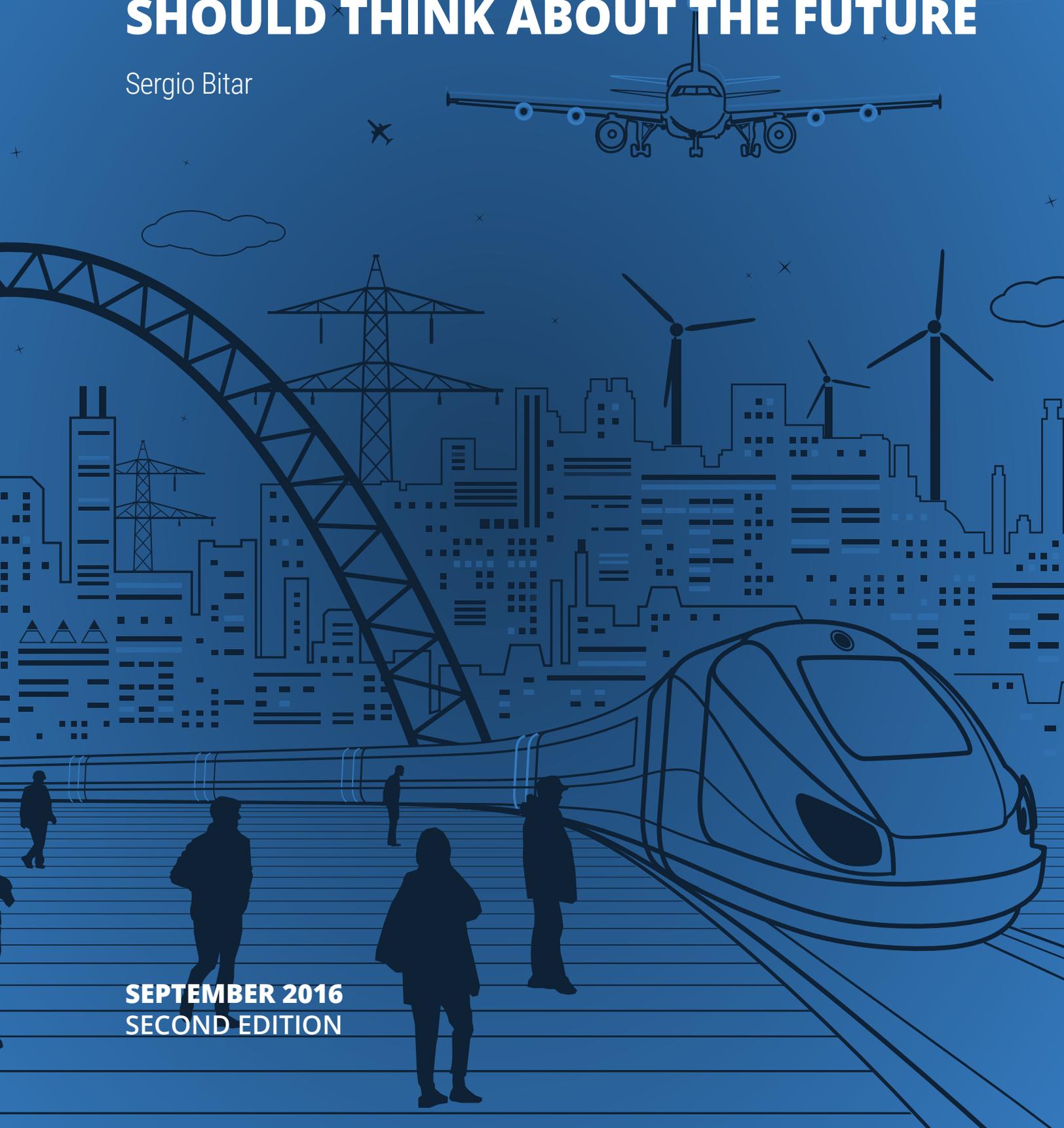


# WHY AND HOW LATIN AMERICA SHOULD THINK ABOUT THE FUTURE

Sergio Bitar



**SEPTEMBER 2016**  
**SECOND EDITION**



## FOREWORD

The Inter-American Dialogue continues to give priority attention to raising awareness of global trends analysis and how future scenarios will affect Latin America. For this reason I am pleased to present this updated version of the Dialogue's report on why and how Latin America should think about the future. Written by Dialogue senior fellow Sergio Bitar, who directs our initiative on global trends, the current edition incorporates new elements and shifts in global trends that present new opportunities for Latin American countries. Since the original was published in December 2013, several changes stand out:

- The drop in birth rates has become more pronounced;
- Challenges to governance have become greater;
- Inequalities caused by technological change have intensified;
- The race for innovation has accelerated;
- The impact of climate change has grown;
- The pace of renewable energy installation has increased;
- New security risks have emerged, specifically the sharp rise in terrorist and fundamentalist groups.

There have also been positive signs on security, such as US political agreements with Iran and Cuba, and governability, thanks to the adoption of the Sustainable Development Goals by the United Nations. This edition explores new areas of opportunity for Latin America, including rising water use for food production, new industrialization and innovation, renewable energy, and institution building. In fact, institution building emerges as an even greater challenge for combating increased corruption and channeling amplified demands for participation and equality.

As this report makes clear, Latin America's future is inextricably connected to developments taking place beyond the borders of individual nations.

While a number of governments, businesses, and civil society organizations in Europe, the United States, and Asia are addressing this new reality by carrying out studies

of long-term political, economic, social, and security scenarios to inform policy decisions, comparable efforts in Latin America lag behind, as the region's policymakers remain primarily focused on short-term domestic agendas. Too few institutions in the region are carrying out the data collection, research, or analysis needed to understand critical trends at the global level, and incorporate them into policy thinking.

Addressing such a challenge can greatly improve the outlook for the region's economic, social, and environmental welfare and security. Against this backdrop, in 2011, with support of the Inter-American Development Bank, the Inter-American Dialogue launched its Long-Term Global Trends Initiative. The program seeks to foster the practice and culture of long-term strategic thinking in Latin America and build the capacity of regional experts and institutions to carry out policy-relevant, forward-looking studies. In 2015, the project produced a regularly updated database of global trends reports ([www.globaltrends.thedialogue.org](http://www.globaltrends.thedialogue.org)) and periodically issues newsletters addressing future scenarios and how to organize institutional and human capacity in Latin American countries in response.

This new report provides an original and comprehensive framework for achieving these objectives. Drawing on decades of policy experience in roles ranging from senator to minister in three different presidential administrations in Chile, Sergio Bitar makes a compelling argument for long-term global thinking in Latin America and reviews six global trends to which policymakers should pay particular attention. He concludes by proposing steps that Latin America can take to confront challenges and take advantage of opportunities in five key areas: democratic governance, economic competitiveness, social inclusion, geopolitics, and sustainable development.

We hope that this new report will help spur constructive debate about Latin America's future among policymakers, business leaders, and members of civil society. We are grateful to the Inter-American Development Bank for its crucial support of this initiative.

Michael Shifter,  
President

## ACKNOWLEDGMENTS

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# I. WHY AND HOW LATIN AMERICA SHOULD THINK ABOUT THE FUTURE

## A. PURPOSE OF THE REPORT

Latin America must strengthen its ability to plan forward and deepen its strategic reflection if it is to govern better and improve the design of public policies. Achieving this may require countries in the region to familiarize themselves with global scenarios and to explore the types and scale of challenges that they might confront. A national perspective is not sufficient; a global vision is essential.

Globalization creates a stream of effects that cannot be controlled by individual countries. With an outlook that takes into consideration the rest of the world, Latin American governments could improve their capacity to anticipate events and, when those events occur, to respond effectively to uncertainty and rapid change. Through strategic planning that envisions diverse and myriad situations, countries of the region may be able to skirt damage or even identify advantageous responses. In effect, human action might alter trajectories in ways that could bring the region closer to desirable outcomes.

In this study I set out to explore the nature and potential impact of trends and scenarios that could emerge, and I make recommendations for building anticipatory capacity. The first part of this report summarizes the global trends and scenarios I believe are most likely; the scenarios are based on reports from leading research centers in developed countries. Up-to-date information can also be found on the **Database of Reports, Global Trends, and Future Scenarios**, [globaltrends.thedialogue.org](http://globaltrends.thedialogue.org), a website maintained as part of the Global Trends and the Future of Latin America project of the Inter-American Dialogue (directed by the author) in collaboration with the Inter-American Development Bank.

In the second part, I identify where Latin America—both individual countries and the region as a whole—should focus. I then underscore the fields in which countries of the region should strengthen their capacity for foresight study.

