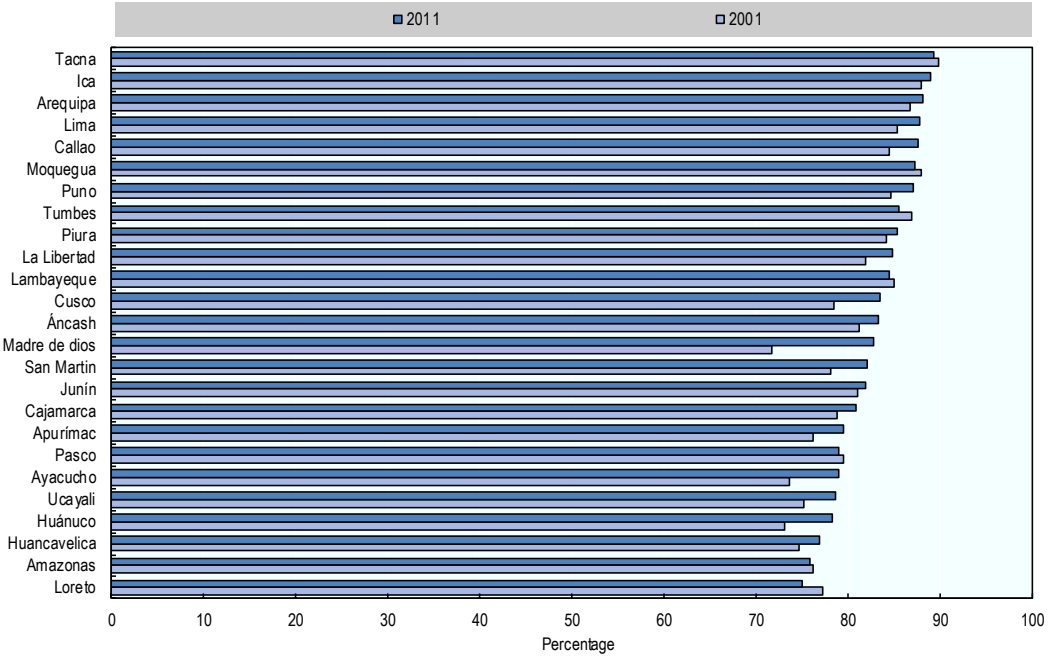
Tacna, Ica, Arequipa, Lima and Callao; in these departments voter turnout has been generally between 85% and 90%, a percentage which is high by OECD standards.

Figure 1.55. **Quality of governance indicators, 2014**



Source: World Bank (2016), Worldwide Governance Indicators, http://info.worldbank.org/governance/wgi/index.aspx#home.

Figure 1.56. **Voter turnout by department**



Source: Based on INEI data, http://www.inei.gob.pe.

Overall the quality of governance in Peru appears to be low and these issues are likely to be greater at a subnational level. Effective regional development policies depend upon including, and co-ordinating, a broad range of actors in the policy process. Competencies also need to exist at a regional level to ensure policies are tailored to address the

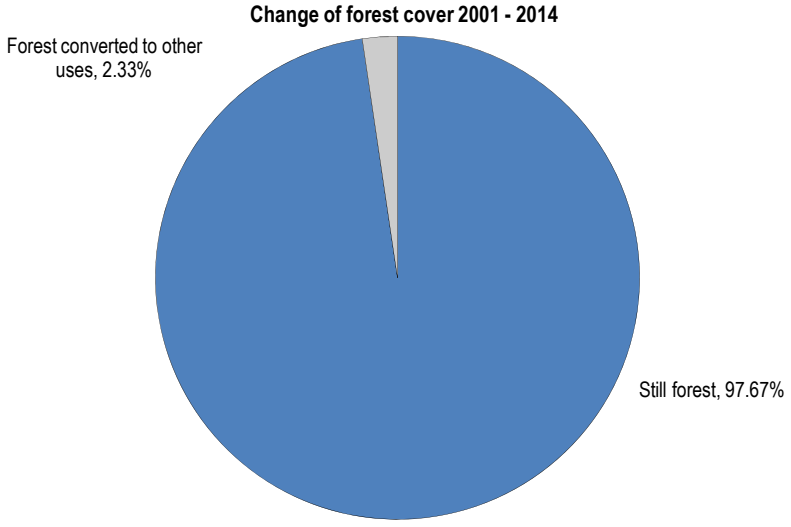
development challenges and opportunities within that location. Chapter 4 will investigate these issues, further including the central role of regional governments in addressing the issues highlighted in this chapter.

Natural resources will need to be carefully managed to ensure the country's future well-being and competitiveness

There is an increasing recognition internationally that economic growth and development should occur in a way that reduces environmental damage and inefficient resource use (OECD, 2015a). Environmental assets such as forests, grasslands, wetlands and other natural assets located primarily in rural areas are important to well-being and the national development of Peru. In addition to generating private market opportunities, these assets can have recreational values, offer flood protection, purify drinking supplies, protect biodiversity and regulate the climate.

