

PERU

CLIMBING THE ANDEAN HEIGHTS OF WEALTH
AND WELL-BEING



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CONTENTS

- 4 EXECUTIVE SUMMARY**
- 8 WILL PROGRESS BEGET PROGRESS?**
 - The Power of SEDA
 - Peru Today
 - A Centralized Economy
 - Wide Regional Disparities
 - A Pressing Need for Greater Balance
- 16 PERU’S PRIORITIES FOR A BETTER TOMORROW**
 - SEDA’s Peer Analysis
 - An Agenda for Action
- 20 MAINTAINING MOMENTUM: THE NEED FOR ECONOMIC DIVERSIFICATION**
 - Remove Obstacles
 - Facilitate Expansion
 - Support Business Creation
 - Incentivize
 - Subsidize Only as a Last Resort
- 23 INFRASTRUCTURE: BUILDING OUT THE BASICS**
 - The Problem: A Broad Infrastructure Deficit
 - The Causes: Lack of Spending and Poor Processes
 - Recommendations: Streamline Processes to Attract New Investment
- 29 EXTENDING HEALTH CARE TO ALL**
 - The Problem: Inadequate, Inconsistent Care and Low Quality of Service
 - The Causes: Low Participation and Expenditure
 - Recommendations: Expand Funding and Coverage, and Improve Quality
- 34 EDUCATION: A PREREQUISITE TO GROWTH AND WELL-BEING**
 - The Problem: A System That Cannot Meet the Nation’s and the People’s Needs
 - The Causes: Underfunding, Fragmented Management, and Too Few Teachers
 - Recommendations: Centralize Policy and Incentivize Teachers

38	MOVING FORWARD
39	FOR FURTHER READING
40	NOTE TO THE READER

EXECUTIVE SUMMARY

***P**ERU TODAY RANKS IN the middle of nations globally in terms of national wealth and the well-being of its citizens. But its recent progress has been anything but middling: Peru has made much faster strides than its peers and many other developing countries in both increasing its wealth and spreading the benefits of that increase among its people. Still, much work remains to be done. Our analysis indicates that if Peru is to demonstrate sustainable improvement and move up the global ranks, it needs a concerted effort by the public and the private sectors in four areas: broadening its economic diversification, building out critical infrastructure, expanding health care coverage, and improving education. Progress in all of these must be broad-based and designed to reduce disparities across regions and socioeconomic groups.*

To help understand where Peru stands today and develop recommendations for how the country can best move forward, we used The Boston Consulting Group's Sustainable Economic Development Assessment (SEDA), a powerful diagnostic tool designed to provide government leaders with a perspective on the well-being of citizens, including how effectively their countries convert wealth, as measured by income levels, into well-being. This analysis helps countries set national priorities by pinpointing both the areas most in need of improvement and those in which improvement can have the biggest national impact.

SEDA defines well-being through ten dimensions and examines how effectively countries convert wealth and growth into well-being.

- SEDA's measure of well-being includes ten dimensions: income, economic stability, employment, health, education, infrastructure, income equality, civil society, governance, and environment.
- For each country in our analysis, we look not only at the current level of well-being but also at recent progress—that is, how well-being has changed in recent years. We conduct the analysis

on a relative basis, comparing each country with the others in our data set.

- To assess the link between a country's economic resources and well-being, we measure how effectively countries convert wealth into well-being and how effectively they convert economic growth into improvements in well-being.

Peru's progress has been faster than average in recent years.

- Peru has had relatively high, stable economic growth, and—most important—it has converted its economic gains into improvements in well-being at a rate that is also above the global average.
- Peru has a powerful asset in its economy, which has outpaced regional peers and demonstrated solid growth over the past 15 years, including the period following the 2008 global recession.
- Despite this progress, Peru's GDP per capita still lags the region's average and is far below that of some countries of comparable size and similar geographic and economic characteristics.

A comparison of Peru's circumstances with those of several sets of peer nations highlights the need to take the following actions.

- Promote the diversification of the Peruvian economy by creating conditions in which new enterprises can thrive and existing enterprises can expand their range of activities and increase their productivity.
- Address the bottlenecks affecting specific industries and improve connectivity among cities and mobility within them by developing a well-targeted, prioritized, and unified infrastructure plan.
- Improve health care quality and delivery by devoting additional resources to expand coverage and outreach and to increase the quality of services and treatments.
- Improve the education system by paying particular attention to aligning educational content with employers' evolving needs, updating infrastructure, and improving teacher quality.

Peru faces structural economic issues.

- Peru's economy is highly centralized; Lima accounts for a disproportionate share of economic activity, and outlying regions lag far behind.
- The country has wide regional disparities in economic activity, growth, and well-being, with social indicators in some regions approaching the lowest levels worldwide.
- Peru's economy is insufficiently diversified, with exports heavily dependent on a few commodities, such as copper and silver.

- Unless Peru generates more public revenue, it will face severe constraints in the government's ability to fund the priority action plans that are critical to sustained, inclusive growth.

Infrastructure—physical, electrical, telecommunications, and, increasingly, digital—is an essential foundation of both economic growth and well-being.

- Peru faces an estimated infrastructure gap of some \$160 billion from 2016 to 2025, with transportation, energy, and telecommunications making up almost three-quarters of the shortfall. Moreover, plans in several sectors fall short of actual needs and do not address the most critical problems.
- Lack of spending is a big part of the problem—Peru has far underspent its peers. As a result, it suffers from poor water resources and roads and low internet penetration. We estimate that Peru would have to invest approximately 8% of GDP each year from 2016 to 2025 to close its infrastructure spending gap.
- To eliminate the financing gap and meet Peru's infrastructure needs—important steps in addressing other issues related to building wealth and well-being—the government needs to take the following actions: set priorities and put a coordinated plan in place; establish a single agency for approvals; provide incentives for more public-private partnerships; and define clear rules and develop a framework of best practices.

Despite good progress in recent years, health care remains a big challenge.

- Peru trails its peers—significantly, in many cases—in multiple measures, including hospital beds, immunization of children, incidence of tuberculosis, and physician density.
- While the percentage of the population that contributes to health care funding has been rising at an annual rate of 5% for the past eight years, in 2014 it stood at just 19%—27 percentage points below the average of Peru's Latin American peers.
- Peru needs to move aggressively in three areas of health care reform if it is to register significant improvement. First, the country must address funding shortages by expanding the public revenue base to create fiscal room for increasing health care expenditures. Second, Peru needs to address regional and socioeconomic disparities by expanding coverage and improving service, especially in underserved regions. Third, the country needs to improve overall quality and service through tighter evaluation, including a more effective methodology and more frequent assessment.

The graduates of Peru's education system have neither the skills they need to succeed in today's world nor the skills that Peru's economy needs if it is to continue to develop at a rapid pace.

- One of the main reasons that Peru trails its peers is funding. The country spends only 3.7% of GDP on education, well below its peers' average of 4.5%.
- Peru's schools are in bad shape; they lag behind in digital education infrastructure, and teachers are underpaid and undervalued.
- Peru needs to address four areas of education policy. Two priorities are to tighten the management and implementation of education policy and to ensure that programs reflect national needs. The remaining urgent necessities are to improve school infrastructure (both physical and digital) and to elevate and incentivize the career of teaching.

WILL PROGRESS BEGET PROGRESS?

INCREASING A NATION'S WEALTH is hard; using that wealth to improve the well-being of citizens is harder still. In recent years, Peru has made significant progress on both fronts, as evidenced by The Boston Consulting Group's most recent Sustainable Economic Development Assessment (SEDA). In terms of both income level and overall well-being, Peru stands slightly below the median for the 163 countries in the SEDA analysis.¹ Peru is on the right track, but much work remains to be done.

Given that a new government is beginning its administration, setting priorities and strategies for the next five years, this is an opportune time for Peru to assess where it stands and to highlight the areas in which concerted effort to make improvements can have an outsize impact in converting the country's increasing wealth into greater well-being. In this regard, SEDA provides insights that will help set priorities and identify relevant best practices.

The Power of SEDA

The well-being of citizens is the central concept around which national strategies revolve. But narrow economic measures, such as GDP, often are the only indicators used to track progress. BCG has developed a broader measure to help focus national strategies on the pursuit of improvements in well-being.

SEDA provides a comprehensive measure of the level of well-being of citizens in countries around the world. The assessment defines well-being through ten dimensions that fall into three categories: economics (income, economic stability, and employment), investments (health, education, and infrastructure), and sustainability (environment, governance, civil society, and equality). (See the sidebar "Defining and Measuring Well-Being.") SEDA generates four relative measures:

Peru is on the right track, but much work remains to be done.

- Current-level well-being score (based on the most recent data available—mainly for 2014)
- Recent-progress well-being score (assessing improvement from 2006 to 2014)
- Wealth-to-well-being coefficient (a country's well-being compared with what would be expected given its income level)
- Growth-to-well-being coefficient (improvement in well-being compared with what would be expected given economic growth)

DEFINING AND MEASURING WELL-BEING

SEDA defines well-being through three elements that comprise ten dimensions. (See the exhibit.) The first element is *economics*, which gauges a country's performance in generating balanced growth through income, economic stability, and employment. That balanced growth provides a basis for the country to invest in the other two elements.

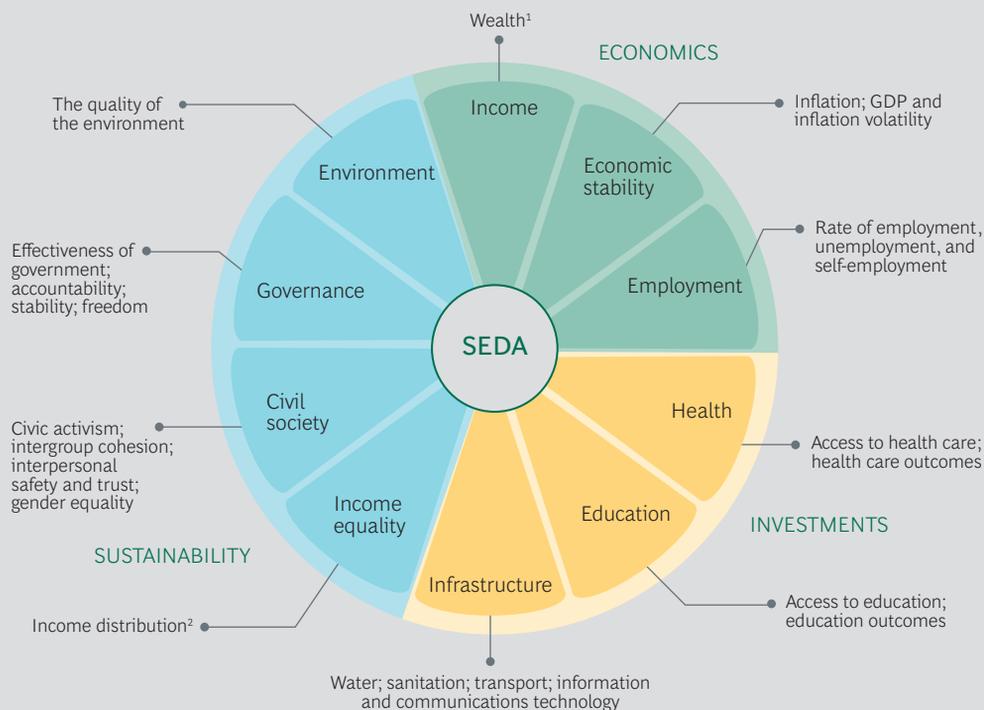
The second element is *investments*, which includes health, education, and infrastructure. These categories—major items in any government budget—encompass short- and long-term investments that help drive improvements in both economic growth and well-being over time.

The third is *sustainability*. The term “sustainability” usually refers to the environment, but it can encompass issues related to social inclusion. In the SEDA

sustainability element, we include both the environment dimension and social inclusion (which comprises the dimensions of income equality, civil society, and governance). A robust score in this element typically reflects sound policy decisions rather than large budgets. And strong performance here tends to increase a country's ability to sustain gains in well-being, while weakness in any of the dimensions can limit a country's well-being down the road.

We use indicators for each dimension to generate scores that reflect a country's current level of, and recent progress in, well-being. Our recent-progress measure tracks how well-being has changed. For our 2016 analysis, we used data from 2006 through 2014. Current-level scores—both overall and by dimension—tend to be fairly stable, because they reflect decades of

SEDA's Ten Dimensions of Well-Being



Source: BCG analysis.

¹Wealth is measured as GDP per capita (purchasing-power parity, current international \$) for current-level scores, and GDP (constant local currency unit) for recent-progress scores.

²Income distribution is based on the Gini coefficient.

DEFINING AND MEASURING WELL-BEING (continued)

investment and development. Recent-progress scores tend to be more dynamic.

SEDA does not measure well-being in absolute terms: both current-level and recent-progress scores—overall and by dimension—are measured on a scale of 0 (lowest) to 100 (highest). The median scores for other countries in our data set can then be used to assess how a country stacks up in a given area against a peer group or the rest of the world.¹

Of course, wealth has a direct bearing on well-being. SEDA examines this connection by looking at a country's current level of well-being relative to income levels and at recent changes in well-being relative to economic growth. These relationships are reflected in two metrics:

- The *wealth-to-well-being coefficient* compares a country's current-level SEDA score with the score that would be expected given the country's GDP per capita. The expected current-level score is based on the relationship between GDP per capita and current-level well-being scores among all countries in our analysis. The coefficient thus provides a relative indicator of how well a country

has converted its wealth into the well-being of its population. Countries that have a coefficient greater than 1.0 deliver higher levels of well-being than would be expected given their GDP levels, while those with a coefficient below 1.0 deliver lower levels than expected.

- The *growth-to-well-being coefficient* compares a country's SEDA score for recent progress with the score that would be expected given the country's GDP growth rate. The expected score is based on the average relationship between recent-progress scores and GDP growth rates during the same period for all countries. The coefficient therefore shows how well a country has translated income growth into well-being improvements. As with the wealth-to-well-being coefficient, countries that have a coefficient greater than 1.0 are producing improvements in well-being beyond what would be expected given their GDP growth rate from 2006 through 2014.

NOTE

1. Although we used a common scale, the distribution of countries differs in each of the two measures, with a median score of 43.8 for the current level and 49.1 for recent progress.

Each measure indicates where a country stands with respect to others around the world and can be used to compare countries that are similar in size, population, and economic and geographic circumstances. The result is a powerful diagnostic tool that not only benchmarks a country's well-being but also provides a basis for identifying strengths and weaknesses at the level of SEDA's ten dimensions. Hence, it can help establish priorities for action.