## B. THE IMPORTANCE OF FORESIGHT

In recent decades, Latin American countries have strengthened their democratic systems and respect for institutions, balanced the handling of public finances, efficiently managed the macro economy, and implemented inclusive social policies that seek to reduce poverty and inequality. However, they lag behind in a very important area: the ability to devise a strategic vision that helps prioritize goals and build political agreement. Instead, their projects and policies are usually confined to the national sphere, and thus they fail to adequately consider the full range of possible global scenarios. There is a shortfall in medium- or long-term structural thinking, the programs needed to raise productivity, and initiatives that would enhance equality and participation. This weakness in foresight capacity reduces each country's ability to react to unexpected events. The future is unpredictable, but identifying scenarios opens the mind to the possible consequences of unconsidered or improbable developments. While foresight explores scenarios, strategy helps build a path. Forward thinking helps to interrelate and integrate diverse phenomena and processes. In the end, it is a different way of thinking. In order for countries to meet the national and regional Sustainable Development Goals 2030, they must strengthen their strategic and foresight capabilities. The need for improved, long-term vision becomes obvious when one considers whether better decisions could have been made over the last two decades in the region. Five profound transformations exemplify Latin America's insufficiency in looking at the horizon and reacting accordingly.

**The Internet.** In the early 1990s, Internet access was limited to higher-income groups that owned personal computers. In spite of the rapid decline in costs (Moore's Law states that computing capacity doubles every 18 months), the expansion of access was not anticipated before the widespread adoption of cell phones—and then smart phones—and until expanded transmission and processing capacities and accessibility to computers exponentially increased communication. Economic opportunities, social relations, and citizen awareness changed as new and unexpected technologies appeared. Some countries, such

as South Korea, grasped what was happening early and took the lead by setting up broadband networks and establishing businesses with an international outlook. By contrast, in countries that assumed this arena would develop linearly, vast sectors of the population remain marginalized from connectivity and broadband. During this time, much of Latin America did not take the lead in expanding this technological innovation.

**China.** Increasing evidence has signaled China’s emergence as a monumental presence in the region. This has been positive for South American countries, although the full effects and opportunities have not been properly assessed. At the same time, strategies for handling possible scenarios with China have not been adequately designed so as to reduce risks when a cycle ends. This squanders opportunities for greater benefits or lower costs.

**Financial crises.** When the Asian crisis surfaced at the end of the 1990s, some governments underestimated its effect, judging it to be little more than a tremor with no great repercussions. However, it struck Latin America severely and slowed growth. Even more worrying was the massive financial crisis that began on Wall Street in 2008 and sparked a chain reaction that damaged Europe.

Improved policies and other prudent steps taken after the debt crisis of the 1980s and the financial crisis of the 1990s helped position Latin America to avoid the worst effects of the US recession. That said, it is important to note that the magnitude of this recent destabilizing wave originated, to some degree, in global information and communication technologies. These technologies reached a high level of sophistication in the financial system, amplifying and triggering an immediate transmission of the impact. It is very likely that increased, and potentially dangerous volatility and systemic shifts will persist long term. Better follow-up holds the potential to empower governments and companies to design new procedures able to minimize the impact of such unexpected events.

**Climate change.** Information and analysis on climate change arrived late to decision-making centers in Latin America. New norms have been slowly established, yet better work must be done to understand, follow up, and quantify potential effects on the region. Areas that should all be permanently assessed are: how much the planet’s temperature may make different scenarios more likely; what will happen if sudden shifts occur; how agriculture is affected; and how climate change influences natural

disasters. New institutions will emerge, as will new technologies, and the concept of green growth will spread to become part of every country’s development strategy, imposing changes on consumption patterns and raising investment needs.

**New behaviors:** Changes in awareness and behavior have accelerated as a consequence of higher educational levels, an improvement in living standards, and communication technologies, among other factors. Expectations grow, demands multiply, the desire to participate is heightened; requirements for transparency and probity, for equality of rights and gender, are on the rise. These trends have intensified pressure on institutions that appear lagging and have spurred signs of ungovernability.

If better anticipated, these five hugely important occurrences—the rise of the Internet, China’s presence in Latin America, the US economic crisis, climate change, and new behaviors—could have inspired better policies and more effective actions.

## C. CAN LATIN AMERICA SHORTEN THE DISTANCE?

Latin American countries need to improve their insight about the future and to think in contexts of uncertainty. This is not easy in a culture that addresses issues in short-term time frames and wherein policymakers often believe that uncertainty makes foresight studies volatile. Their preferred approach is to let the market operate and then tackle problems as they arise. There is a dearth of foresight studies in the region, and the few that exist appear only sporadically and are detached from government agencies.

The region can quickly catch up by building on developed countries’ global foresight capacity. Scenarios drawn up by the world’s leading think tanks run by governments, businesses, universities, international organizations, and independent centers can be tapped to create forward-looking capacity, as well as to train specialists for Latin American prospective analysis and to prepare institutions through which they can conduct their work.

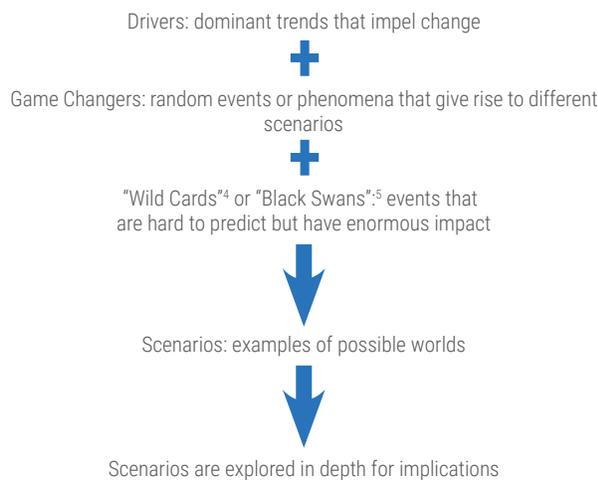
For years, leading powers—with the United States at the helm—have systematically assessed global trends. Other countries have joined the undertaking, using the US government and universities, companies, and private research centers. The most relevant US study is *Global Trends 2030: Alternative Worlds*, produced by the National

Intelligence Council (NIC) in 2012 and based on broad consultation with experts from around the world.<sup>1</sup> For its preparation, studies were commissioned from various institutions and individuals. Of particular importance is a report by the Atlantic Council, *Envisioning 2030: US Strategy for a Post-Western World*.<sup>2</sup>

Similar developments are evident in the European Union (EU), the source of equally important reports: *Global Trends to 2030: Can the EU Meet the Challenges Ahead?* by the European Strategy and Policy Analysis System, and *Global Trends 2030: Citizens in an Interconnected and Polycentric World* by the European Union Institute for Security Studies.<sup>3</sup> Small countries with impressive development records, such as Singapore and Finland, have also been pioneers. Emerging countries taking steps in this same direction include China, South Korea, Russia, and Brazil.

**FIGURE 1. METHODOLOGY AND VOCABULARY OF PROSPECTIVE ANALYSIS**

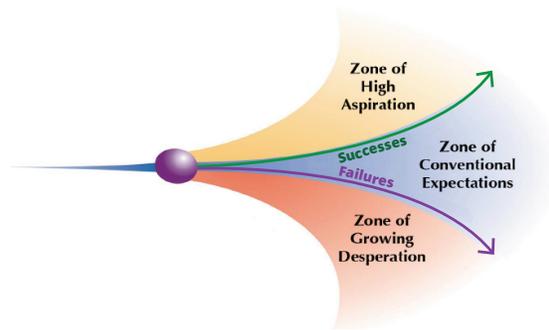
Source: National Intelligence Council (2012). *Global Trends 2030: Alternative Worlds*. Washington, DC, National Intelligence Council.



Foresight analyses are highly qualitative, based on consultations with experts in various fields from all world regions. Which of the emerging phenomena could be dominant? What is the probability of their occurrence and the scale of their effects? Some argue that wild cards or black swans cannot be identified, that the human mind rejects high levels of uncertainty and extreme events. Others argue that it is at least possible to reduce uncertainty. Exploring alternative scenarios allows us to consider combinations of favorable processes, as well as processes of stagnation and deterioration. The most plausible are chosen, as is evident in Figure 2.

**FIGURE 2. IAF'S ASPIRATIONAL FUTURES APPROACH**

Source: Institute for Alternative Futures (2013). *World Scenarios in 2030*. Alexandria, VA, IAF.



Mathematical models that can process big data provide support to foresight analysis by helping to explore scenarios. "International Futures," devised by Barry Hughes at the University of Denver, is a frequently used model of global-systems simulation that includes demographic, economic, technological, political, and regional variables. It is used as a forecasting tool, as a guide for experts, and as a vehicle for training personnel. The rapid expansion of big data processing technologies promises to enhance mathematical modeling.

**D. SIX GLOBAL TRENDS**

The Inter-American Dialogue has registered more than 800 long-term global and sector-specific studies that look forward at least 10 years. An initial review reveals six trends that are important for the future of Latin America:

**"Disruptive" technologies** in development, the spread of which will bring substantial changes in production, employment, well-being, governability, and human relations.

**Natural-resource scarcity** affecting water, food supplies, energy, and minerals. Also changes in demand and technological innovations.