The physical geography of the country (categorised as the coast, highlands and rainforest) shapes the distribution of natural resources. Water resources are distributed unevenly with the majority in the Amazon basin. Natural water storages and flows in the highlands and coast are limited, and the coastal area has an arid climate. The soil along the coast and in the highlands is generally of poor quality. The interior is largely covered by forest. It is estimated that 37.8% of land is suitable for forestry production whilst 42.3% is protected.

Figure 1.57. **Loss of forest coverage, 2001-14**



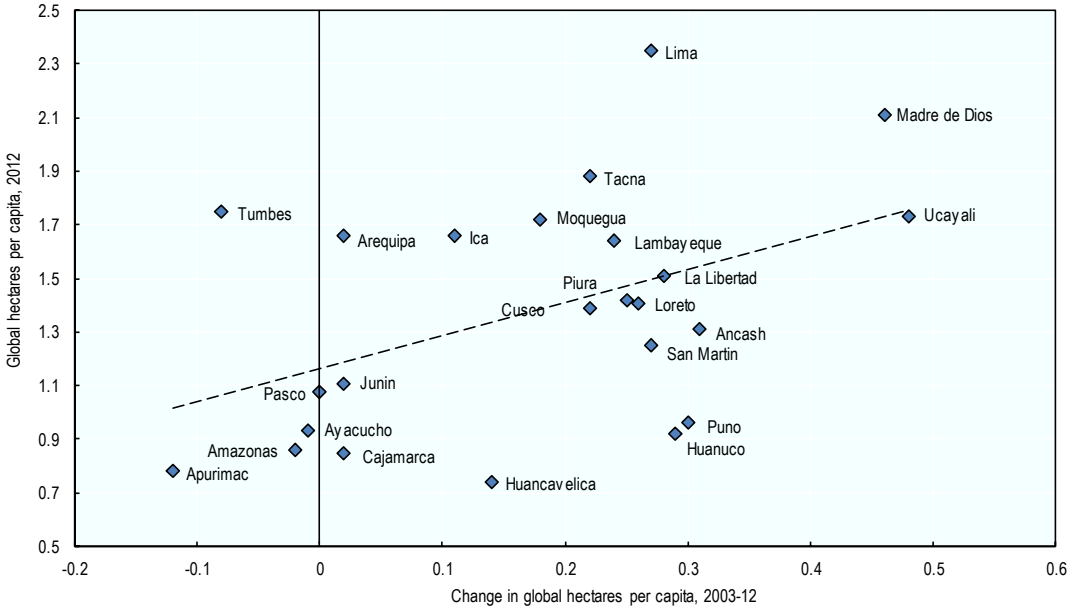
Source: Ministry of Agriculture and Irrigation (information generated in the framework of the ACTO project "Monitoring Deforestation, Forest Use and Land Use Change in the Pan-Amazonian Forests").

In terms of agricultural production, according to the Land Classification Study of Peru, 5.9% of land is suitable for crops and 13.9% for pasture. Agricultural production is important for the regions in the Amazon basin. However, production increases impact on forest through expanding the agricultural frontier. The Amazon has significant value to the global environment, and is also a potential source of economic growth through specialised crops, aquaculture, bio-medical applications and tourism. There are also opportunities to promote the sustainable development of the forestry industry.

Sea-based resources are also important, with fisheries exports valued at USD 2.4 billion in 2008 (FAO, 2015). Key catches include anchovy, mackerel, hake and squid. Overfishing and the impacts of El Niño events in the early 1970s and 1990s led to large declines in the fishing catch, and the introduction of measures such as quotas to address sustainability issues. Aquaculture has also grown in recent years in Peru and will need to be carefully managed in the context of water scarcity and biodiversity impacts.

The Peruvian Ministry of the Environment has developed an ecological footprint indicator which measures human demand for renewable resources.[6] The indicator has six components, which include the carbon footprint, farm areas, pasture areas, forest areas, fishing areas and urban areas.[7] Some of the regions with the slowest growing economies are also among those with the highest ecological footprint in 2013 (e.g. Madre de Dios, Tacna, Áncash and Moquegua). Some faster growing economies are also consuming higher rates of natural resources including Cusco, Ica and Lambayeque. In contrast, the only high-performing region which has managed to reduce its ecological footprint index is Tumbes.

Figure 1.58. **Ecological footprint per capita, by department**



Note: For Ucayali the time frame 2003-11 is used.

Source: OECD analysis based on data from Ministry of Environment – National System of Environmental Information (Ministerio del Ambiente- Sistema Nacional de Información Ambiental) INAM-SINIA, http://sinia.minam.gob.pe.

Climate change also presents risks for Peru. Glaciers in the Andes lost a significant proportion of their ice volume over the 20th century. Further reductions in glacial runoffs would impact upon hydroelectricity production and the supply of water to agriculture and urban populations (World Bank, 2014a). Approximately half of Peru's population lives in the arid coastal region and depends upon water from the western slopes of the Andes. The likelihood of more extreme weather events associated with El Niño presents risks to Peru's rich fishing grounds, and economic damage caused by more frequent extreme heat and increased precipitation.