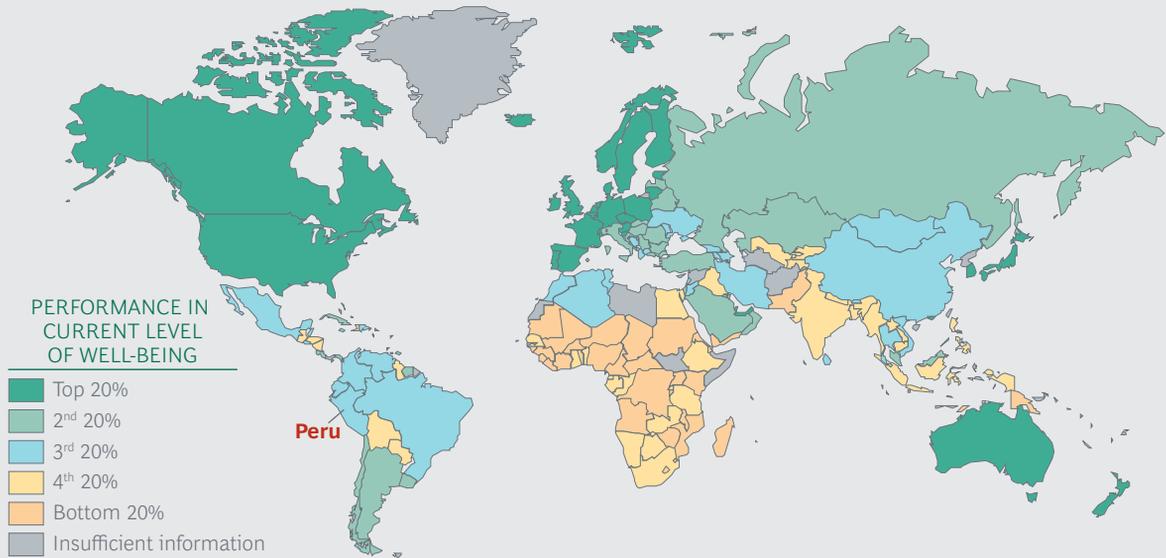
Peru Today

In terms of the current level of well-being, Peru stands just below the median of the 163 countries included in SEDA. (See Exhibit 1.)

Peru is roughly average in converting its wealth into well-being. Looking at recent progress, however, Peru has relatively high and stable economic growth, and, most important from our perspective, it has converted its economic gains into well-being improvements at a rate that is also above the global average. (See Exhibit 2.)

Peru has a powerful asset in its economy, which has outpaced regional peers and demonstrated solid growth over the past 15 years, including the period following the 2008 global recession. (See Exhibit 3.) Growth has been driven primarily by two factors: private consumption, which has been responsible for 3.1 percentage points, on av-

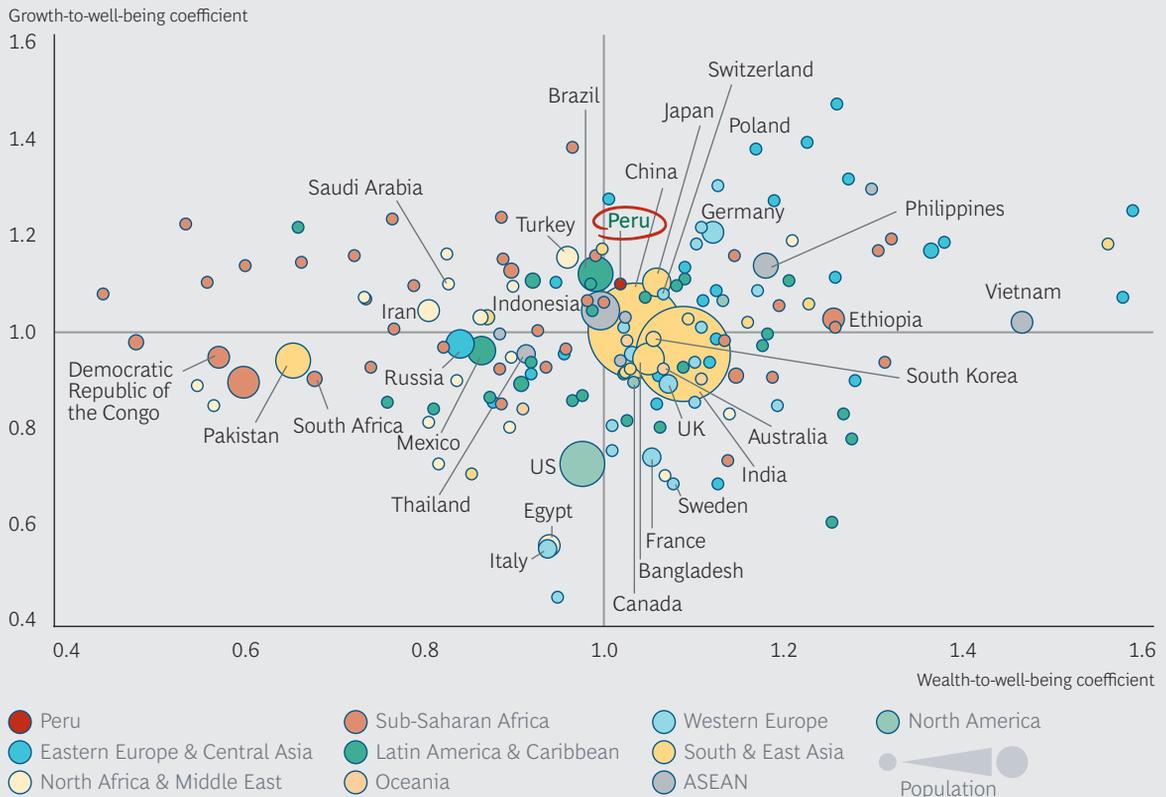
EXHIBIT 1 | Peru Is in the Third Quintile in SEDA Current-Level Performance



Source: BCG analysis.
 Note: Based on SEDA 2016 scores.

EXHIBIT 2 | Peru’s Performance on Wealth to Well-Being and Growth to Well-Being Is Above Average

WEALTH-TO-WELL-BEING MATRIX

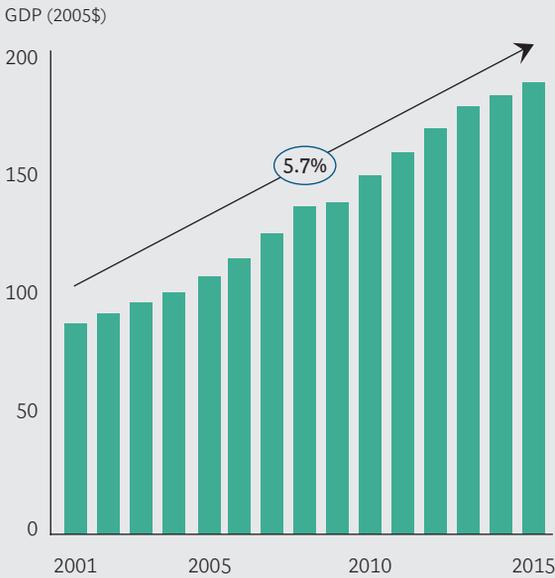


Peru is going in the right direction, but it must figure out how to move ahead more ambitiously

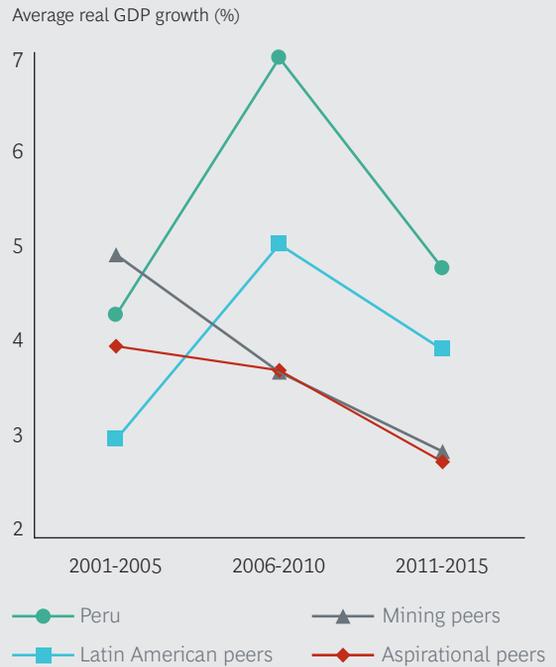
Source: BCG analysis.
 Note: Does not include Central African Republic, Chad, Croatia, and Greece.

EXHIBIT 3 | Peru's Economic Growth Has Been Even Higher Than That of Its Regional and Global Peers

REAL GDP HAS BEEN GROWING AT 5.7% PER YEAR



PERU SURPASSED ITS REGIONAL AND GLOBAL PEERS IN GDP GROWTH FOR TEN YEARS



Sources: The World Bank; BCG analysis.

Note: Peru's Latin American peers are Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Mexico, Panama, and Uruguay. Its mining peers are Australia, Canada, Chile, Kazakhstan, Poland, and Russia. Its aspirational peers are Chile, the Czech Republic, Poland, and South Korea.

erage, of GDP growth, and increasing investment, which has accounted for an average of 1.8 percentage points. Strong GDP growth has been complemented by a significant drop in poverty and an expansion of the middle class. Poverty decreased by 32% from 2001 to 2014 (and now affects less than a quarter of the population). The middle class (as defined by the Inter-American Development Bank) has increased by almost 40% from 2005 to 2014; today it represents a little more than half the population.

Despite this progress, Peru's GDP per capita lags behind the region's average and is far below that of some countries of comparable size and geographic and economic characteristics. The same is true of productivity (measured as GDP per person employed): Peru is almost 30% below the average for Latin America. (See Exhibit 4.) The country still faces significant challenges and wide regional variations in economic and social well-being; social indicators for some regions in Peru are among the lowest worldwide. For example,

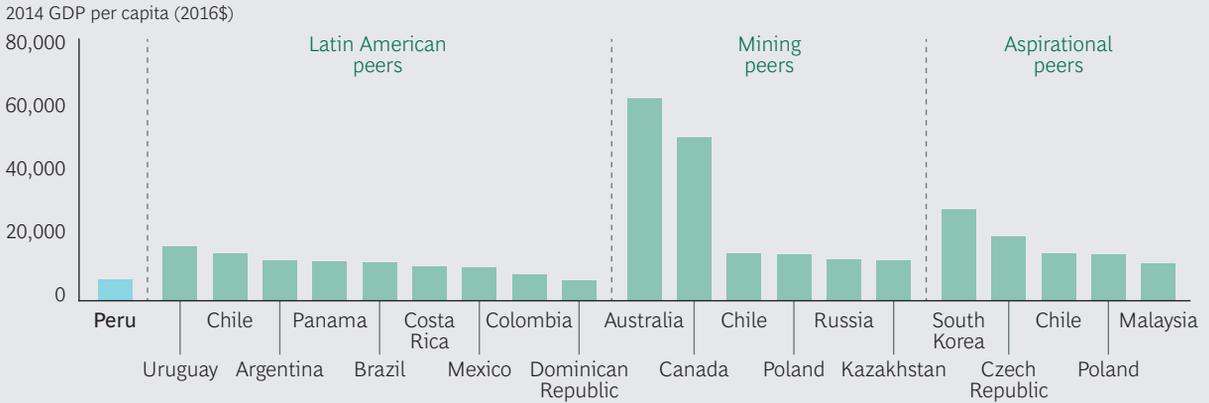
according to INEI (Instituto Nacional de Estadística e Informática), 35% of the population of Huancavelica is undernourished, which is on a par with Zimbabwe. There are significant variations among regions in such critical measures as illiteracy rates and physician density as well (See Exhibit 5.)

Peru also has a large informal economy, the second largest in Latin America in relative terms (representing the equivalent of more than 40% of GDP, according to a study by the University of Linz, Austria). This is an inhibiting factor for growth, a constraint on government revenues to fund critical initiatives (such as health and education), a facilitator of crime and corruption, and a drag on productivity.

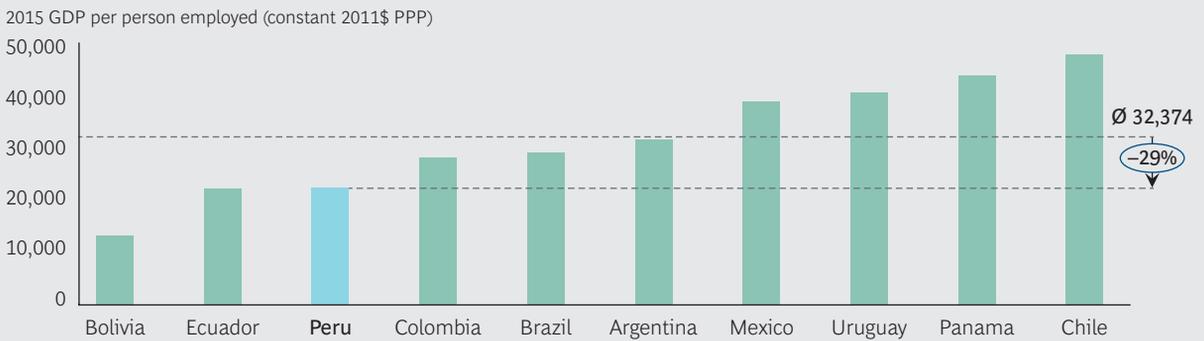
On the other hand, low public debt and sound economic management have enabled the country to mitigate volatility and financial risk. Today, Peru's public debt ratio stands at 23% of GDP, and international reserves account for 32% of GDP. In recent years, however, high GDP growth has pushed

EXHIBIT 4 | Peru's GDP per Capita and Productivity Have Room to Grow

PERU'S GDP PER CAPITA IS BELOW THAT OF ITS PEERS



PERU'S PRODUCTIVITY IS ~29% BELOW THE LATIN AMERICAN AVERAGE



Source: The World Bank.
Note: PPP = purchasing-power parity.