**Demographic changes and displacement of power**, new markets, rising middle classes, and migration.

**Urbanization and growth of cities**, population concentration, demands for infrastructure and basic services, quality of life, and competitiveness of cities.

**Climate change**, its effect on agriculture, "green-growth" opportunities, citizen awareness, and behavioral change.

**Democratic governability**, impact of new technologies in connecting citizens, forging social relations, improving transparency, strengthening security, and providing opportunities for organized crime and cyber-attacks.

### 1. Disruptive technologies

Experts predict technological acceleration will exceed that which occurred with computers. They distinguish between incremental and disruptive technologies: the former refine products and processes; the latter produce radical and abrupt changes that transform social, economic, environmental, and governmental systems.<sup>6</sup> Governments and businesses are devoting more resources to bring together scientists, experts, politicians, and civil-society organizations to scrutinize how technology will affect people's lives. An example is Singularity University,<sup>7</sup> the recently created entity devoted to the systematic examination of disruptive technologies. It trains young leaders, business people, and academics to design high-impact projects. Other examples of teams focused on technological foresight include William Halal's *techcast.org* in Washington, D.C., and Michell Zappa's *envisioningtech.com* in London.

To track changes, media reports are scanned for news on technology, the potential of the developments are explored, and their stage of application is determined by experts. The life cycle of each technological advance is analyzed, with an eye on the period in which it might become commercially mature and the scale of its impact. These team initiatives share two basic assessments: a) there will be an exponential increase in the level of interaction and connectivity between people, thereby creating a kind of planet-wide brain; and b) the period between technological creation and commercial development will continuously shorten.

Disruptive technologies can be grouped into five areas.<sup>8</sup>

- 1) Technologies *transcending physical limitations* encompass the processes and products that affect healthcare, longevity, and quality of life. This category includes developments in advanced diagnostic techniques involving nanostructures, function control, and biological structures, as well as genetic analysis to predict illnesses before they occur. The convergence of nanotechnology, biotechnology, and information technology will have a substantial impact on healthcare and its personalization. The aim is to create nanomotors that emulate bacteria and perform biochemical functions. These nanomotors might be used to target certain kinds
- 2) The second disruptive technology group focuses on *energy*. This includes "smart energy," the intelligent networks that improve efficiency and security by receiving and distributing energy—such as electricity—based on users' behavior. The synthetic-biological redesign of organisms that generate biofuel almost identical to gasoline is also in this category, along with nanotechnology that advances solar cell and battery efficiency.
- 3) A third area comprises *new industrial materials and processes* that join 3D printing or additive manufacturing (AM) with nanomaterials and information technology. Many experts and economists predict an increase in AM, which is expected to shorten or eliminate assembly lines and allow for an infinite variety of designs and high levels of specialization. The machines that drive these processes produce sequential layers that follow computational designs and employ different materials. Their application will be enhanced by the addition of nanoparticles to liquids, metals, ceramics, and polymers, including the manufacture of biocompatible tissues that can be implanted into the human body, and with the potential for production of organs for transplant. The spread of this technology may alter the territorial localization of manufacturing and reverse developed countries' loss of competitiveness, bringing back manufacturing production that in recent decades has moved to China and other countries with large populations of young people and cheaper workforces. The impact could be as powerful as that of the spread of personal computers more than 20 years ago.
- 4) The fourth area is *communications technology*. Some estimates indicate that the Internet's influence over the next 15 years will exceed the impact of the industrial revolution over the course of 50 years.<sup>9</sup> It is estimated that by 2030, some 75 percent of the world's inhabitants will have mobile connectivity and 60 percent will have broadband.<sup>10</sup> Information technology, networks, and sensors will bring about connections that produce "the Internet of Things," allowing any person to connect with

any object anywhere, most notably for the purpose of moving, managing, or tracking it. In conjunction with big data mining, the Internet of Things will swiftly be upon us. The digitization of machines, vehicles, and other elements of the physical world is a powerful idea. Scenarios drawn up by experts predict that in 2025 the Internet of Things will expand to the point that 30 percent of cars, homes, offices and other systems will be connected.<sup>11</sup> The spread of sensors and networks will make it possible to monitor every individual's movements, tastes, and interests, thereby endangering privacy and freedom. There will be no secrets and anonymity will disappear. By their nature, these new networks and virtual groups will operate beyond most formal control, posing challenges to governability. Virtual governments without fixed geographic locations may be established. The greatest threats could take the form of national or international cyber-attacks that undermine countries' security, public services, and logistical and military capacity. Examples include attacks that disrupt or destroy the electronic systems that govern the operation of cities, banks, and trade. This category of disruptive technologies encompasses issues that are crucial for the security of countries, individuals, and businesses.

- 5) The fifth area is *robotics*.<sup>12</sup> Bio-robotics will advance, underpinned by artificial intelligence, nanotechnologies and nanosensors, as will energy-storage technology (batteries). In the automobile sector there could be a radical change in vehicle use, and a decline in the number of private cars.<sup>13</sup> Bioweapons capable of triggering viral chains<sup>14</sup> could result from the advances in this area.

Routine work will be destroyed or replaced and, at the same time, a large number of new businesses will be created.<sup>15</sup> Nanotechnology, artificial intelligence, and robotics will increase automatization and productivity. This will entail a challenge for the employment of low- and medium-skilled workers, and for developing countries.<sup>16</sup>

Other important foresight studies highlight advances in the following areas:

- Unlimited computational and data processing capacity, cloud computing, quantum computing technology, artificial intelligence, and machine inference and reasoning.
- Urban technologies for managing megacities, transportation, energy, security, and services.
- Innovation in new materials, especially the use of graphene (layers of carbon the thickness of an atom, which could replace silica and copper) in communication technologies.<sup>17</sup>
- Low-cost genomic sequencing. In the near future it may be possible to register each person's genome for as little as US\$100.
- Synthetic biology that includes writing DNA.
- New technologies for extracting gas and oil.<sup>18</sup>

Other studies anticipate additional technological changes that may have larger social impact. McKinsey Global Institute (MGI) has identified 100 technologies from which they chose 12 for their larger effect. In addition to those already mentioned, they signal: genomics, low-cost genetic sequencing, synthetic biology (DNA creation), advanced materials, and new technologies to extract gas and oil.<sup>19</sup> The December 2013 Atlantic Council report on the new "technological revolution" highlights synthetic biology, 3D/4D printing and robotics. 4D printing produces material objects that are programmed to change their shape and properties (for example, in infrastructure they can adapt to changes in load and climate). The 2014 Policy Horizons Canada report underscores the plausible impacts in the economic, social, and environmental fields. Synthetic biology may be the least known and most "disruptive" of the technologies. It could make it easier for customers to produce their own fuel, food, and natural resources. But the report warns that governments must set up teams and institutions to anticipate the likely impact by 2030. MGI also highlights the disruptive technologies that will drive development in the 10 ASEAN countries: mobile Internet, big data, the Internet of Things, the automation of knowledge work, and cloud technology.<sup>20</sup> Klaus Schwab suggests that disruptive technologies are pushing the world toward a fourth industrial Revolution.<sup>21</sup>

Because of the speed of technological advancement, foresight is becoming an almost immediate input for governments and businesses seeking to assess projects

or launch programs. It would be useful if Latin American countries monitored trends and reflected on the areas in which they should become involved. Latin America’s technological foresight networks should be strengthened and linked to governments and businesses.

## 2. The power of natural resources

Because of demographic and economic growth, the coming decades will see rapidly rising demand for energy, water, minerals, and food supplies. According to a Merrill Lynch report, global food demand is set to increase by 50 percent, energy demand by 50 percent, and water demand by 40 percent.<sup>22</sup> The threat from this nexus is increasingly evident, particularly regarding water, as geopolitical tensions over water and energy coincide with a sharp rise in drought and water stress. It is estimated that, by 2030, half the people on the planet will be living in conditions of water stress.