Given the importance of environmental issues, there is an opportunity for Peru to develop regional environmental indicators. In some case, this would require the integration of datasets form heterogeneous sources and/or the use of geospatial analysis. These data sources include:

- municipal level data, from the RENAMO, provide information on the major environmental challenges faced by each municipality
- other national information systems that focus on environment indicators include the SISFOR and OSINFOR on forestry resources and the Sistema Nacional de Gestión Ambiental (SNGA) of the Ministry of Environment
- land-use data are available from the national cadastre (*Catastro nacional*) and the updated urban Cadastre (*Catastro urbano actualizado*)
- the Ministry of Environment manages a Sistema de Información Geográfica para el Ordenamiento y Monitoreo del Territorio, which provides information related to land use, deforestation and vulnerability to natural disasters (which provides data on land-use changes and vegetation coverage every 15 days).

This should build upon existing initiatives such as the National Environmental Information System, which has already made some steps towards this by integrating environmental information to support processes of decision making and environmental management.

Notes

1. The comparison year has been chosen as 2004 due to a methodological change by INEI in collecting labour market statistics in that year.

2. There are a number of international definitions for informality, and depending on the definition, between half and two-thirds of individuals are employed informally. According to the legal definition of CEDLAS and the World Bank (i.e. an informal worker is one who does not have the right to a pension when retired), 49.9% of workers in Peru were in informal work in 2011, the latest year for which there are comparable data for our benchmark countries. When using the "productive" definition (i.e. an employee in a firm with five or fewer employees, a non-professional self-employed or a zero-income worker), 59.4% of workers fell into the informal category in 2012. The International Labour Organization's (ILO) non-agricultural

informal employment rate for Peru, 68.8% in 2012, was the highest share amongst all of the benchmark countries (OECD, 2015e).

3. The cornerstone for territorial demographic and socio-economic indicators is the Census of population. The most recent one conducted in Peru was undertaken in 2007; it was used for subsequent projections of the population (INEI, 2015).

4. INEI does not produce GDP data at the departmental level. The indicator used for departmental statistics is gross value added (GVA). The difference between GDP and GVA is given by *impuestos a la producción* and *derechos de importación*, these are only estimated at the national level. These two items represent approximately 8% of the national GDP; hence, departmental GVA is a close proxy for regional GDP. The methodology to generate gross value added by economic activity at a regional level was updated by INEI with a new data series released in 2007. This included improvements in data collection and methodological changes to better align with international standards. As a result, GVA data prior to 2007 has not been utilised in this report.

5. The statistics on "Lima" in this section refer to the metropolitan area of Lima, which (normally) includes the province of Lima and Callao.

6. For a detailed description of the methodology used to compute this index, see: http://sinia.minam.gob.pe/documentos/huella-ecologica-peru

7. To determine whether human demand for renewable resources and CO_2 uptake can be maintained, the ecological footprint is compared with the regenerative capacity of the planet or biocapacity, the total regenerative capacity available to meet demand represented by the footprint. Both the ecological footprint (which represents demand for resources) and biocapacity (which represents the availability of resources) are expressed in units called global hectares (gha), with 1 gha being the production capacity of 1 hectare of world average production.

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Annex 1.A1.
Peru's administrative and statistical definitions

Peru's territorial definitions

For the purpose of statistical dissemination, the National Institute of Statistics and Informatics (Instituto Nacional de Estadística e Informática, INEI) has established a set of territorial definitions, which, to a large extent, reflects the administrative structure of the country. Table 1.A1.1 presents the territorial units most frequently used for the purpose of statistical dissemination of census, survey and other administrative data. In addition, INEI maintains a system of georeferenced statistics that permits territorial indicators for specific types of infrastructure or establishments (such as educational and health facilities) to be produced.

Table 1.A1.1. **Subnational territorial units of Peru**

Territorial unit	Count	Statistical	Administrative
Department	25	Yes, nearly all territorial indicators are produced or can be rolled up at this geographic level	Yes, referred to as a region. Elected regional government (governor), every four years
Province	195	Yes, some statistics are available at this geographic level	Yes, provincial municipality
District	1 854	Yes, mainly census and census-like administrative data	Yes, district municipality
Population centre	65 535	Yes, census data	Some have municipal responsibility and structure
Macro regions	3	Yes, nearly all territorial indicators are produced or can be rolled up at this geographic level	No

Annex 1.A2.
Geographic Concentration Index

The Geographic Concentration index of population and gross domestic product (GDP) is defined as:

$$\left(\sum_{i=1}^{N}\left|p_i - a_i\right|\Big/2\right)*100$$

where p_i is the population and GDP share of region i, a_i is the area of region i as a percentage of the country area, N stands for the number of regions and $\left|\ \right|$ indicates the absolute value.

The index lies between 0 (no concentration) and 1 (maximum concentration) in all countries and is suitable for international comparisons of geographic concentration.