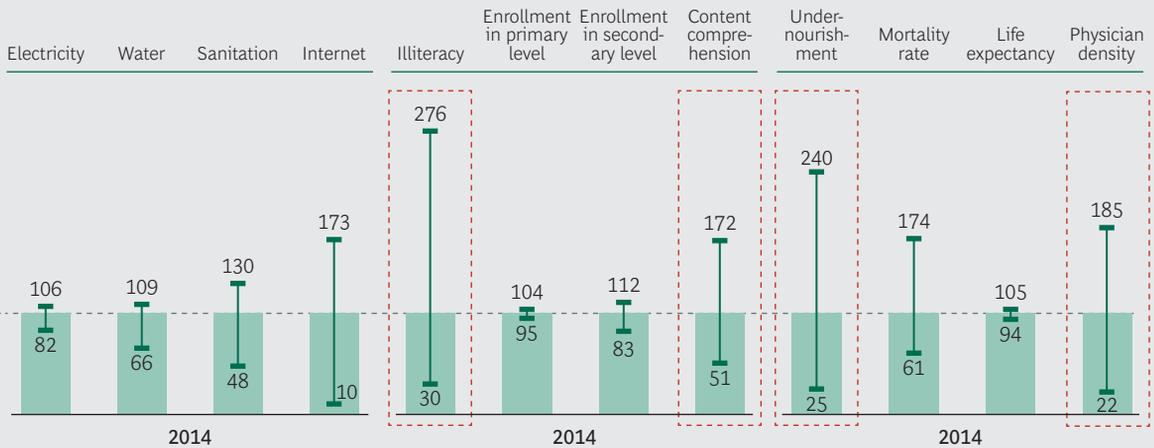
EXHIBIT 5 | There Is Significant Disparity in Social Indicators Among Peru's Regions

INFRASTRUCTURE (COVERAGE)

EDUCATION

HEALTH

This dimension has the largest gaps between regions



XX%: The highest value among Peruvian regions in terms of the average value
YY%: The lowest value among Peruvian regions in terms of the average value

Sources: INEI; INCORE at Instituto Peruano de Economía.

the inflation rate above the central bank's target range of 1% to 3%—it was 3.6% in 2015—and inflation control has become a priority for Peru's central bank.

A Centralized Economy

Peru has a highly centralized economy. Lima, home to 33% of the country's population, accounts for half the country's GDP. Lack of physical infrastructure outside the capital leads to high logistics costs in the other regions. For example, transportation costs in regions such as Iquitos are up to 90% higher than those in Lima. These cost differentials are bigger than those in countries with similar geographic characteristics, such as Colombia. Scarcity of talent outside Lima also limits increases in productivity.

There are large disparities in economic activity and growth among the regions of Peru.

Recently, the government has enacted policies to tackle the infrastructure issue. For example, an extension of the Port of Matarani, in the southern region of Peru, was completed in early 2016, adding 300,000 metric tons of mineral storage capacity and increasing the port's loading capacity by 2,000 metric tons per hour. Chavimochic, the world's biggest irrigation project developed under a public-private partnership (PPP), scheduled to be completed in 2019, will add 63,000 hectares to agricultural production and improve the irrigation of 48,000 additional hectares in the northern region of Peru.

Further development of road infrastructure remains a priority. Even though the length of paved roadways in the national network increased from 53% in 2011 to 85% in 2015, the departmental and local road networks, respectively, are still only 10% and 2% paved. In addition, there are fewer than 1,500 kilometers of multilane highways. The inadequate state of the road system directly affects intercity connectivity and the circulation of goods and people.

Population concentration and density in Lima itself are stretching logistics in the city, and pressure is increasing for new infrastructure to accommodate the rising economic activity. Given that Lima is the economic center of Peru, it attracts much of the country's talent, which undermines development in other parts of Peru.

Wide Regional Disparities

There are large disparities in economic activity and growth among the regions of Peru, and social indicators in some regions are approaching the lowest levels worldwide. Amazonas, Ayacucho, Cajamarca, Huancavelica, Loreto, and Ucayali are the country's poorest-performing regions.

Education is one of those lagging indicators. Apurimac, for example, has an illiteracy rate of 17%, compared with the national median of 6%. In Ucayali, only 20% of students fully understand the content they are being taught, while in Tacna the figure is 66%.

There are also big regional gaps in health indicators. The percentage of undernourished children under five years old is 35% in Huancavelica and only 4% in Tacna. There is only one physician per 2,000 habitants in Cajamarca; in Arequipa, there are eight physicians per 2,000 habitants.

Some regions suffer from an alarming lack of access to basic infrastructure, such as water, electricity, and roads. For example, according to INCORE 2016 (Peru's regional competitiveness index), 99% of households in Lima have access to publicly provided electric power, while in Loreto only 77% have this service. Although 90% of households in Peru have ready access to running water, those in Pasco and Puno have access, respectively, for only two hours and five hours a day.

A Pressing Need for Greater Balance

Peru's economy evidences increasing balance and diversity, but there is room for further improvement, especially in the country's import-export structure. Mining represents about 10% of GDP but more than half of total exports.

(See Exhibit 6.) The country is heavily exposed to fluctuations in commodity prices, especially copper, and, historically, Peru's GDP growth has risen and fallen in line with copper, gold, and silver prices. Exports are highly concentrated in non-value-added, mostly mined, products, as well as in nontraditional exports. There is also room for growth in trade with neighbors—the Latin American region represents less than one-fifth of total exports and less than one-quarter of total imports. And, in contrast to non-value-added exports, two-thirds of imports are mostly finished consumer and capital goods.

Previous efforts to diversify Peru's economy have had mixed results, but some industries—including metal mechanics, agriculture, and tourism—have experienced significant progress. The metal mechanics industry has taken off in recent years thanks to the high growth and development of the mining industry. However, consumption today is mostly domestic, so metal mechanics contributes less than 2% to exports. Agriculture is growing, owing to recent trade agreements, new irrigation infra-

structure, and rising demand for certain products, such as quinoa, asparagus, and, more recently, blueberries. Still, this sector is focused mostly on primary product commercialization, and additional irrigation infrastructure may be necessary for further growth. Tourism doubled from 2005 to 2015 (from 1.5 million to 3 million visitors per year), mainly because Machu Picchu was named one of the seven new wonders of the world. Other tourism resources remain underexploited.

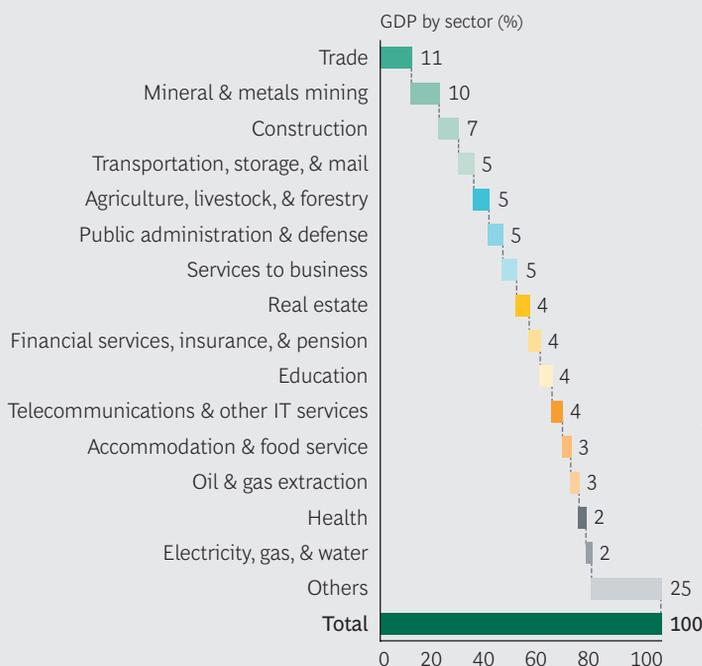
In these sectors, as in many others, a combination of further infrastructure development, sound public policy, a focus on value-added activity, and increasing attention to exports is needed to accelerate growth.

NOTE

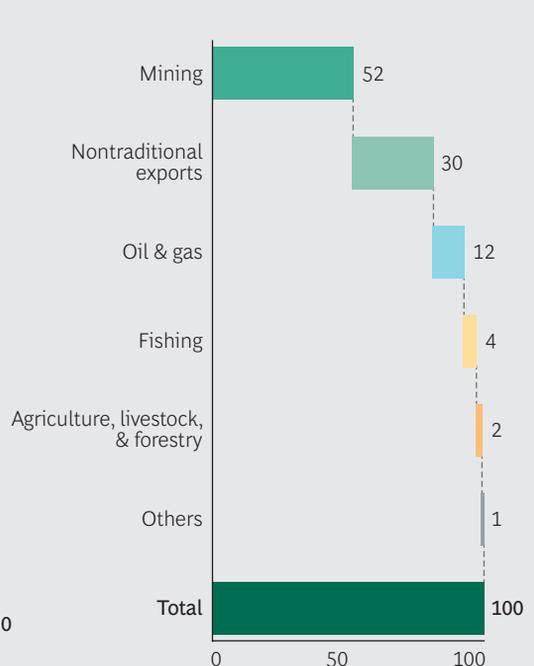
1. Our 2016 data set includes 162 countries plus Hong Kong, which is a special administrative region of China. For the sake of simplicity, we refer to all entities as "countries."

EXHIBIT 6 | Peru Has Pursued Economic Diversification, but Exports Are Highly Concentrated in Mining

PERU HAS A RELATIVE DEPENDENCE ON MINING



PERUVIAN EXPORTS ARE HIGHLY CONCENTRATED IN MINING



Sources: Banco Central de Reserva del Perú; The World Bank; BCG analysis.
 Note: Based on 2014 dollars.

PERU'S PRIORITIES FOR A BETTER TOMORROW

PERU FACES PLENTY OF challenges in terms of both wealth and well-being, as would be expected of any country at a similar stage of development. The question is, where and how should Peru apply its resources to maintain, or even accelerate, the progress of recent years? How can the country best continue to fuel economic growth and convert its increasing wealth into improvements in well-being for citizens?

SEDA's Peer Analysis

SEDA helps a country pinpoint areas for improvement by comparing its performance with countries that have similar geographic, economic, and developmental characteristics. The goal is twofold: to help a country frame challenges and set priorities, and to identify the strategies and approaches that have worked elsewhere. (See Exhibit 7.)

For Peru, we looked at three peer groups:

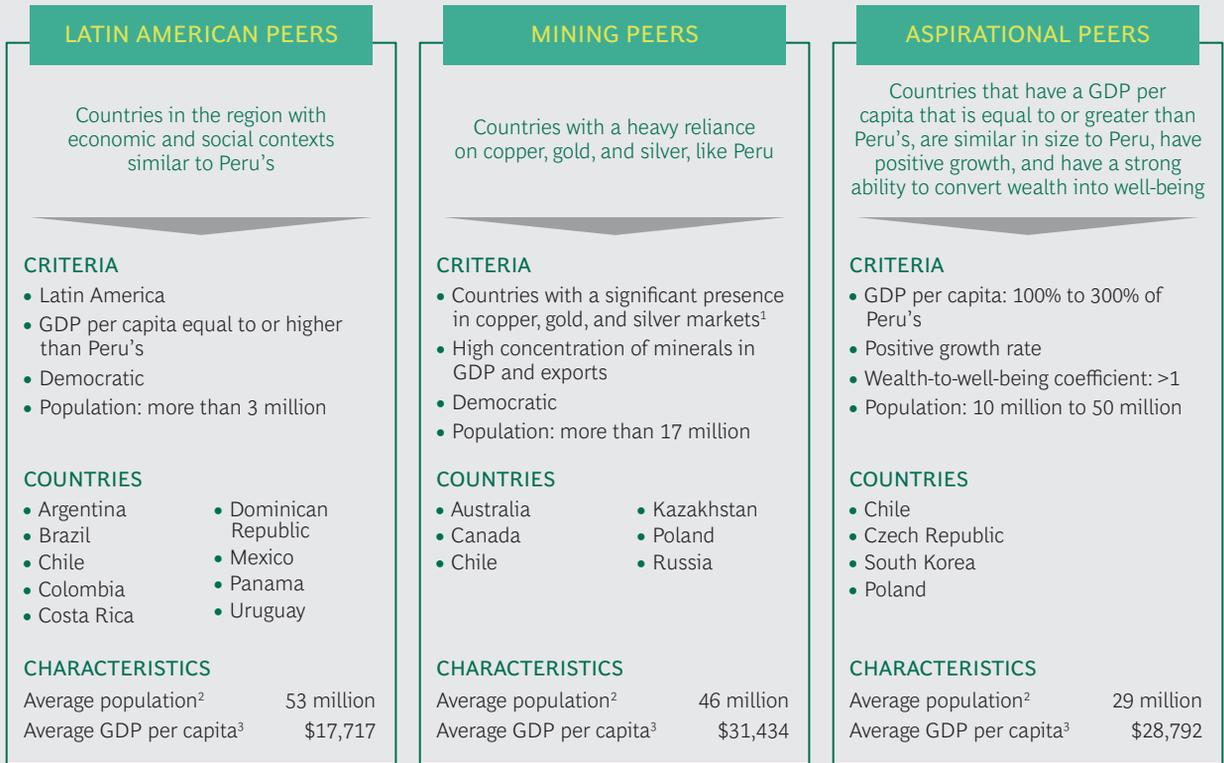
- **Latin American peers.** This group comprises countries in the region with similar economic and social circumstances: Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Mexico, Panama, and Uruguay. These countries have democratic governments, an average population of 53 million (compared with Peru's 31 million), and GDP per capita that is equal to or higher than Peru's

\$12,402 (the average in this peer group was \$17,717).¹

- **Mining peers.** Like Peru, the countries in this group depend substantially on metals and mineral extraction. They represent much of the worldwide production of commodities such as copper, gold, and silver. They have average populations of 46 million and average GDP per capita of \$31,434. This group comprises Australia, Canada, Chile, Kazakhstan, Poland, and Russia.
- **Aspirational peers.** These countries have populations and economies similar in size to those of Peru, but they have levels of wealth that are higher than Peru's and above-average records of converting wealth into well-being. Their per-capita GDPs are between 100% and 300% of Peru's, and their economies are growing. The average size of their populations is 29 million, and their average GDP per capita is \$28,792. This group comprises Chile, the Czech Republic, Poland, and South Korea.