In lower-income countries, the increase in consumption includes a high proportion of material goods. In more advanced countries, the share of services is greater. Africa, Asia, and Latin America may consume substantially more food and proteins, durable goods, electricity, and transportation. If the population of the middle sectors rises to 5 billion people by 2030, representing an increase

of 3 billion, the impact would be colossal.<sup>23</sup> Demand for natural resources would skyrocket. The number of cars in developing countries would increase substantially.<sup>24</sup>

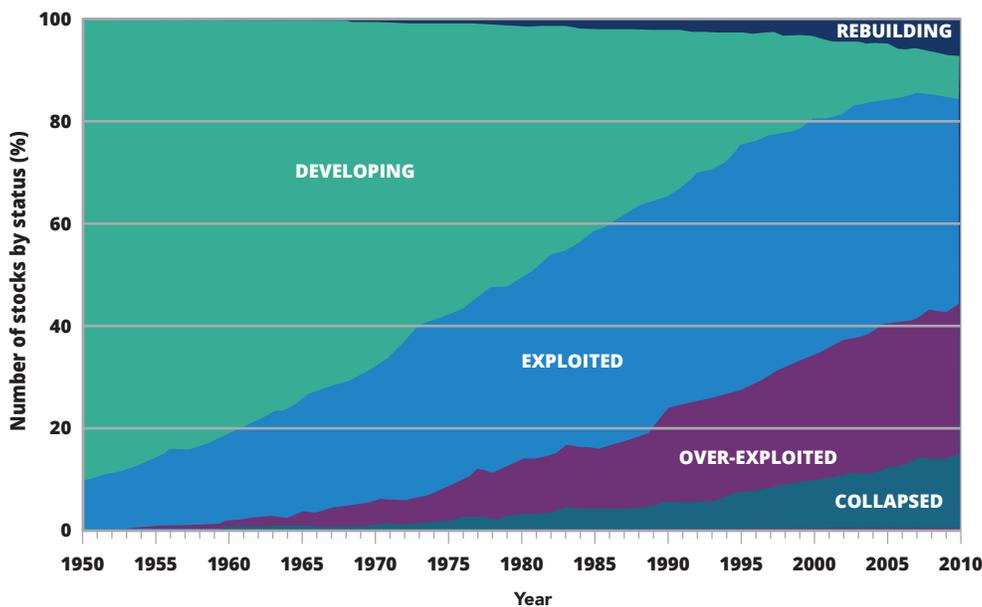
The Food and Agriculture Organization (FAO) estimates that the world’s population will reach 9 billion by 2050, and demand for food may increase by 70 percent. Cereal consumption could rise to 3 billion tons per year, from 2 billion, and global meat consumption to 500 billion tons per year, from 300 billion.<sup>25</sup> These trends could increase pressure on natural resources, specifically fisheries. The overexploitation of seafood products is a threatening trend that must be reversed by means of special measures to limit extraction and recover fish stocks.<sup>26</sup>

It is interesting to compare these numbers to those of the first decade of the twenty-first century. In the twentieth century the population grew fourfold and per capita income rose even more. Demand for foodstuffs, minerals, and energy increased by between 600 and 2,000 percent, and output jumped by 20 times.

Will this trend continue? According to the FAO, the growing pressure on water and land will persist. Existing land can meet only 20 percent of the increased need for foodstuffs, and additional arable land is judged to be scarce. Meeting

**FIGURE 3. STATUS OF GLOBAL FISHERIES**

Source: Pauly, Daniel et al. (2013). “Fisheries: Does Catch Reflect Abundance?” *Nature* 494: 303–306.



the other 80 percent of demand will have to come from the use of technology, higher crop yields, efficiency, and savings.

How will food prices evolve and what effect will they have on poverty and food security? This will depend on the extent to which supply increases as a result of technological progress. If necessary measures are implemented well, the commercial application of innovations could be quickened. Savings in water and electricity could stem from precision technology for agriculture, biotechnology, and “smart grids” (intelligent transmission networks); greater energy efficiency in electricity plants, smelting operations, and other industrial processes; and improvements in transmission and distribution networks.

Food supplies will also be contingent on climate change. Most predictions envision rainfall changes that will affect harvests. The over-exploitation of aquifers is also problematic, since the depletion of their resources will bring significant declines in production. This issue carries particular repercussions in Latin America, a region abundant in land and water but lacking in policies and programs that adequately address water-supply infrastructure, new technologies, and water savings—all factors that could advance the industrialization of foodstuffs.

It is worth asking whether the expected increase in consumption dovetails with agreed targets for environmental protection. Under the most optimistic scenario for innovation,<sup>27</sup> human activity will generate about 48 gigatons of CO<sub>2</sub> a year by 2030, enough to trigger a rise in planetary temperature in excess of 2° C. To maintain the maximum target of a no more than 2° C increase by 2030, emissions must not exceed 35 gigatons a year. A World Bank Report concludes that existing trends in human activity could provoke an increase of between 3.5 and 4° C.<sup>28</sup> Compliance with a 2° C limit will require major adjustments in production and consumption worldwide. The advanced countries’ composition of consumption could not be extended to the emerging middle classes. Per capita energy consumption in the United States is four times higher than that of China and 20 times that of India.<sup>29</sup> Averting a crisis requires moving ahead rapidly towards a new composition of consumption and a new productive structure, aiming at so-called green growth.

According to studies, continued deforestation as a result of the expansion of agricultural areas and the harvesting of firewood will increase soil erosion and desertification. The depletion of fishery resources will also endanger food

security. Adverse scenarios point to severe social unrest arising from a jump in food prices and an increase in hunger.

Under other scenarios, however, there could be great opportunities for innovation, investment, and sustainable production. The MGI study<sup>30</sup> identifies a series of action goals including: increasing energy efficiency and savings, boosting agricultural yields, reducing food waste, lessening water leakage, protecting against soil degradation, improving management, changing behavior, and increasing the efficiency of mineral production. In an urbanized world, city planning could help close these gaps and cut journey times by introducing high-quality public transportation and encouraging the use of electric cars and biofuels. Many of these activities could be very profitable while creating high-quality jobs. Latin America should be involved in these innovations.

#### a. Water scarcity

Water scarcity may affect agriculture and limit energy production, since the latter uses water for cooling. Some 70 percent of the water consumed in the world is expended on agriculture. Future scenarios see the greatest problems arising in China, India, South Africa, Saudi Arabia, and the arid zones of other countries.<sup>31</sup> Some firms and organizations of these countries have acquired agricultural land in Africa and Latin America to expand future production and contribute to food security. And there will be more desalination of seawater. How can water scarcity be overcome? The export of foodstuffs is a form of international water trade. It takes 870 liters of water to produce one liter of wine, 125 liters to produce a 150-gram apple, 4,325 liters to produce a kilo of chicken meat, and 15,400 liters to produce a kilo of beef. It takes 10 times more water and 10 times more land to produce a calorie of meat than a calorie of vegetables or grains. The export of foodstuffs is equivalent to the virtual export of water.

After agriculture, the chief demands on water come from manufacturing, mining, and electricity generation. Each of these consumes 5 to 10 percent of all the water used globally. The extraction and processing of fossil fuels and the transportation and irrigation needed to produce biofuels absorb a great deal of water.<sup>32</sup> There is also a close, two-way link between electricity generation and water consumption. It is estimated that the demand for water to produce energy could grow twice as fast as the demand for energy itself. In turn, water production requires more energy, either to desalinate it or to pump it from greater depths and move it to distant locations.

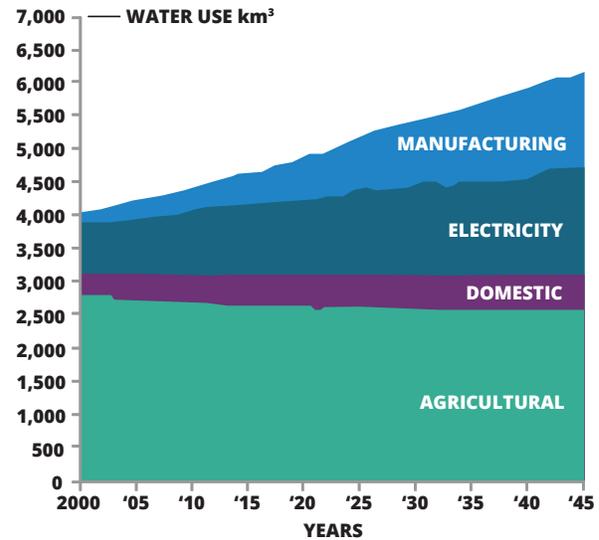
The demand for water for energy purposes is likely to double by 2035 (50 percent of US areas that are fracked already suffer from water stress today).<sup>33</sup>

Human consumption accounts for about 10 percent of freshwater use, although averages tell little given that there are huge differences between countries and socioeconomic groups. Latin America consumes about 100 liters of water per person per day, but high-income groups in the region use as much as 400 liters per person per day while the poorest use less than 40 liters. Pressure is building to ensure a basic supply of 40 liters per person per day as a human right.

Figure 5 shows that 80 percent of the increase in future water consumption should be satisfied by sources other than savings. How can we tackle the potential scarcity of water? What do the scenarios reveal? Many underground water sources have been overexploited and are non-recoverable. At the same time, glaciers—huge sources of freshwater—are being lost through melting. Some of this loss can be offset by new technologies, including renewable energy that takes less water to generate, more economical desalination, infrastructure improvements that remedy leaks, new dams, rainwater collection, and “drop per crop” approaches in no-till farming. Genetic research on plants that can grow in arid areas and the use of new fertilizers

**FIGURE 4. GLOBAL WATER DEMAND TO 2050**

Source: Merrill Lynch Global Research. [https://mlaem.fs.ml.com/content/dam/ML/Articles/images/ML\\_investment-themes-redefining-the-world-in-2015\\_8.jpg](https://mlaem.fs.ml.com/content/dam/ML/Articles/images/ML_investment-themes-redefining-the-world-in-2015_8.jpg).