As is the case in the global rankings, Peru's performance on many of SEDA's dimensions trails that of its peers, but it has outperformed in recent progress. (See Exhibit 8.) More tellingly, the peer comparison highlights multiple areas in which Peru lags its neighbors and its mining and aspirational peers. These include income, infrastructure, education, health, gov-

EXHIBIT 7 | Three Sets of Peer Countries Help Frame Peru's Challenges



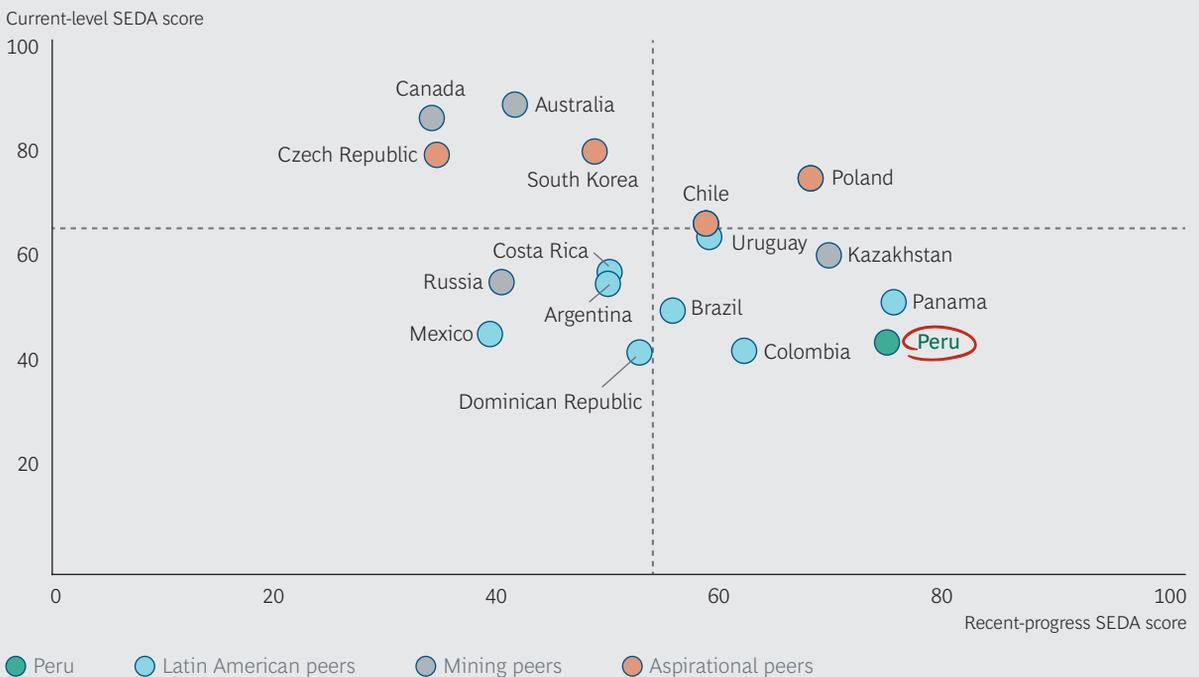
Source: BCG analysis.

¹Based on the 2014 average production share of each country for copper, gold, and silver.

²As of 2015.

³As of 2015 purchasing-power parity (current international \$).

EXHIBIT 8 | Peru Ranks Below Its Peers but Has Above-Average Recent Progress



Source: BCG analysis.

ernance, and civil society. (See Exhibit 9.) Peru needs to further boost economic growth and reduce its reliance on mining. There is an urgent need to step up investment in infrastructure, which has widespread economic and social benefits. A combination of investment and improved performance, quality, and efficiency are also urgently needed in health care and education. Shrinking the gaps in these areas, while addressing harmful problems related to governance and civil society, such as security, crime, and corruption, would set Peru on a path to achieving strong improvements in the well-being of its citizens. A prerequisite, of course, is that Peru maintains its momentum in economic growth.

An Agenda for Action

Peru urgently needs to take three actions:

- Promote the diversification of the economy by creating conditions in which new enterprises can thrive and existing enterprises can expand their range of activities and increase their productivity.
- Develop a targeted, prioritized, and unified infrastructure plan to address the

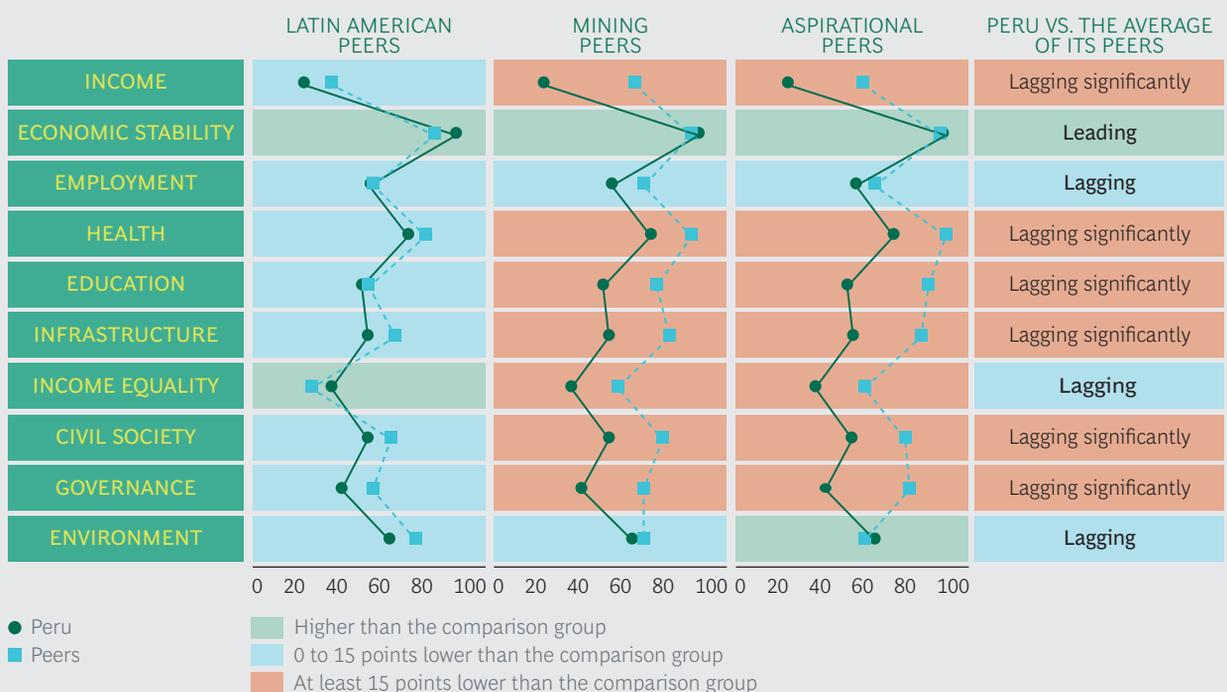
bottlenecks affecting specific industries and to improve interconnectivity among cities and mobility within them. Simplify bureaucracy in the approval and execution processes of PPPs to facilitate financing and investment by the private sector.

- Develop an improvement program in the health and education sectors, with an increased focus on quality without disregarding the need to extend coverage more evenly across regions.

Improved fiscal management will be a critical success factor for the proposed efforts on infrastructure, health, and education. While there is room for improvement in the efficiency of expenditure, it is also essential to increase public revenue generation.

In addition, Peru needs to address the problems in governance and civil society that can undermine and limit the effectiveness of efforts in other areas. Two of the biggest issues are crime and corruption. Peru has one of the highest crime rates in the Americas. More than 30% of Peru’s population fell victim to at least one crime during 2014, and the number of crimes increased for eight years straight

EXHIBIT 9 | Peer Analysis Highlights Areas for Improvement



Source: BCG analysis.

through 2014. Peru also ranks below its peers in Transparency International’s Corruption Perceptions Index, and public polling shows that people consider crime to be the most important issue facing the new government. According to the National Audit Office, Peru loses some \$3 billion a year to corruption—and this is probably just the tip of the iceberg.

Peru has plenty of company with regard to the pervasiveness and pernicious effect of these problems. It may be that a combination of top-

down legislation and enforcement and bottom-up practical initiatives that employ new technologies offers the best approach to tackling them. (See the sidebar “Deploying Digital Technologies in Governance and Civil Society.”)

NOTE

1. Unless otherwise noted, all GDP figures in this report date from 2015 and are calculated using current dollars, adjusted for purchasing-power parity.

DEPLOYING DIGITAL TECHNOLOGIES IN GOVERNANCE AND CIVIL SOCIETY

Digital tools can have a major positive impact on governance and civil society. They may also help reduce crime and corruption by making it more difficult to engage in those activities.

Digitizing Government

In governance, digital tools reduce the number of points at which government employees personally provide services or make individual decisions, cutting down on the inappropriate diversion of funds through gaps in the system, curtailing discrimination, and enhancing citizens’ trust in, and engagement with, government. Using digital tools in this way involves a commitment to transparency and service delivery. Citizens and businesses are provided with ready access to information related to the public procurements and contracts of all public institutions in all government levels. The media and others can thus easily monitor the progress and results of programs and projects, which provides greater transparency into the workings of the public sector and its agencies.

Digitization also improves the efficiency and user-friendliness of existing processes and services, with big benefits for citizens, especially in developing countries. (See *Digital Government: Turning the Rhetoric into Reality*, BCG report, June 214.)

Uruguay, which is ranked by the United Nations as the most developed country in

Latin America in terms of e-government, acts as a role model. Over recent years, Uruguay has introduced digital technologies in several areas and processes, from statistics to issuing birth certificates. Its commitment to building out digital services is one reason that Uruguay also ranks first among Latin American countries in Transparency International’s Corruption Perceptions Index.

Electronic Banking and Payments

Electronic banking minimizes the amount of cash that small businesses and individuals hold, potentially reducing the risk of robbery and violence. Improvements in financial inclusion that involve digital services—which can have many other benefits as well—are likely to have a positive impact on personal safety.

In 2012, Chile launched the Chile Cuenta program, which was designed to provide bank accounts and make electronic payment available to the most vulnerable Chilean population through partnerships with local banks. Backed, developed, and launched by the Ministry of Social Development, the program offers temporary subsidies to cover the cost of using the electronic payment alternative. It aims to provide comfort, savings capacity, and safety to the Chilean population, and it is credited with reducing the country’s incidence of robberies in recent years.

MAINTAINING MOMENTUM

THE NEED FOR ECONOMIC DIVERSIFICATION

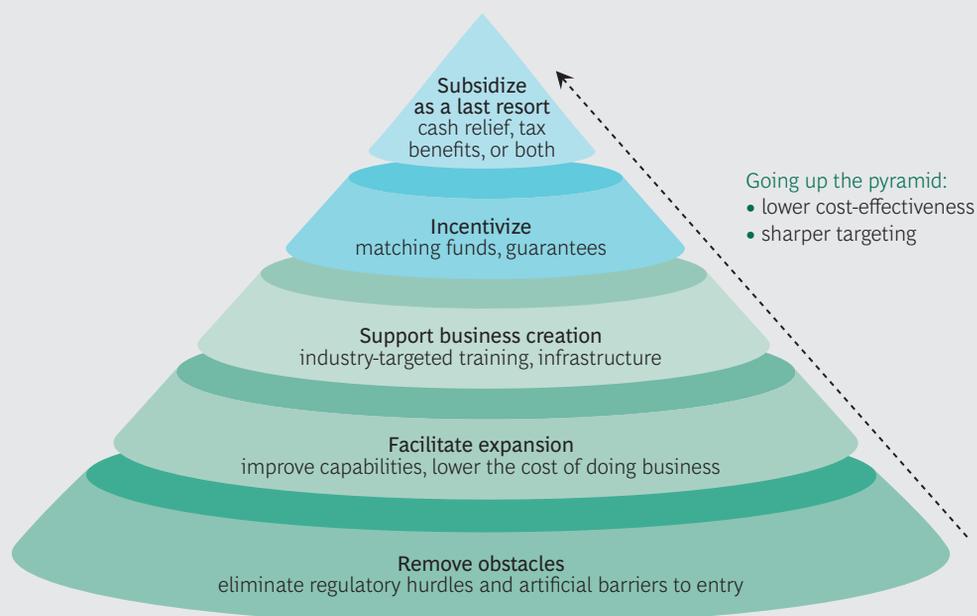
TO SUSTAIN GROWTH AND reduce exposure to commodity price volatility, Peru needs to broaden its economic base. While there is no one recipe that will convert a concentrated, resource-rich economy into a diversified one, we believe that a combination of private investment and structured, noninvasive public participation can help accelerate this process.

As a result of our work with governments, nongovernmental organizations, and compa-

nies around the world, BCG has developed a framework, the Hierarchy of Interventions Pyramid, that helps guide public participation toward economic development and diversification. (See Exhibit 10.)

This framework consists of five levels of public action that involve both increasingly sharp targeting and decreasing cost-effectiveness. The bottom two levels aim to remove obstacles and generate healthy conditions for new

EXHIBIT 10 | BCG's Hierarchy of Interventions Pyramid



Source: BCG analysis.

industries to thrive at an economy-wide level. The top three focus on supporting and fostering particular industries or sectors that have naturally emerged as candidates for economic development and diversification.

Remove Obstacles

The business environment in a developing country such as Peru can be a significant obstacle to diversification and economic growth, particularly for small and midsize enterprises (SMEs), which are often the engine of economic and job growth. Microeconomic business policies, typically involving layers of red tape, are usually a legacy of colonial administrations. Time-consuming and outmoded local regulations also lead to government inefficiencies. These policies and ways of working need to be updated and shaped according to actual needs.

The public sector needs to address bureaucracy and red tape, but the private sector can provide a helpful push. In Sweden, for example, a nonpolitical business organization, the Board of Swedish Industry and Commerce for Better Regulation, advocates on behalf of the Swedish business community for simpler, more business-friendly regulations, both within Sweden and in the EU. The board comprises 15 Swedish business organizations and trade associations that together represent more than 300,000 companies of all sizes in every sector. Since 2002, the board has published an annual report that evaluates policy and progress on improving regulation and suggests actions.

Facilitate Expansion

Governments can help further economic development and diversification by facilitating business creation and expansion. This can involve a range of initiatives, but the ones that tend to have the greatest impact include improving capabilities (such as policies that encourage innovation and use of technology, for example) and lowering the cost of doing business.

BCG research in 2015 in six countries (Brazil, China, Germany, India, South Korea, and the US) found that narrowing the “mobile divide” between SME leaders and laggards in the use

of mobile technologies could add 7 million jobs over three years, increase GDP growth by 0.5 percentage points, and help reduce unemployment by more than 10%. But there was a strong need for policies aimed at tackling the mobile divide head on. (See *The Mobile Revolution: How Mobile Technologies Drive a Trillion Dollar Impact*, BCG report, January 2015.)

The public sector needs to address bureaucracy and red tape, but the private sector can provide a helpful push.

In recent years, Angola, which has sought to reduce its dependence on the oil sector (which represents almost half of GDP) through diversification, has developed 16 projects to improve general economic conditions in the country. These include setting up concession models to target the attraction and transfer of knowledge and technology, the promotion of local content (supporting the migration of workers to places where special expertise is needed), and workforce nationalization programs.

Support Business Creation

An additional way to accelerate economic development and diversification is to support the industries and sectors that have naturally flourished and whose growth can be stimulated through government initiatives. Targeted training and infrastructure initiatives, for example, are two important ways to support such industries. Peru has plenty of candidates for support: tourism, metal mechanics, logistics, forestry and aquaculture, and creative and gastronomic endeavors, among others, are promising candidates to drive economic development and value-added export potential.

After several failed attempts in the 1960s and 1970s to grow trout and salmon in Chile, Fundación Chile, a public institution that promotes innovation among Chilean industries, threw its support behind the salmon industry by investing in R&D and the devel-

opment of technology capabilities, such as adapting Norwegian salmon-farming technology to Chilean conditions. This public intervention achieved outstanding results, spurring exports from \$1 million in 1985–1986 to almost \$160 million in 1991. Chile is now the second-largest salmon exporter in the world, with more than \$4 billion in annual exports.

Incentivize

Targeted incentives are another effective means of encouraging the development of an economic sector and promoting economic growth and diversification. The best incentives can be supported by government or public institutions, but, critically, they also have an important private-sector component, such as matching funds and guarantees.

Consider Taiwan. At the beginning of the 1980s, global economic trends pressured the economy and industry to change. Government officials reached a strategic consensus to develop industries that produced high-value-added goods. Labor-intensive industries were de-emphasized as the mainstay of the industrial sector and gradually replaced by technology- and capital-intensive industries. To promote the development of the latter, the government established funding packages for venture capital, financed high-level research and development projects, and offered elaborate management and marketing assistance.

Subsidize Only as a Last Resort

Subsidies constitute the highest level of public participation in the Hierarchy of Interventions Pyramid and represent one of the greatest levels of intervention that a government can have in the market. Subsidies should be

used sparingly because they can easily introduce distortions and build detrimental dependencies. The most common way to provide subsidies is through tax benefits and cash relief.

For instance, in the early 1970s, Chile made a strategic bet that the Monterey pine tree, rarely found in Chile at the time, would thrive in the country's unique soil and weather conditions and thus grow faster there than anywhere else in the world. The government passed several laws providing governing and legal certainty and incentives for planting the trees. The provisions stated that land on which the trees were grown could not be expropriated, and the government granted cash subsidies for up to 75% of the startup costs, including direct credit lines. Today the Monterey pine is one of Chile's most important forestry exports and a major source of pulp and sawn wood exports.

While it is tempting to go straight to the top of the pyramid and use subsidies in specific high-potential sectors, the most effective approach is to start at the bottom with broad-based initiatives that are inexpensive to implement and free up private capital and entrepreneurial abilities and then move up the pyramid, taking a market-based, rather than a cherry-picking, view. History shows that governments are not good at identifying winners and losers, and those that make mistakes can find themselves struggling under the weight of white elephants.

INFRASTRUCTURE

BUILDING OUT THE BASICS

INFRASTRUCTURE—PHYSICAL, ELECTRICAL, TELECOMMUNICATIONS, AND increasingly, digital—is an essential foundation of both economic growth and well-being. While the private sector has an important role to play, infrastructure development requires active involvement, planning, direction, and, often, funding by the public sector.

Improving infrastructure is a major and essential challenge for Peru. Despite recent advances, the country lags behind its peers in both spending and development. (See Exhibit 10.) BCG's SEDA ranks Peru at 100 out of 163 countries for the current level of its infrastructure, well below the average current-level score of 47. In the World Economic Forum's global competitiveness ranking, Peru scores 89 out of 140 for infrastructure, far worse than its peers' average. Peru also underperforms its peers' average in the World Bank's Logistics Performance Index.

The Problem: A Broad Infrastructure Deficit

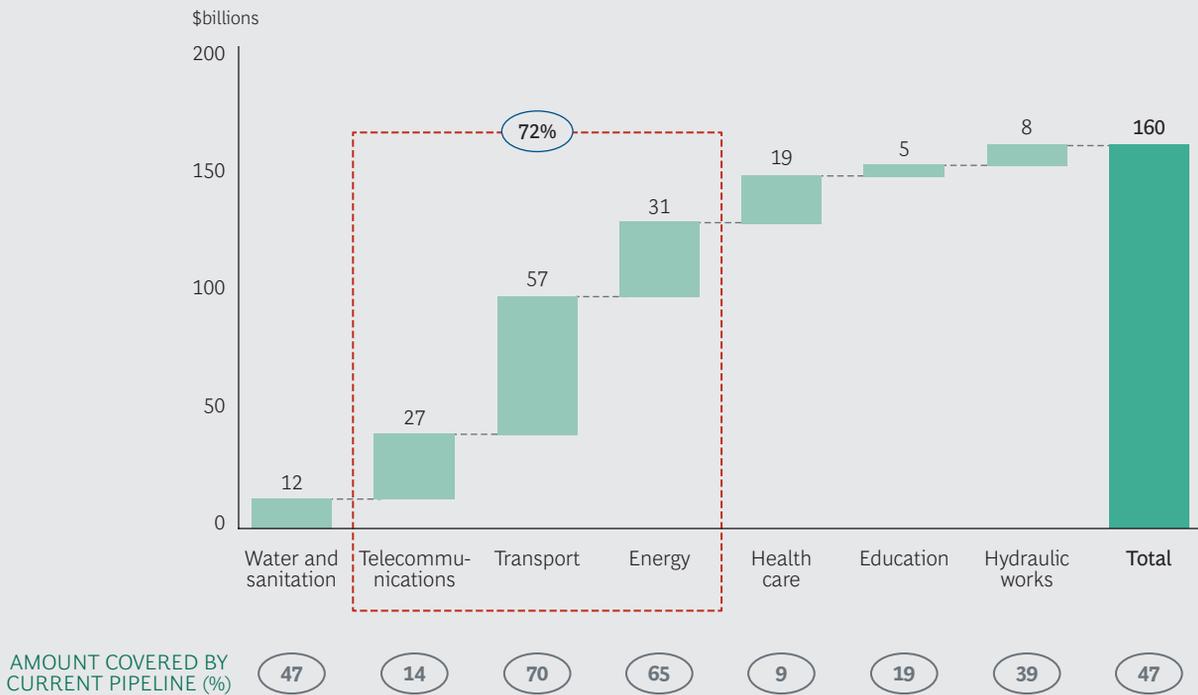
Peru faces an estimated infrastructure gap of some \$160 billion from 2016 to 2025, with transportation, energy, and telecommunications making up almost three-quarters of the shortfall. (See Exhibit 11.) Worse, while the government has a national strategy (CEPLAN 2011) to guide infrastructure develop-

ment through 2021 that includes a regional development and infrastructure section, actual development plans are in place for only the rail network, rural electrification, and sanitation. There are no development plans today for telecommunications, health care, or education.

Improving infrastructure is a major and essential challenge for Peru.

Moreover, plans in several sectors fall short of actual needs and do not address the most critical problems. In transportation, for example, railroads and airports are overfunded, while current plans for roads and ports fall short of projected needs by 32% and 24%, respectively. Peru's telecommunications infrastructure is underdeveloped, and the current project pipeline covers only 14% of the total gap. Mobile-network antenna construction represents almost 80% of the current pipeline, but little spending is contemplated in rural provinces, which have minimal telecommunications coverage. Significant infrastructure investment is planned for the energy sector, but it will not cover long-term needs. Current projections forecast an \$11 billion shortfall by 2025.

EXHIBIT 11 | Peru's Infrastructure Gap Is Estimated at \$160 Billion



Sources: Escuela de Gestión Pública at Universidad del Pacífico; AFIN.
Note: The infrastructure gap is estimated for the period from 2016 to 2025.

The Causes: Lack of Spending and Poor Processes

Lack of spending is a big part of the problem: Peru has far underspent its peers, and as a result, it suffers from poor water resources, inadequate roads, and low internet penetration. (See Exhibit 12.) We estimate that to completely close its infrastructure spending gap, Peru would have to invest approximately 8% of GDP each year from 2016 to 2025. Historically, however, the country has invested less than 2% of GDP. Even if the political will to increase infrastructure spending can be mustered, Peru will need to find much of the requisite money. An analysis of government income and spending shows that only about 3% of GDP is available for additional investment. Approximately 5% will need to come from either the private sector or the issuance of public-sector debt.

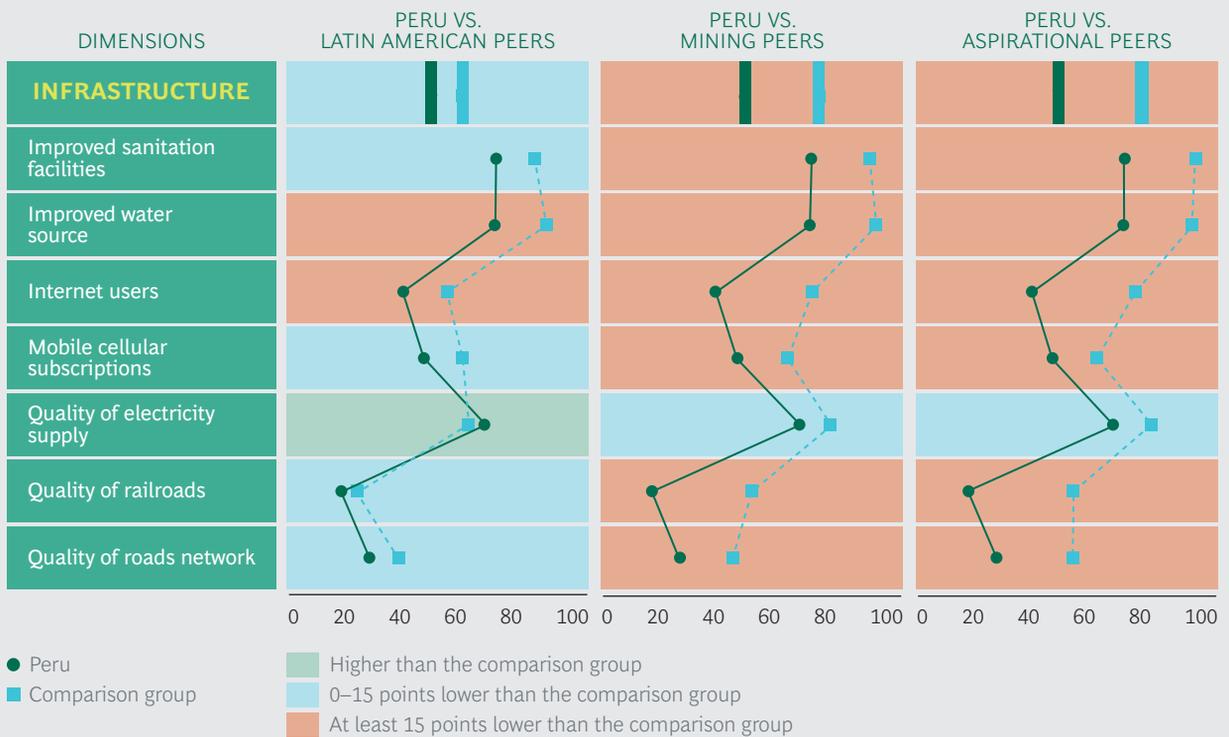
Peru is also plagued by constraints all along the infrastructure development pipeline. For example, the country's well-established infrastructure approval and investment processes are far from unique, but they involve a high degree of government interaction and bu-

reaucracy, which slows, and sometimes inhibits, investment and imposes burdensome costs on players in both the private and the public sectors. Project approval timelines can vary widely across projects and regions, and financing for a project can come from one of three sources: public funding, PPPs, and the Works for Taxes Law (WFTL).

Projects financed with public funds involve bureaucratic processes from idea development through the investment phase. Sistema Nacional de Inversión Pública (SNIP), Peru's project evaluation tool, can hinder a project's assessment. If the project uses debt, an entity dependent on the Ministry of Economy and Finance must also approve the investment profile and feasibility study after SNIP's approval.

The PPP approval process is only moderately better. It also involves many interactions with government entities and is generally sluggish and opaque. Either a government ministry or ProInversión (a private investment promotion agency) oversees a multistep process that involves project review and approval; private-

EXHIBIT 12 | Water, Roads, and Internet Penetration Are the Main Reasons for Peru's Low Score



Source: BCG analysis.

partner solicitation, qualification, competition, and approval; and contract negotiation and approval—all before a project can get off the ground.

The WfTL is a good tool for public institutions to move critical projects forward. It facilitates private-sector investment in exchange for tax deductions. The approval process has streamlined bureaucratic processes compared with PPPs. However, the law limits eligible projects to \$18 million of private investment, and expediting the certificate of tax deduction for the private party can take a long time, delaying the start of a project.

To close the infrastructure gap, Peru must move the actual execution of projects forward much more quickly. It takes an average of 1,163 days—more than three years and more than 2.5 times the average of 20 other countries—to reach financial closure of a PPP project after the project has been awarded. According to AFIN, Peru's association for the promotion of national infrastructure, the delays in the execution phase result from slow

expropriation processes and difficulty in getting permissions. In addition, the process is plagued by a high level of corruption. Peru ranks 99th out of 140 countries in irregular payments and bribes in connection with the awarding of public contracts and licenses, according to the World Economic Forum.

Recommendations: Streamline Processes to Attract New Investment

If Peru's government is going to close the financing gap and meet the country's infrastructure needs—important steps in addressing other issues related to building wealth and well-being—it will need to take four actions.

Set priorities and put a plan in place. Peru must prioritize projects according to its most critical requirements and develop an integrated, multisector national infrastructure plan. There are role models to follow. Peru must establish an institutional structure that supports rigorous, outcome-focused project prioritization. Key success factors include:

- Building an evidence-based, long-term infrastructure vision that provides a consistent framework for decision making
- Identifying existing government assets that would be more efficiently managed as private, or state-owned, enterprises
- Requiring a rigorous, transparent, independent, and expert review of all proposed investments
- Conducting a cost-benefit analysis to determine the optimal delivery model
- Tracking project performance against outcomes

Peru also needs to reassess its current infrastructure project pipeline and supporting policies. (See the sidebar “Managing the UK Transportation Infrastructure Pipeline.”)