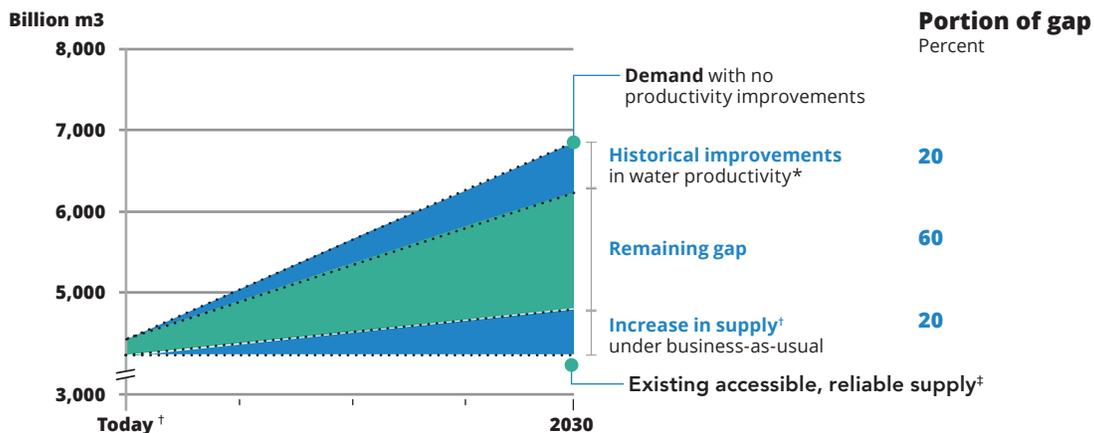


will also play a role. Even with these efforts, however, emergencies could arise in poor regions that lack resources.

Conservation is the most promising and least expensive way to narrow the supply-demand gap. It is essential to

**FIGURE 5. WAYS TO OVERCOME THE WATER DEFICIT**

McKinsey Water Resources Group (2009). *Charting Our Water Future*. New York, McKinsey. [http://www.mckinsey.com/App\\_Media/Reports/Water/Charting\\_Our\\_Water\\_Future\\_Full\\_Report\\_001.pdf](http://www.mckinsey.com/App_Media/Reports/Water/Charting_Our_Water_Future_Full_Report_001.pdf).



\* Based on historical agricultural yield growth rates from 1990–2004 from FAOSTAT, agricultural and industrial efficiency improvements from IFPRI.

† Total increased capture of raw water through infrastructure buildup, excluding unsustainable extraction.

‡ Supply shown at 90% reliability and includes infrastructure investments scheduled and funded through 2010. Current 90%-reliable supply does not meet average demand.

raise awareness of the need to conserve energy and water, to train communities in managing services, and to use new technologies. An important part of this strategy will be its incorporation into school curricula.

There is also a clear and urgent need to obtain more useful information on surface waters, aquifers, basins, and water quality. Institutional dispersal has to be rectified, decades-old legislation has to be updated, specialists have to be trained, and government efficiency has to be increased. These changes must include users' associations and the community in such a way that decision-making is decentralized.

This should be a priority area for Latin American policies and investment projects. Countries of the region must effectively take these matters into account and explore new long-term opportunities. Latin America is an exporter of foodstuffs and, therefore, of water. Production has expanded thanks to new lands and water. Its growth will depend on technologies and the efficient use of water resources.<sup>34</sup>

**b. Energy challenges and Latin America's position**

The global energy picture is in constant flux, but all scenarios point to swift growth in global demand over the next two decades, especially in the areas of transportation

and electricity. This increase will occur mainly in emerging countries. Recent scenarios drawn up by energy companies argue that between 2010 and 2040, global energy consumption will grow by 140 percent without energy savings, and by 35 percent with such savings.<sup>35</sup> In tandem, there will be mounting citizen pressure to reduce emissions, lower costs, and avoid insecurity and conflict.

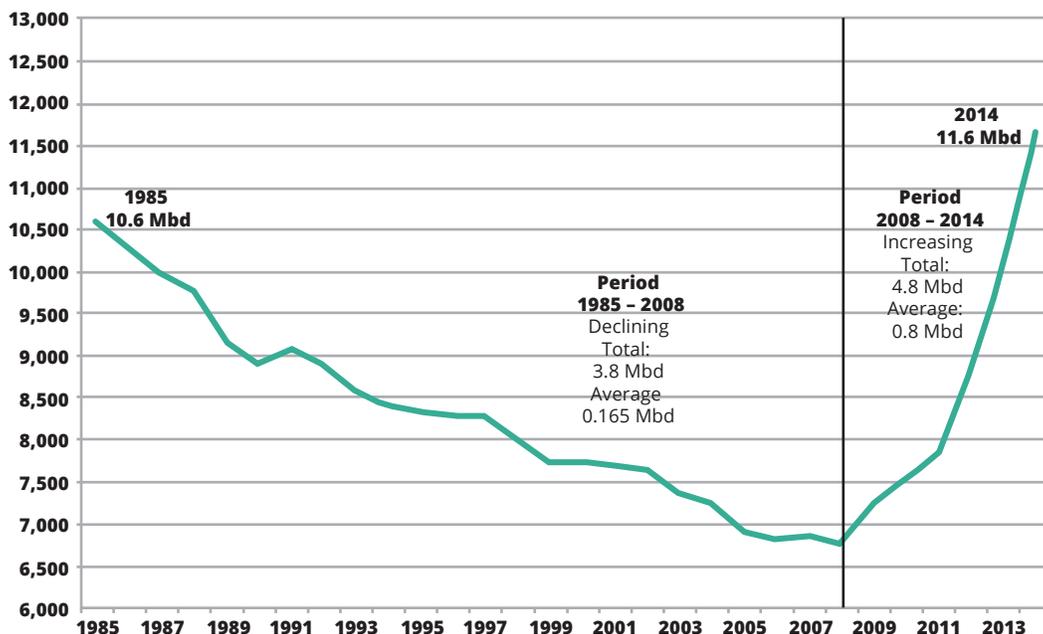
The United States is expected to reduce its external dependence and increase production of shale gas, oil, and renewable energies.

Iraq's oil production is forecast to climb significantly after 2015, and Iranian output also should grow after the nuclear agreement. In several countries there will be resistance to nuclear energy in the wake of the tragedy in Japan, but China, India, South Korea, and Finland, to mention only a few, will continue with their nuclear programs. The push for renewable energy—especially bio, wind, and solar—will regain momentum, although their share of the overall mix may remain modest for the next 10 years. Production on new gas deposits could start in several areas of the world, depending on international market prices.

The oil trade between Asia and the Middle East will intensify as Europe reduces fossil fuel use, the United States gains energy independence, and Asia's consumption increases.

**FIGURE 6. US ANNUAL PRODUCTION OF OIL 1985–2014, MILLION BARRELS PER DAY**

Source: Espinasa, Ramón (2016). "Brand New Model, Same Old Price," *Technical Note 937*. Washington, DC, Inter-American Development Bank.



The various scenarios devised by international agencies and businesses indicate that demand for fossil fuels, both oil and coal, will continue to grow, although coal consumption will hinge on the growth of less-polluting liquid natural gas (LNG), which may become cheaper. Given the increased number of cars in emerging countries, transportation will generate the largest demand for oil. It is estimated that there will be 1.7 billion vehicles in operation by 2035.<sup>36</sup>

How can the energy supply be increased and made more sustainable in order to avert crisis? Most countries have established regulations and set targets to reduce CO<sub>2</sub> emissions—through regulation of car emissions in the United States, a 20 percent emission-reduction target by 2020 for the European Union, a 10 percent reduction in electricity consumption by 2030 in Japan, and industry regulations in China. However, progress is slower than most had hoped. In its *World Energy Outlook 2012*,<sup>37</sup> the International Energy Agency (IEA) scrutinizes two scenarios: the New Policy Scenario and the Efficient World Scenario.

In the New Policy Scenario, most of the energy demand would be met by fossil fuels. If that is the case, the global temperature could rise by 3.5° C, far above what scientists consider to be manageable. In the Efficient World Scenario,<sup>38</sup> the most potent means of achieving a sustainable outcome would be energy efficiency combined with energy saving, halving the increase in global demand by 2030. This strategy will have to be used in conjunction with carbon capture and storage (CCS), and policies subsidizing the consumption of gasoline and diesel—such as those used by many developing countries—will have to be rectified. Disruptive innovations that could help increase the supply of renewables include second-generation biofuels (which use agricultural residues, stems, leaves, and stalks), energy storage, and new kinds of batteries for solar and wind-energy infrastructure. Under the most optimistic scenarios, renewables could cover a third of the increase in electricity demand projected for 2030.

In summary, narrowing the gap will depend on four factors: energy and water efficiency, technological change, citizen demands, and national and international political agreements that impose rigorous emissions standards. Early adoption of green-growth strategies that use new technologies may spark job creation and investment, making them an increasingly attractive option.