It should do so in the context of a national infrastructure plan that integrates four elements:

- A long-term vision balancing key infrastructure needs and available resources
- Medium-term goals providing coordinated, outcome-based targets for progress that are consistent with the long-term vision
- A project and privatization pipeline encompassing both public projects and PPPs, including privatization options, that

invest in existing and new infrastructure required to achieve the medium-term goals

- Priority policy interventions supporting public and private investment to deliver the pipeline

Establish a single agency for approvals. Peru also needs a properly resourced agency accountable for the overall infrastructure-project approval process. The agency must allocate responsibilities between local and regional governments and the Ministry of Economy and Finance. Digital processes can help reduce paperwork and increase transparency.

Significant improvements are possible without compromising the integrity of the approvals process. Setting time limits for approvals is an important first step, and it should be supported by the establishment of additional preconditions that drive efficiency, such as clear allocation of responsibilities among the agencies involved, early and efficient public participation, and clear, consistent, and coherent regulatory objectives.

Increase incentives for PPPs. To close the infrastructure gap, Peru needs to generate annual infrastructure financing equivalent to almost 5% of GDP through 2025. Of the three financing mechanisms for infrastructure projects—public funding, PPPs, and WFTL—PPP may offer the highest potential for closing the financing gap. For example, ProInversión has a large concession pipeline,

MANAGING THE UK TRANSPORTATION INFRASTRUCTURE PIPELINE

The UK provides an example of how to effectively manage an infrastructure pipeline in the transportation sector. The government has a long-term vision of an integrated transport system that provides reliable, cost-effective domestic and international connections. Medium-term goals address such factors as road quality, increased capacity, and congestion, and ensure that the network provides critical connections. The smart motorways pro-

gram, which includes four high-capital-value projects, will take advantage of new technology (such as variable speed limits and CCTV monitoring for rapid incident response) to maximize the capacity of the existing motorway network. To support public and private investment, the government is transforming the former Highways Agency into a government-owned strategic highways company.

but there are no local construction companies capable of managing complex projects.

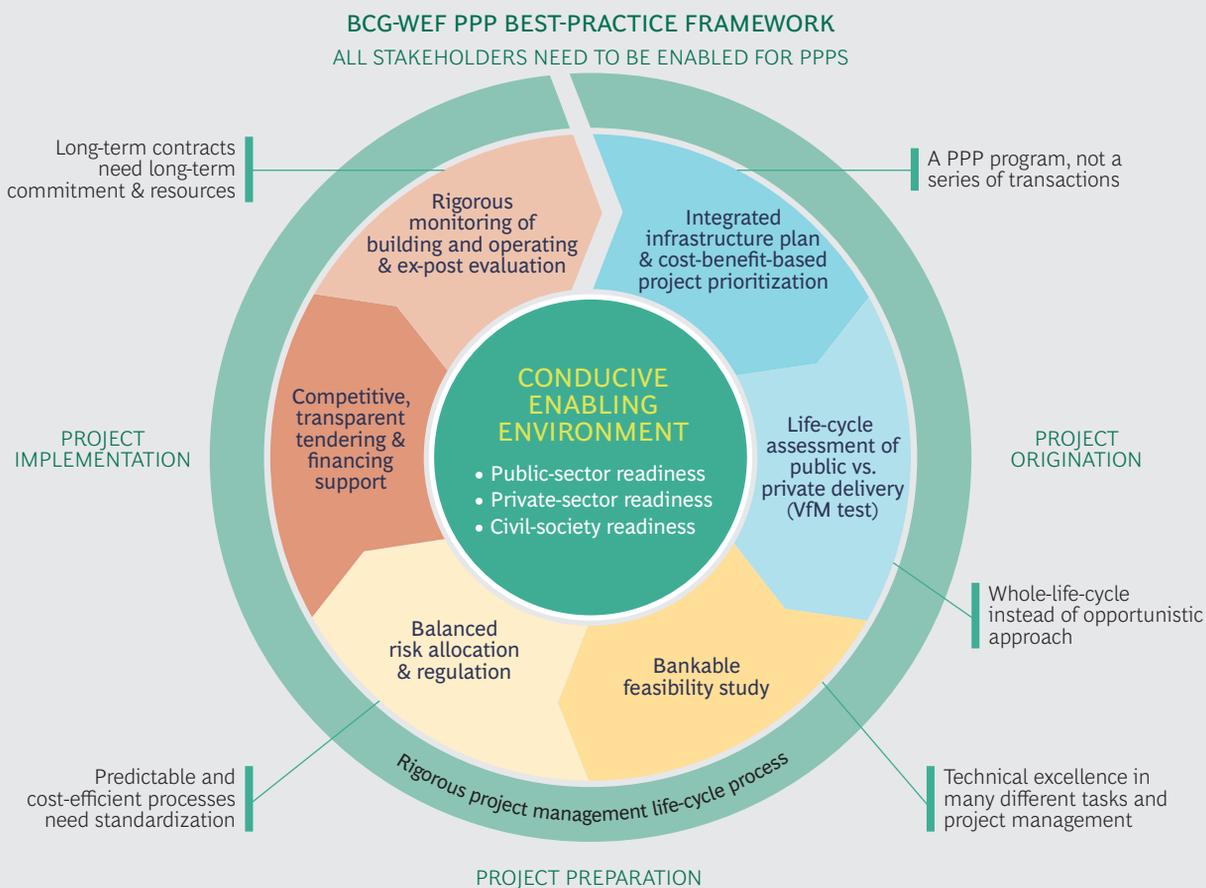
the WfTL, particularly with respect to small, high-impact projects.

Peru is one of the most predisposed countries toward PPPs in Latin America. From 2008 through the first half of 2015, Peruvian PPPs invested almost \$30 billion. WfTL was responsible for an additional \$600 million from 2008 to 2015. Peru offers potentially attractive opportunities to foreign companies that specialize in infrastructure projects. A leading Brazilian construction group, for example, has developed significant business in roads and hydropower generation in Peru, and European players are active as well. But Peru needs a sound environment for private investment. This requires supporting current marketing initiatives with a lean approval process and empowering government technical teams to interact with private-sector players. Peru can also take greater advantage of

Define clear rules and develop a best-practice framework. Peru has no laws with which to enforce private company performance on infrastructure projects or to penalize government agencies that do not comply with requirements. The country urgently needs to define clear rules and sanctions to motivate the government to work with private-sector enterprises in order to move projects forward and ensure that private companies' priorities are aligned with the government's needs. Increasing transparency in negotiations after a project's approval is another priority.

BCG and the World Economic Forum have developed a best-practice framework for PPPs that is based on a study of successful international PPP models. (See Exhibit 13.)

EXHIBIT 13 | A Whole-Life-Cycle Strategy Is Key for Success in Public-Private Partnerships



Sources: World Economic Forum; BCG analysis.
Note: PPP = public-private partnership; VfM = value for money.

Using this framework to assess Peru’s performance in the various aspects of project execution against a global benchmarking data-

base could improve project design and policy settings, and increase the support of multilateral agencies. (See Exhibit 14.)

EXHIBIT 14 | Potential Benefits to Be Gained from Global Benchmarking

	POTENTIAL BENEFITS	EXAMPLE BENCHMARKS
PROGRAM & PROJECT BENCHMARKS	<ul style="list-style-type: none"> Enable improved project design Better cost and demand forecasts Identification of improvement areas <ul style="list-style-type: none"> Support infrastructure asset class development Better risk-return benchmarks 	<ul style="list-style-type: none"> Implementation effectiveness by sector KPIs of physical progress, costs, & design quality, such as the average cost per kilometer of a bus route <ul style="list-style-type: none"> Program/project design and structuring For example, the amount of private financing leveraged
POLICY BENCHMARKS	<ul style="list-style-type: none"> Incentivize and enable improved policy settings Public comparisons incentivize and highlight the need for improvement Detailed comparisons identify action priorities 	<ul style="list-style-type: none"> Elements of the enabling framework For example, the presence of PPP legislation, such as investing in infrastructure survey
SUPPORT BENCHMARKS	<ul style="list-style-type: none"> Incentivize and enable improved support Done by multilateral agencies Greater transparency on performance and effectiveness 	<ul style="list-style-type: none"> Performance of supporting agencies Levels of provision by multilateral development banks, development finance institutions, and development assistance agencies; for example, guarantees issued for PPP projects

Source: BCG analysis.

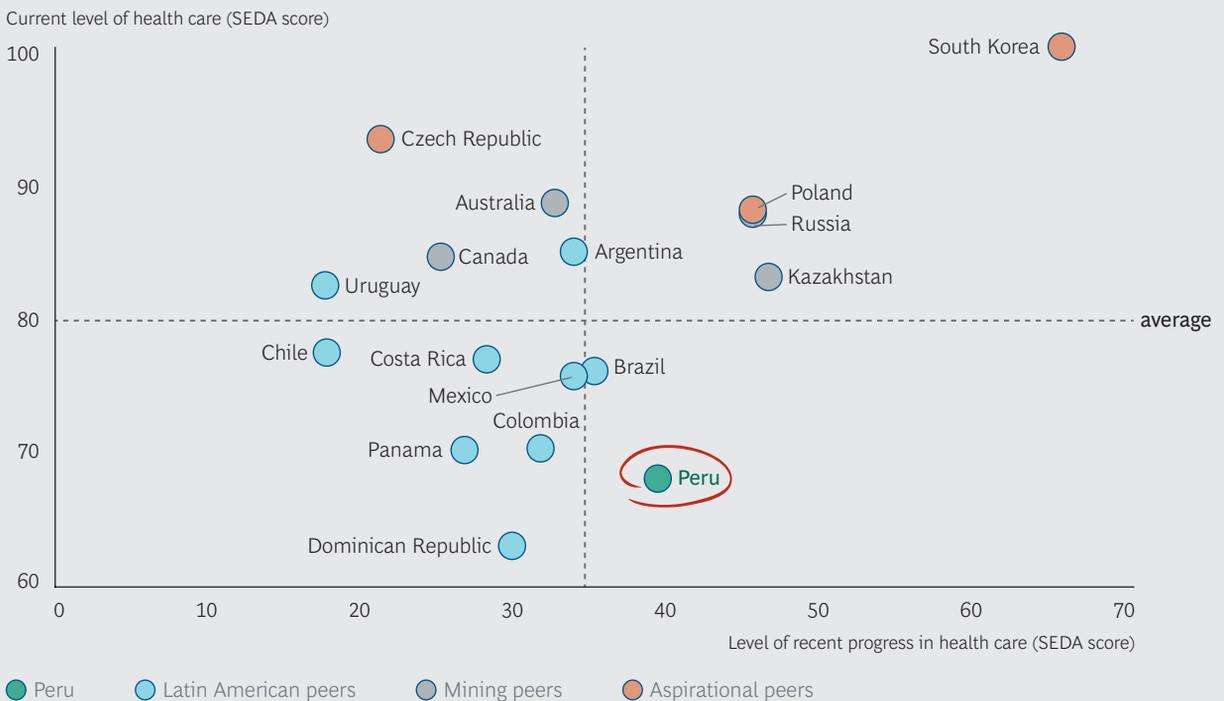
Note: PPP = public-private partnership.

EXTENDING HEALTH CARE TO ALL

DESPITE GOOD PROGRESS IN recent years, health care remains a big challenge for Peru. In the SEDA ranking, Peru ranks 96th out of 163 countries in its current level of health care, but it ranks 65th in recent progress. (See Exhibit 15.) There are visible

signs of improvement. From 2007 to 2014, the rate of undernourishment for children under five years of age has dropped by half, and the child mortality rate has decreased by 15%. Life expectancy has increased by 1.3 years, and physician density has risen by 43%.

EXHIBIT 15 | Peru Has a Low Current Score in Health Care but Has Made Significant Recent Progress



Peru ranks 65th for recent progress in health care

Source: BCG analysis.

The Problem: Inadequate, Inconsistent Care and Low Quality of Service

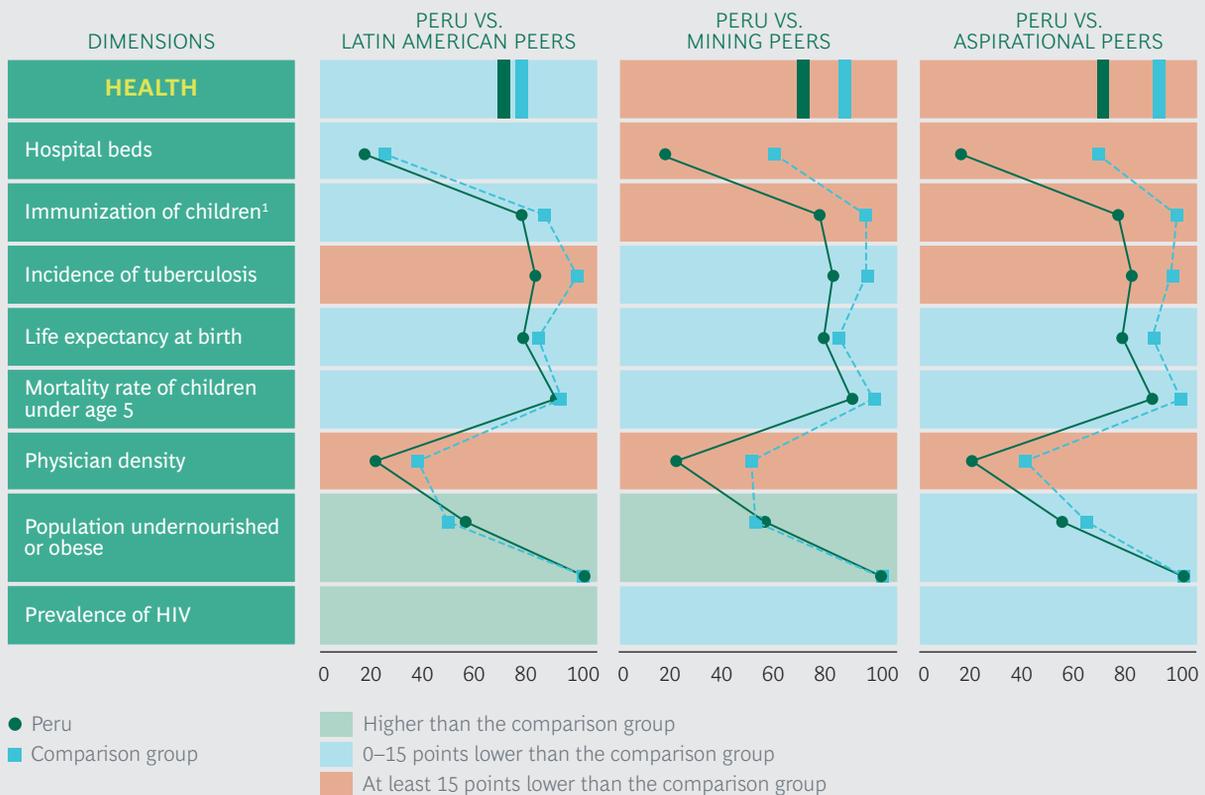
Peru trails its peers, often significantly, in multiple measures, including hospital beds, immunization of children, incidence of tuberculosis, and physician density. (See Exhibit 16.) The number of hospital beds per 1,000 inhabitants actually declined slightly from 2008 to 2015 and, at 15.3, remains far below the average of its peers: Peru’s Latin American peers have 22 beds per 1,000 inhabitants, its mining peers have 53 beds, and its aspirational peers have 66. Physician density has been on the rise. The number of physicians per 1,000 inhabitants has increased sharply since 2008, standing at 2.1 in 2015, just below the Latin American peer average of 2.2. But regional disparity in health care coverage remains a serious problem. Amazonas, Ayacucho, and Huancavelica rank far below other regions on such criteria as physician density as well as on other basic measures, such as malnourishment and mortality.

Service is another factor. Public opinion polls show a rising dissatisfaction with health care services, and general quality of service is the principal source of discontent. Among the many issues the typical patient faces are long wait times for both primary and specialized care (it can take 30 to 90 days to get an appointment with a doctor, for example), a high level of bureaucracy throughout the health care system, and constant shortages of medicines. A big part of the problem is the absence of a program to evaluate the health care system, which could help the government identify problem areas and develop remedial initiatives.

The Causes: Low Participation and Expenditure

Peru has a big problem with participation in health care. While the percentage of the population that contributes to health care funding rose at an annual rate of 5% from 2007 through 2014, it stood at just 19% in 2014, 27 percentage points below the average of Peru’s Latin American peers. (See Exhibit 17.)

EXHIBIT 16 | Peru Lags Its Peers in Multiple Dimensions of Health Care



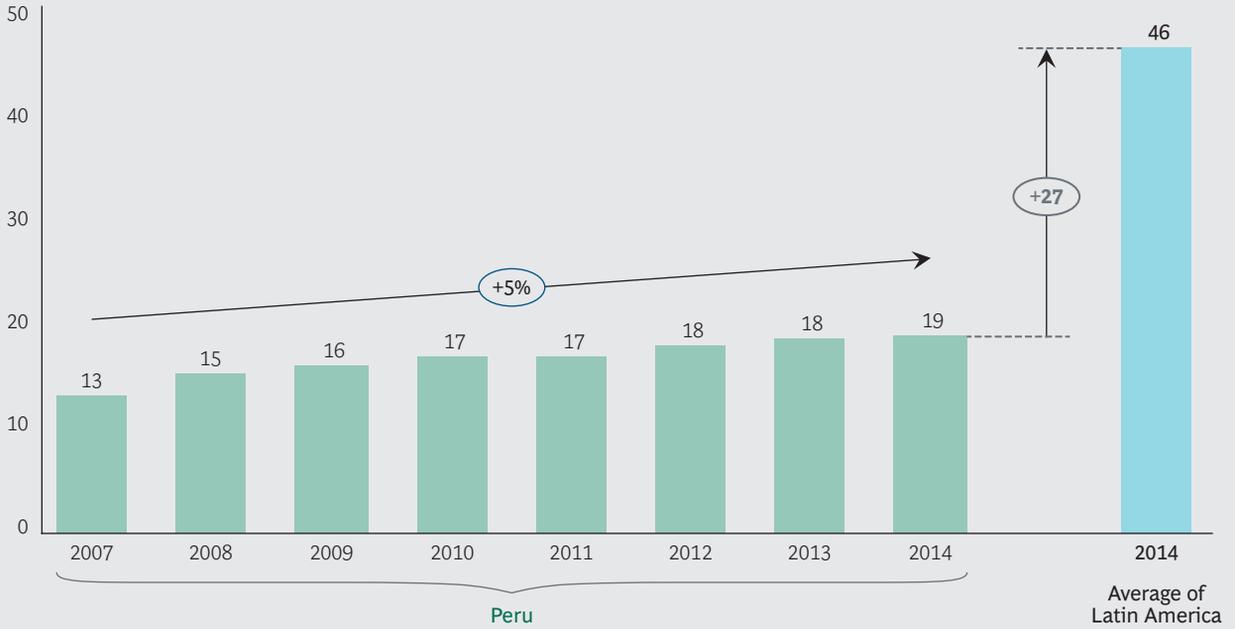
Source: BCG analysis.

¹Immunization = measles and DPT vaccination.

EXHIBIT 17 | Peru Has Low Levels of Contribution to Health Care, Which Leads to Low Expenditures per Capita

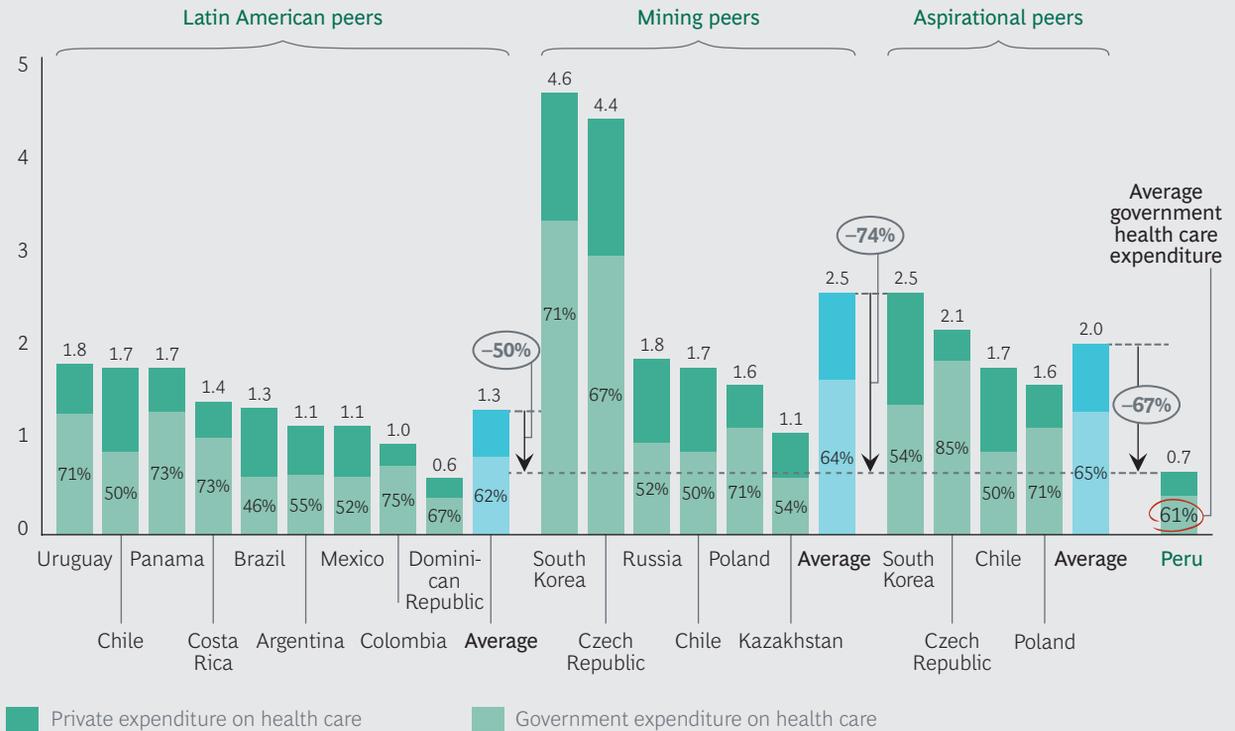
PERU NEEDS TO INCREASE THE AMOUNT OF CONTRIBUTORS BY 27 PERCENTAGE POINTS TO REACH THE AVERAGE LEVEL OF OTHER LATIN AMERICAN COUNTRIES

Contributors (% total population)



PERU HAS A LOW LEVEL OF EXPENDITURE ON HEALTH CARE, AS MUCH AS 74% LESS THAN ITS PEERS

2014 per-capita expenditure on health care (international purchasing-power parity \$thousands)



Sources: EsSalud; Academia Peruana de Salud.

The large informal economy is one reason for this low rate of participation; it is difficult for people who work outside the mainstream economy to participate in the government health care system. Some 30% of Peruvians remained uninsured at the end of 2014, and overall expenditures have been flat.

The low level of contribution has led to a per-capita expenditure of only \$650—50% below Peru’s Latin American peers, 74% below its mining peers, and 67% below its aspirational peers. But the level of contribution by the government, 61%, is close to that of its peers: 62% for Peru’s Latin American peers, 64% for its mining peers, and 67% for its aspirational peers.

Recommendations: Expand Funding and Coverage, and Improve Quality

Peru needs to move aggressively in health care reform if it is to register significant improvement. It should take the following three actions.

Increase funding. To create fiscal room for increasing health care expenditures, Peru needs broad reform: it should expand its public revenue base and improve its tax collection system, including capturing contributions from informal workers. Imposing targeted taxes on such products as tobacco and alcoholic beverages could also help. Many countries use such levies to raise funds for various purposes. The Philippines, for example, applied taxes on tobacco and alcohol both to reduce consumption of those products and to increase funding for health care. As a result, the annual amount of tax collected on alcohol and tobacco products increased by 150% from 2012 to 2015. Some 70% of the incremental revenue has been assigned to the national health insurance program, 15% has gone to national medical assistance and health enhancement facilities, and the remaining 15% has been allocated to programs that benefit tobacco farmers.

Expand coverage. Peru needs to expand coverage and improve service, especially in underserved regions. The government should analyze and prioritize regions for the assign-

ment of resources, both human and infrastructure, to reduce the current gaps. PPPs can help close the infrastructure gap, particularly with respect to hospitals, which can be built and run by private players. The government should develop campaigns to encourage and facilitate health-related careers to improve physician density. In the meantime, hiring foreign medical graduates may provide a short-term solution.

Many other countries have taken action to resolve issues similar to those of Peru. In 2006, for example, Turkey faced a long-term shortage of almost 100,000 hospital beds. The government launched a series of PPPs across the country, investing some \$5 billion, to put in place 25,000 new hospital beds. The program required private-sector participants to finance, construct or renovate, furnish, supply, operate, and maintain the hospitals, while the Ministry of Health was responsible for providing most of the medical services. As of 2013, the number of hospital beds in Turkey had increased by more than 25%, and density had increased more than 20%; as of 2014, the number of private-sector hospital beds had jumped by almost 350%.

Peru should expand its public revenue base and improve its tax collection system.

Many other countries employ diverse educational, regulatory, and financial policies to increase health care in rural areas and to reduce disparities among regions. The US National Health Service Corps successfully placed physicians in underserved areas by providing scholarships or through loan repayment programs. Germany regulates physician density through licensing. Canada and the UK provide financial incentives to encourage physicians to work in underserved areas.

New technologies and business model innovations, such as telemedicine and mobile health, can also help. They allow for rapid progress by leapfrogging current systems and processes with cost-effective and easily scal-

able solutions. Three steps are required to fully implement them.

The first is to embrace the ability of new technological solutions to cost-effectively expand access to health services. This requires a strong commitment from the government, including investment in the required infrastructure. The second step is to train more nurses and frontline community health workers, and to change regulations and policies, in order to shift basic tasks from physicians to these workers by, for example, instituting flexible protocols and innovative work-flow arrangements that make use of technology. The third step involves including the private sector in health care reform, through, for example, accelerating the development of a new insurance market and encouraging business model innovations in the health care supply chain and in service deployment.

Improve quality and service. Peru needs a health-care-system evaluation program with clear KPIs, including those for methodology and frequency of assessment. Effective use of digital technologies can reduce bureaucracy,

deliver better service, and improve resource planning.

Peru could look to its neighbor, Chile, for a model for improving quality and service deployment. In 2008, Chile developed a project called *Sistemas de Información de la Red Asistencial (SIDRA)* with the goal of digitizing institutions in the public-health-care network to improve systemwide quality and service deployment. SIDRA focused first on digitizing the processes for resource agendas, appointments, prescriptions, emergency management, and medical records. As of August 2015, almost 1,300 institutions had been integrated into the network, covering more than 80% of the country. Wait times and medicine shortages are down, control and planning have improved, quality has increased, and patient satisfaction levels are on the rise.

EDUCATION

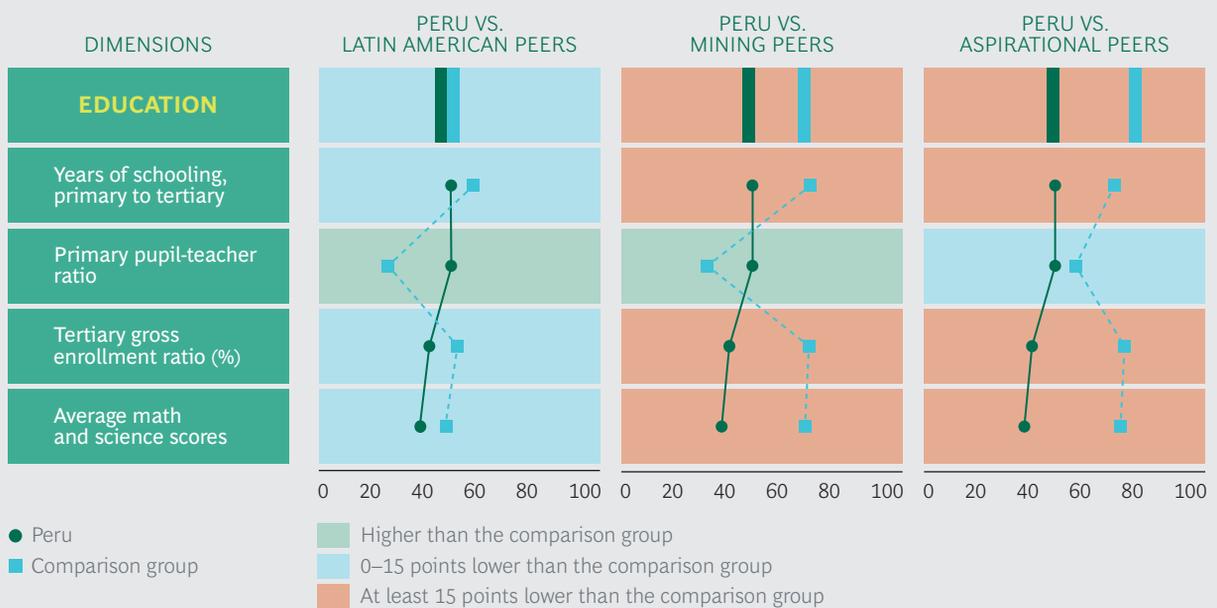
A PREREQUISITE TO GROWTH AND WELL-BEING

PERU HAS MADE BIG strides in education in recent years. The challenge is to maintain the momentum so that the nation catches up with its peers, which it trails on multiple measures, including years of schooling, tertiary enrollment, and math and science scores. (See Exhibit 18.) The education system is producing graduates who have neither the skills they need in today’s world nor the skills the economy needs if it is to continue to develop at a rapid pace.