It is clear that devising global and national scenarios for 2030 will help Latin American countries chart the best course and improve the quality of their energy policies.

### 3. Demography and power

Demographic changes will continue to affect individual countries' economic clout and the balance of world power. In the past, population growth was seen as an obstacle to development and a driver of poverty, unemployment, and instability. Today, by contrast, if countries are well managed they gain a "demographic dividend" through population growth. This refers to the potential for a two-fold benefit: a young and better-trained labor force, and higher demand for goods and services. The aging of the population in developed countries, by contrast, could bring in less financial savings and investments, a decline in productivity, and a growing need for resources to finance welfare and healthcare.<sup>39</sup>

The United Nations has produced demographic scenarios for 2050, 2100, and 2300.<sup>40</sup> If the fertility rate (number of children per woman) falls to 2, which is the most probable outlook given trends, the world's population will reach 9 billion in 2050. If the fertility rate remains at its current level of 2.5, the population will rise to 10.6 billion. If the rate falls to 1.5, the population will reach 7.6 billion, equivalent to the replacement rate (i.e. zero population growth). The differences among the scenarios are striking. If the fertility rate is 1.5 rather than 2, there will be 1.4 billion fewer people on the planet. This is equivalent to the entire population of China in 2030.

Several European Union studies point to a scenario of lower world population growth.<sup>41</sup> The fertility rate has been falling, and under the lowest-rate scenario of 1.7 children per fertile woman (which is lower than the replacement rate of 2.1), the population would still grow as people live longer but would level out in 2030, thereby defusing the "population bomb."<sup>42</sup>

This decline of the fertility rate is closely related to women's education. As a woman's educational level rises and she takes part in the labor force, reproduction is delayed and the number of children declines. This phenomenon could have a greater impact than is estimated on labor and population growth.

Under each scenario, the greatest growth comes in developing regions, including sub-Saharan Africa, India, Pakistan, and Bangladesh.<sup>43</sup> The population of the developed countries remains practically unchanged at about 1.2 billion.

Demographics will shift in tandem with population growth. The number of people over the age of 60 will rise from 780 million in 2010 to 2 billion in 2050. And the age of

the average global citizen will jump from 29 to 38. Life expectancy for the planet will increase from 68 to 76 years in 2050. In developed countries, life expectancy will rise to 83 years. Between now and the year 2100, world life expectancy will increase by 12 years.

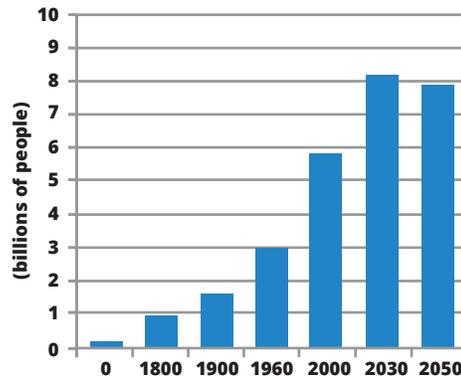
What implications and new opportunities will Latin America face as a result?

Population outlooks merit more detailed consideration. The populations of Japan and Russia would decline.<sup>44</sup> Europe’s population would also drop, with rates varying among countries and in response to migration policy. The United States would likely be the only developed country experiencing population growth. Its population is projected to rise from the current 315 million inhabitants to 370 million in 2030, with fertility and immigration contributing equally to the increase.<sup>45</sup> The population of Africa, which is experiencing by far the most growth, will rise from 1.3 billion in 2015 to 2.4 billion in 2050, or to 25 percent of the world population.

China’s population would also swell—until 2030 when it would reach a turning point and then decline, following a pattern similar to that of Japan. The change to a two-child policy could offset aging by 2050. India’s population would overtake that of China in 2030.<sup>46</sup> The fertility rate in Japan has declined substantially and is now below the replacement rate. There is also little immigration to Japan. Russia’s population is falling because of the

**FIGURE 7. WORLD POPULATION (BILLIONS)**

Source: European Strategy and Policy Analysis System (2015). *Global Trends to 2030: Can the EU Meet the Challenges Ahead?* Luxembourg, Publications Office of the European Union.

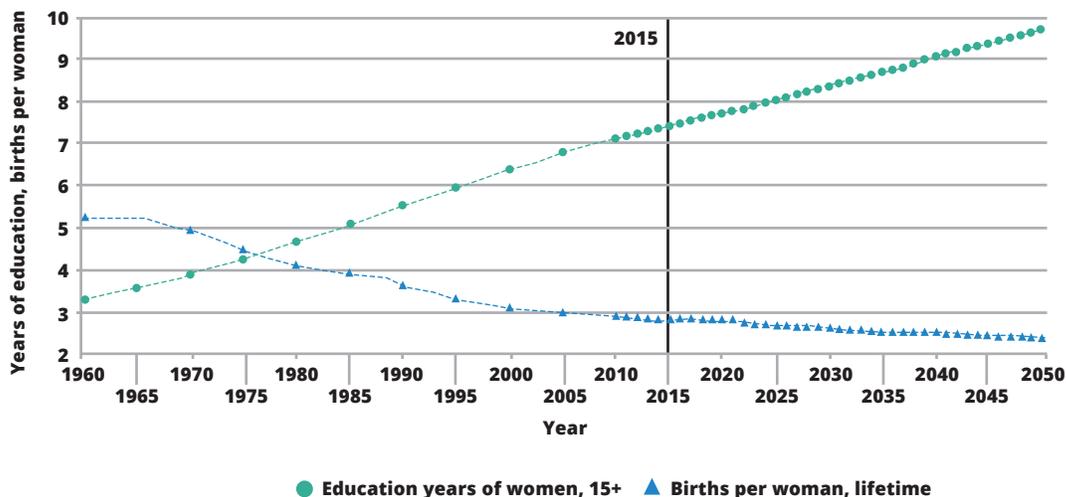


decline in fertility and the rise in mortality. The number of economically active people in the country may drop by 20 percent by 2030.

Between 1964 and 2014 world GDP grew sixfold, driven by the increase in employment (1.7 percent annual average) and productivity (1.8 percent). Demographic changes will alter this scenario, because in the next 50 years employment will increase by 0.3 percent. Growth at the same pace as in the previous half century would require a huge effort in productivity, which would have to increase by an annual average of 3.3 percent.<sup>47</sup>

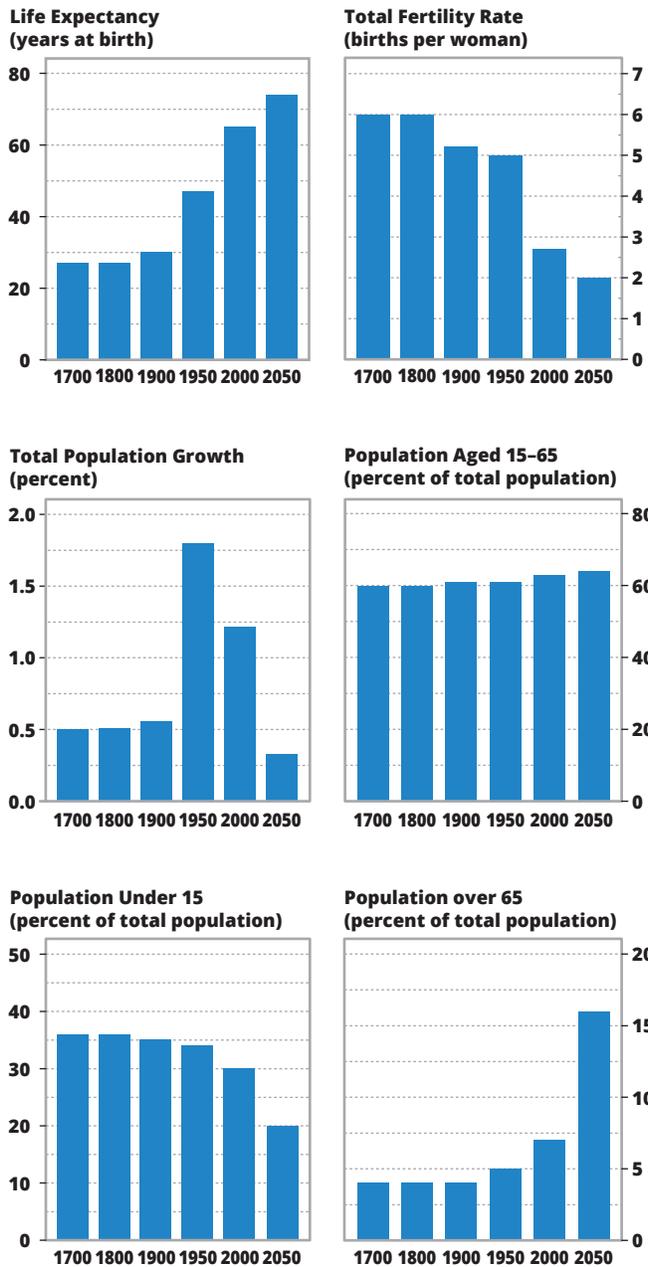
**FIGURE 8. GLOBAL HUMAN DEVELOPMENT: BASIS OF OPTIMISM RELATED TO FEMALE FERTILITY AND EDUCATION**

Source: Hughes, Barry, Pardee Center for International Futures, University of Denver. Taken from a seminar at the Congress of the Future 2015, Santiago, Chile.



**FIGURE 9. DEMOGRAPHIC TRANSITION, 1700–2050**

Source: International Monetary Fund (2004). *World Economic Outlook*. Washington, DC, International Monetary Fund.



The population distribution by religion will also change. The number of people who practice Islam will increase from 1.6 billion in 2010 to 2.8 billion in 2050, while the number of Christians will rise from 2.2 billion to 2.9 billion. The number of Muslims will exceed the number of Christians in 2070.<sup>48</sup>

The racial-ethnic composition of the United States will also change radically. The white population, which declined from 80 percent of the total in 1980 to 63 percent in 2014, will shrink to 44 percent in 2060, while those who self-identify as Hispanic will be close to 30 percent. Asians (and others) will increase to 15 percent and the African American population will remain at around 13 percent.<sup>49</sup>

These shifts have several consequences but one in particular stands out: the educational challenge. Any future advantage stemming from population growth would depend on national education policies. School coverage and the technical training of youth contingents would be crucial in raising productivity and bringing about the “demographic dividend.” The increased share of women, youths and seniors will also call for efforts to improve training and capacity building.

If this is not attained, there would not be convergence. Instead, the gap might widen as advanced countries leave other nations lagging behind. Political instability, violence, weak institutions, and corruption might also set back the positive outcome of population growth—and this could have important implications for Latin America. The region has accorded priority to robust enrollment rates at the pre-school and post-secondary levels. As these are attained, governments will have to agilely improve the quality of education and make great efforts to implement technical education that is responsive to workplace needs. Global-level advantages could also be secured if occupational training and adult education improved rapidly. An older cohort offers experience, but its education level tends to be lower than that of younger generations. The challenge of the demographic outlook includes universal and ongoing education as a way to maintain high levels of efficiency and creativity by all citizens across a longer working life.

Education policies have to be in place for at least a decade before the first results can be assessed in the context of long-term educational goals. What subjects

and skills must be taught and transferred as part of global educational requirements in 2030? How should education systems, schools, and universities be organized in Latin America?

#### a. Middle class: engine of development

Economic growth and higher educational coverage have allowed families to escape poverty and achieve higher standards of living. All scenarios expect these “middle classes” to post impressive growth in relative and absolute economic terms.

A recent World Bank study defines “middle class” as those who receive between US\$10 and US\$50 per person per day at purchasing power parity (PPP).<sup>50</sup> The study found that in the decade ending in 2009, Latin America’s middle class grew by 50 percent from 100 million to 150 million people. The middle class now makes up 29 percent of the region’s population. In 2030, the share will be 42 percent, while 18 percent of Latin Americans remain in poverty.

The Organization for Economic Cooperation and Development (OECD) defines the middle class in a different way, as those whose income is between US\$10 and US\$100 a day (2009 dollars at PPP). According to OECD forecasts, the ranks of the middle class would climb from 1.8 billion in 2009 to 3.3 billion in 2020, and then reach 4.9 billion in 2030.

The global demand in the purchasing power of these middle classes could grow from US\$21 trillion in 2009 to US\$56 trillion in 2030.<sup>51</sup> This study presents scenarios for 145 countries, including income distribution, consumption levels, and trends in productivity, investment, and population.

About 80 percent of this increase—and the corresponding consumption and investment—would occur in Asia, where the impact would be dramatic. In 2009, 54 percent of the middle classes were in the United States and Europe, and 28 percent were in the Asia-Pacific region. New scenarios envision Asia-Pacific accounting for 66 percent in 2030, while North America’s share falls to 7 percent (from the current 18 percent) and Europe’s drops to 14 percent (from 36 percent).

Latin American countries should take these estimates into consideration when designing development strategies and investment programs. Large firms prepare scenarios in their sectors in order to decide where to invest and in what. Countries should do likewise, supporting or conducting studies on areas with future comparative advantages.

Some analysts seek to draw conclusions about changes in political behavior caused by the expansion of middle classes, changes that might be conducive to democracy, diversity, and entrepreneurship. Economists assume members of this group are favorably disposed toward

**TABLE 1. NUMBER (MILLIONS) AND SHARE (%) OF THE GLOBAL MIDDLE CLASS**

Data source: OECD (2010). “The Emerging Middle Class in Developing Countries,” *Working Paper 285*. Paris, OECD. <http://www.oecd.org/dev/44457738.pdf>.

REGION	2009 NUMBER	2009 SHARE	2020 NUMBER	2020 SHARE	2030 NUMBER	2030 SHARE
North America	338	18%	333	10%	332	7%
Europe	664	36%	703	22%	680	14%
Central and South America	181	10%	251	8%	313	6%
Asia-Pacific	525	28%	1,740	54%	3,228	66%
Sub-Saharan Africa	32	2%	57	2%	107	2%
Middle East and North Africa	105	6%	165	5%	234	5%
World	1,845	100%	3,249	100%	4,894	100%

innovation and entrepreneurship. Sociologists and political scientists, though cautious, presume that they will lean toward democracy, tolerance, and pluralism.<sup>52</sup> But analyses of middle-class political behavior by the European Union Institute for Strategic Studies<sup>53</sup> infer another possibility: citizens' demands will challenge national and global governance.<sup>54</sup> Regardless of how it plays out, the swaying opinions of the middle class will make a difference in how governments behave and ensure governability.

### b. Migration on the rise

Globalization is concomitant with migration and mobility. And because the Internet and communications technologies allow global interactions, workforces in international companies will be more mobile. The same will be true of students, professionals, artists, and others, although this kind of mobility differs from traditional migration in that it can be temporary. At the same time, differences in inter- and intrastate growth and rapid technological progress will widen income gaps and also stimulate migration. Moreover, as transportation costs fall, people will find it easier to move, and migrants will feel more welcome thanks to compatriot communities already established in host countries. Language knowledge will also facilitate migration, as will the option of holding citizenship in more than one country.

Where will these flows originate and where will they go? One OECD study outlines scenarios for developed countries,<sup>55</sup> but there are actually few studies on the future of global migration and all of them envision immigration increases. The demand for immigrants will vary in scale. All countries will need more young people to raise labor productivity, finance pensions, and meet the demand for services, especially services to the elderly. In Europe, two additional trends will unfold: widespread inclusion of women in the labor force, and longer working lives. Pressure from Africa would also increase as a result of rapid population growth, economic expectations, and possible failings of political governance. Unexpected events (wild cards), such as the massive flow of refugees from the Middle East, were hardly anticipated, and are a good example of the need to keep exploring unlikely scenarios in order to reduce the chance of surprises.

The propensity to emigrate from emerging countries will depend on economic and political stability. Emerging countries not only could see increased demand for young people with a technical background, but also could prove more attractive to young people with a technical or higher

education. Indeed, flows could reverse, with a rise in the number of young professionals emigrating from developed countries to emerging countries. In a knowledge-based society, a country that has more young people with good training will have an advantage. This is an important consideration for Latin Americans.

Some scenarios point to the effects of climate change and natural disasters as another catalyst for migration. One British study brought together the opinions of 350 experts from 30 countries in order to project scenarios to 2030 and 2060. The study concludes that populations are increasingly located in at-risk areas, especially low-lying coastal land, dry zones, and mountainous regions. The study's conclusions appear to stem from the fact that 17 million people were displaced in 2009 and 42 million in 2010. Relocation from at-risk zones could spawn massive migration flows, mainly within countries.<sup>56</sup>

Governments and international organizations must be better prepared for such scenarios, which could arise abruptly. Long-term trend studies propose courses of action that include improving urban planning, resolving land ownership disputes, protecting migrant populations, and increasing development assistance.

Tied to migration is the issue of remittances, the growing wealth transfer that contributes to the well-being of significant numbers of families in migrants' countries of origin. Remittances were estimated at US\$406 billion in 2012; that amount could reach US\$500 billion in 2020. Of the US\$406 billion, Mexico received roughly US\$24 billion while Latin America as a whole received about US\$69 billion in 2011. Other studies estimate more than US\$60 billion for 2014.<sup>57</sup> How might they develop in the future?

### c. Displacement of power

Asia's resurgence is now so entrenched that some analysts see its global outlook as part of a post-Western world.<sup>58</sup> In all the scenarios examined, the Chinese economy would surpass that of the United States before 2020. According to the OECD report, emerging countries would grow at 5 percent to 8 percent a year and the developed countries at 1 percent to 2 percent through 2060. This suggests that developed and emerging countries could converge in the coming decades. Moreover, the report predicts that the Chinese economy, which has already surpassed that of the European Union, will overtake the US economy before 2020. Similarly, India passed Japan in 2012 and is expected to do the same to the European Union in 2030. The OECD's

baseline scenarios present a range of projections. One envisions that the output of China and India combined would surpass the OECD total in 2060.<sup>59</sup> (In 2010, they accounted for the equivalent of a third of the OECD countries' output.)