The Problem: A System That Cannot Meet the Nation’s and the People’s Needs

Peru halved its illiteracy rate (to 5.5%) from 2005 through 2015, it increased secondary-school enrollment by 9% (to 78%) from 2005 through 2014, and it has shown significant increases in early-primary-school-knowledge test scores from 2012 through 2015. Still, despite leading many of its peers in primary-school pupil-teacher ratios, the country’s il-

EXHIBIT 18 | Peru Lags in Education



Source: BCG analysis.

literacy rate is 3.3 percentage points higher than the average of Peru's peers; secondary-school enrollment is 8 percentage points lower than its peers; and Peru lags considerably in its scores on the global Programme for International Student Assessment. As with other measures of wealth and well-being, there is significant regional variance in education, and some cities, including Apurímac and Tacna, score much worse than others.

Young students are not spending enough time in school. Early-education and primary schools are not complying with minimum standards for the number of hours spent in class. The situation in early-education schools is critical: only 46% comply with minimum classroom hours.

Peru is behind the times with respect to basic tools such as textbooks and technology.

Peru is also behind the times with respect to basic tools such as textbooks and technology. There is a wide disparity in the quality of educational content, including textbooks, across the country. In addition, there is inconsistent use of textbooks with digitized content; digitized textbooks enriched with multimedia resources are less common, and availability is inconsistent; interactive textbooks are rare; and interactive textbooks enriched with assessment mechanisms (the current state of the art) are all but nonexistent.

Schools, curricula, and programs in Peru do not necessarily promote the skills needed by workers in the Peruvian economy, which has a big shortage of skilled workers. This holds back both individual incomes and national growth. The country ranks second in ManpowerGroup's 2015 global talent shortage survey, with 68% of companies reporting problems finding talent—well above the global average of 38%. Among the job categories with the highest shortages are skilled trades (such as electricians and mechanics), technicians, engineers, and accounting and

finance staff. The supply of professionals is a great deal larger than the supply of technical workers.

The Causes: Underfunding, Fragmented Management, and Too Few Teachers

One of the main reasons that Peru trails its peers in education is funding. The country spends only 3.7% of GDP on education, well below the peer average of 4.5%, and even further behind Brazil, Mexico, and Argentina, which devote 5.2% to 5.9% of GDP to education. The percentage of the public budget allocated to education remained flat from 2012 through 2014, even as expenditures themselves increased modestly. Spending on maintenance has increased as a percentage of the total, while spending on teachers has fallen.

One result is that Peru's schools are in bad shape. After a concerted effort to build new public schools, maintenance budgets have been mostly unfunded, leading to an inability to maintain school infrastructures, whether new or old. A study by Unidad de Estadística Educativa found that only 15% of all classrooms are in satisfactory physical condition. In Loreto, the figure is 2%. Less than half of public schools have bathrooms in good condition. Worse, the current pipeline of infrastructure projects covers only some of the school system's four-year infrastructure needs, and Peru faces a funding gap of more than \$3.6 billion (equal to the amount required to fund 133 schools) by 2025.

There is also the issue of digital infrastructure, which is becoming a basic need but is not being financed. Internet penetration has progressed significantly in Peru's school system, but rural penetration rates are still low. Only 10% of rural schools have access to the internet. Nationwide, there are eight students for each school computer, and only 33% of primary schools have internet access.

Education policy is set at the national level, but regional and local governments have substantial flexibility in implementation, which results in inconsistent content and the lack of a standardized program nationwide.

Study after study on education by global development organizations such as the World Bank concludes that nothing has a bigger impact on student performance than teachers. Peru has a problem with both the quantity and the quality of its teachers. At current rates, the country will face a shortage of more than 157,000 teachers by 2021. And the current group of teachers performed poorly in the most recent test given by the Ministry of Education; less than 15% of teachers nationwide passed. One big issue is pay. With salaries equivalent to about \$400 a month, teachers are among the lowest paid professionals in Peru, although compensation is currently under review. Another is professional development and training. Peru can benefit from adapting its current system to put more emphasis on data, evaluations, and quality assurance. (See Exhibit 19.)

Recommendations: Centralize Policy and Incentivize Teachers

Peru can make rapid strides with four actions.

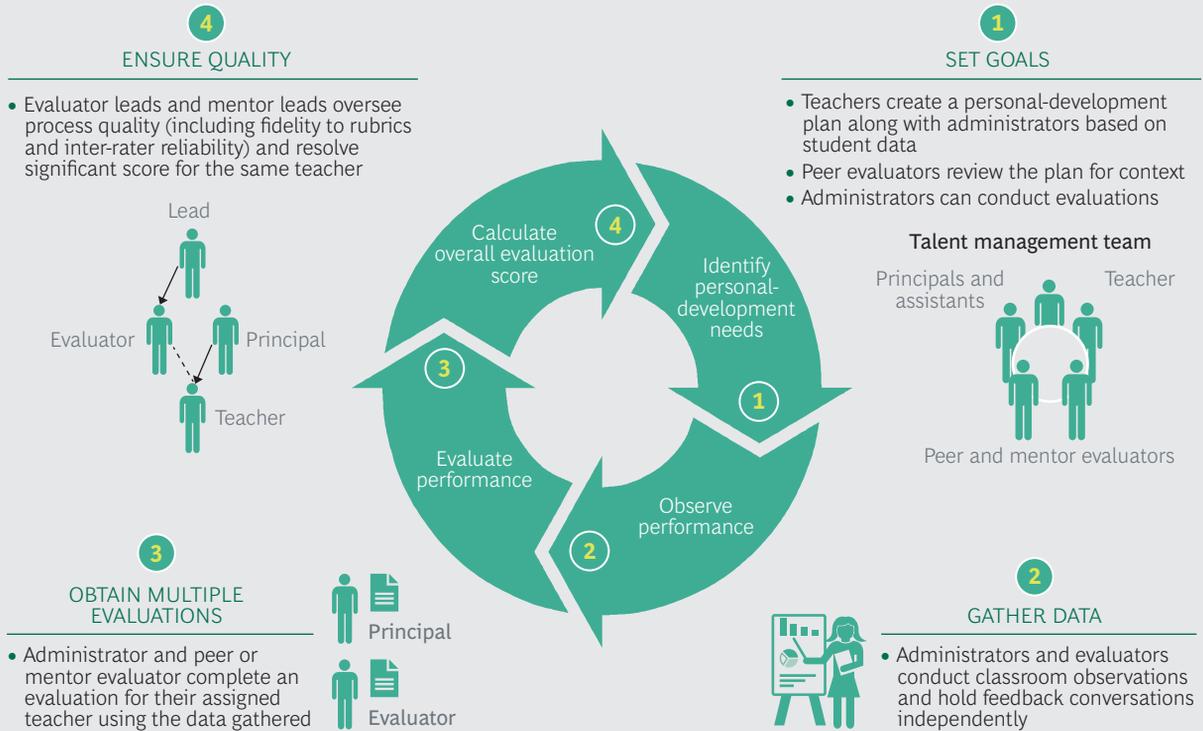
Tighten management and quality control.

Peru needs to tighten the administration and

management of the education system. In our assessment, the most effective systems operate as so-called closed-loop instructional systems. They base curriculum, strategy, and instruction directly on educational objectives. They embed frequent and ongoing evaluation into the system and provide for appropriate interventions. Perhaps most important, they track outcomes and learnings, which are used to modify or adjust objectives.

Contemporary technology has significantly increased the effectiveness of closed-loop instructional systems, making big impacts at each stage of the process. For example, abundant high-quality digital content helps shape multimedia curricula that are timely, relevant, and modular. Digital technologies provide the potential for global reach, personalized learning, and new learning models as well as multiple channels for interaction and collaboration. At an administrative level, faster and richer data allows for detailed analysis of results, which leads to better-informed decisions about strategy and resources.

EXHIBIT 19 | Peru Needs a New System for Teacher Evaluation



Source: BCG analysis.

The national government can also reduce bureaucracy in the education structure, moving toward lean organizations and processes, and limit local and regional governments' ability to change the content of educational programs. One concrete step is to empower the Superintendencia Nacional de Educación Superior Universitaria to regulate the quality of tertiary education.

There is a major need to standardize educational materials across regions and to employ digital technologies much more widely to improve materials and their use.

Focus on needed skills. Peru needs not only to increase the quality, availability, and consistency of its education system, but also to focus programs and content on high-impact areas. Germany offers a model for consideration. The country's dual-track system provides both general and vocational paths, which partially explains why Germany has the lowest ratio of youth to adult unemployment in the world. (See the sidebar "Vocational and Educational Training in Germany.")

Address infrastructure. Peru needs to develop a national multistage education infrastructure plan. A government entity should be in charge of setting priorities and making investment decisions. Public-private partnerships can play a role, especially if projects are grouped so that there are sufficient volumes of work to attract private investment, which could also result in lower costs for the government.

Motivate teachers and teacher development with incentives. Peru desperately needs a new teacher evaluation system that is focused on professional development and has multiple evaluation sources. The system can use digital tools to increase scope, ease the learning process, and obtain accurate information about performance. The country also needs to continue current efforts to make teaching more attractive. Compensation must be at least partly competitive with other professions, which means increasing salaries and using incentives such as bonuses to reward performance and to encourage teachers to work in rural and other underserved areas.

VOCATIONAL AND EDUCATIONAL TRAINING IN GERMANY

In Germany, students can choose to enter vocational school at age 16, and approximately half do so. These students spend one to two days a week in school and three to four days receiving practical, on-the-job training. They select vocations on the basis of the market demand for given skills.

The dual-track system has multiple benefits: young people are motivated by earning a salary and gaining work experience, multiple career paths are offered, and an emphasis on work-family compatibility helps attract women into the workforce.

The dual-track system enjoys active private-sector support. Large multinational companies help set best practices and work with the public sector to keep the apprenticeship supply-and-demand model balanced. Stakeholders in both the public

and the private sectors share education funding. Government invests in oversight and research. The labor office supports students and subsidizes apprentices. Federal and municipal governments fund schools, and employers pay salaries and incentives, sharing the benefits of low labor costs.

By February 2015, Germany had reduced its youth unemployment to 4.8% (from 15.6% in 2004), while the comparable unemployment rates in other big European economies still ranged from 20% to 55%.

MOVING FORWARD

AS WE OBSERVED RECENTLY with respect to increasing wealth and well-being in Southeast Asia, successful countries do a few things very well when it comes to sustainable development. (See *Lotus Nation: Sustaining Vietnam's Impressive Gains in Well-Being*, BCG report, March 2016.) Perhaps most important, they prioritize aggressively, make smart investments in high-impact projects and initiatives, and ensure that government is a leader—not a follower—on economic and sustainability issues.

These are powerful prescriptions for a country such as Peru, which is on the right track and making strong progress but needs to step up its efforts aggressively if it wants to move out of the middle of the pack and into the ranks of its more prosperous and productive peers. By targeting the right areas—including

economic diversification, infrastructure, health, and education—Peru can continue to make, and accelerate, gains.

Benchmarking tools such as SEDA can provide an objective measure of Peru's progress relative to other nations. But the primary focus needs to be on the country's own achievements rather than on those of other nations.

The people of Peru should be encouraged by the rapid improvements they have made with limited resources. Identifying where the priorities for continued progress lie will pave the way for the new government, the private sector, and civil society to focus on actions required in those areas. Continued rapid progress will require that all contribute to the national effort.

FOR FURTHER READING

The Boston Consulting Group has published other reports based on the Sustainable Economic Development Assessment, as well as reports on sustainable development and business and public policy in emerging markets, that may be of interest to senior executives. Examples include the following.

The Private-Sector Opportunity to Improve Well-Being

A report by The Boston Consulting Group, June 2016

Bridging the Skills Gap in Developing Countries

An article by The Boston Consulting Group, March 2016

How Governance Drives Well-Being: An Interview with Nobel Laureate A. Michael Spence

An interview by The Boston Consulting Group, March 2016

Lotus Nation: Sustaining Vietnam's Impressive Gains in Well-Being

A report by The Boston Consulting Group, March 2016

Dueling with Lions: Playing the New Game of Business Success in Africa

A Focus by The Boston Consulting Group, November 2015

Africa Strategic Infrastructure Initiative: A Principled Approach to Infrastructure Project Preparation Facilities

A report by the World Economic Forum in collaboration with The Boston Consulting Group, June 2015

Four Priorities Requiring Leadership for South Africa's Future

A report by The Boston Consulting Group, May 2015

Why Well-Being Should Drive Growth Strategies: The 2015 Sustainable Economic Development Assessment

A report by The Boston Consulting Group, May 2015

African Strategic Infrastructure Initiative: Managing Transnational Infrastructure Programmes in Africa—Challenges and Best Practices

A report by the World Economic Forum in collaboration with The Boston Consulting Group, May 2014

Building Well-Being into National Strategies: The 2014 Sustainable Economic Development Assessment

A Focus by The Boston Consulting Group, February 2014

The New Prosperity: Strategies for Improving Well-Being in Sub-Saharan Africa

A Focus by The Boston Consulting Group, May 2013

Strategic Infrastructure: Steps to Prepare and Accelerate Public-Private Partnerships

A report by the World Economic Forum in collaboration with The Boston Consulting Group, May 2013

Strategic Infrastructure in Africa: A Business Approach to Project Acceleration

A report by the World Economic Forum in collaboration with The Boston Consulting Group, May 2013

From Wealth to Well-Being: Introducing the BCG Sustainable Economic Development Assessment

A report by The Boston Consulting Group, November 2012

The African Challengers: Global Competitors Emerge from the Overlooked Continent

A Focus by The Boston Consulting Group, June 2010

NOTE TO THE READER

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