Other analyses maintain that China will surpass the United States, and that India and Brazil will overtake Japan and France, respectively, around the same time, before moving past Russia and Germany after 2020.<sup>60</sup> Economist Arvind Virmani calculates economic power not only on the basis of GDP but also by using strategic assets such as investments, human capital, research capacity, and organization measured by means of per capita GDP.<sup>61</sup> His scenario posits a bipolar world in 2020 and a tripolar world in 2050. According to his estimates, China will equal the economic power of the United States in 2030 and then, in 2050, the order will be China, the United States, and India—all three with similar economic power.

How developed Western countries—and Japan—are positioned in the future will depend on their ability to reduce debt, increase productivity, boost investment, advance human capital, and further technology. It will also hinge on their ability to induce immigration, lengthen working lives, and increase women's participation in the workforce so as to counteract the aging of their populations. The speed with which emerging and less developed countries converge with developed countries will depend

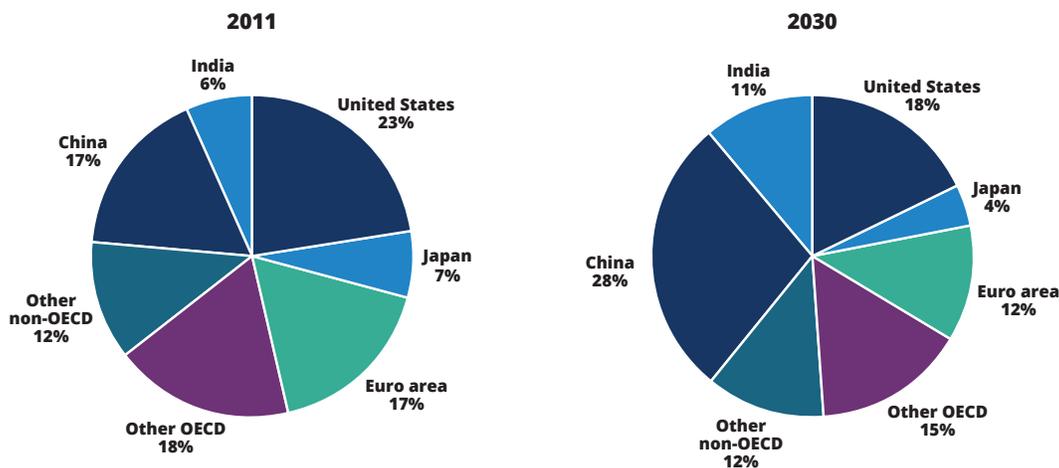
on educational improvements, math and reading levels, implementation of good government practices, structural reforms to attract investments, stimulation of technological innovation, and investment in social welfare.

The persistence of these trends and their effect on Latin America are strategic topics for Latin American study groups and governments to examine closely. They will be relevant when defining international trade and productivity strategies.

There is a widespread assumption that the global power and economic strength of the United States and the European Union will experience a relative decline. Critics of this view argue that the US economy will continue to grow and the country will retain its primacy in innovation. Its ability to create businesses and raise productivity, its population growth (in contrast to other developed countries), its attractiveness to professionals and scientists from other countries, and its political will are factors that would make a difference. Critics of the "decline" thesis also argue that US debt will contract. They maintain that US influence will continue to dominate the coming decades, and while its past hegemony will be gone, no world issue will be resolved without its involvement.<sup>62</sup> The United States could create an "intelligent power" that combines military and economic might ("hard power") with the cultural capacity to attract and convince ("moral authority").<sup>63</sup>

**FIGURE 10. CHANGES IN THE COMPOSITION OF WORLD GDP**

Source: OECD (2012). "Looking to 2060. Long Term Global Growth Prospects," *Economic Policy Paper 3*. <http://www.oecd.org/eco/outlook/2060%20policy%20paper%20FINAL.pdf>.



Scenario building is more arduous in the case of the European Union because of its supranational complex institutions' limited reactive ability. Fiscal deficits and an aging population lend credence to a vision of decline. More favorable scenarios predict that crisis will lead to a more powerful supranational system that assumes national functions related to fiscal, tax, and social security policies. They also assume a powerful monetary system could be consolidated, ensuring financial stabilization, and that the debt crisis would force the pursuit of policies geared toward growth and innovation, integrating markets even further, and establishing more uniform regulations and policies on labor, tax, and fiscal matters. Strengthened institutions and reinvigorated democratic procedures at the European level are also important as they may lead to a rejuvenated scenario. A moderate scenario posits economic improvement but limited political power given the enormous difficulty in managing so many languages, histories, traditions, and national sentiments.<sup>64</sup>

The start of US-EU negotiations for a new agreement, the Transatlantic Trade and Investment Partnership (TTIP), plays a role in positive scenarios. As a development that will strengthen both sides, it is seen to support a scenario in which the West's economic power grows. That could also expedite a solution to Europeans' entangled issues. Possible outcomes from this strategic initiative, as well as the scope and speed of the agreement, should be studied and monitored by Latin American countries, especially in the context of their future role in the international landscape. The United Kingdom's withdrawal from the European Union is a development that will weaken Europe's capacity to surmount the trend towards the relative decline of its global power.

Japan, too, could recover lost ground if its economy is reactivated and if it concentrates on green-growth strategies. Japan has untapped growth potential. In particular, women's participation in the workforce is limited and could be increased, offsetting stagnant population growth.

There are many thoughts on China's long-term path, another confirmation of the need for meticulous global monitoring by Latin America. Will China advance from absorbing foreign technologies to creating its own? Will the Chinese Communist Party be able to open society without losing control? Can China avoid military competition with the United States and its allies in the region?

Although China's growth is slowing, its influence will continue rising.<sup>65</sup> In absolute terms, the size of the economy makes up for the decline in the rate of growth, generating an ever-bigger increase in GDP. China's plans for education, high rates of investment, wide technological absorption, and population growth to 2030 will bring about irreversible progress. Optimistic foresight studies assume a long period of expansion driven by political priorities focused on attainment of higher per capita income, narrowed income gaps, and a harmonious society. These studies also assume that China will not seek to supplant the United States or to compete militarily. Rather, its goal would be to expand the liberal system of international trade and investment from which it has benefited to date.<sup>66</sup> Others foresee a long phase of adjustment and structural change, and a lower growth rate in the coming decade.<sup>67</sup>

Less optimistic scenarios for China highlight increased labor costs and other difficulties. Some activities could relocate to elsewhere in Southeast Asia. Technological change could also spark companies to invest back in their home countries. Politically, the new Chinese professional middle classes will demand greater participation and new freedoms, raising governability obstacles for the one-party system.

The shift in relative power would intensify the multilateral character of the world system, in which there are fewer hegemonies but a greater risk of ungovernability. There is a growing debate about the consequences of multipolarity. Would the world system become more fragile, or more flexible and resilient? The study of these questions and issues is vital in order to imagine the positioning of Latin America over the long term. Latin American governments could also contribute to a more just and balanced global system by taking coordinated action to influence the reform of global institutions and the making of global rules.

#### 4. The city of the future

By 2030, according to the United Nations, more than 80 percent of the world's population will live in cities. That share in Latin America may well exceed 90 percent, making it the most urbanized region of the world. Asia's rate of urbanization, by contrast, will be 53 percent (with China at 59 percent and India at 37 percent) in 2025.<sup>68</sup>

Between 2011 and 2050 the urban population will probably rise from 3.6 billion to 6.3 billion. Under such a scenario, existing and new cities in Asia will have to absorb 1.4 billion people. The figures for Africa and Latin America are 900

million and 200 million, respectively.<sup>69</sup> According to some estimates, about 44 million people a year will move from the countryside to the cities, especially in Asia.<sup>70</sup> Other estimates are as high as 65 million a year between 2014 and 2025.<sup>71</sup> It is hard to imagine the political, economic, social, and cultural consequences of such massive movement.

About 1.5 billion people, more than 20 percent of the global population, currently live in the 600 biggest cities of the world. These metropolises generate about 50 percent of global output. In baseline scenarios, those 600 cities will be home to 2 billion people in 2025, about 25 percent of the world's population, and could account for 60 percent of world output.<sup>72</sup> Even more, the biggest urban areas will not be the *same* 600 cities. New cities in the developing world will emerge to replace 137 current urban areas. It is expected that 100 of the new cities will be in China, 13 in India, and eight in Latin America.

This presents a major challenge for Latin America. An assessment of the region's 10 biggest cities, using 100 indicators (*Urban Performance Index*) in four fields (economic development, social development, resource sustainability, and governability) reveals shortcomings that hinder future development, among them traffic congestion, failure to exploit economies of scale, housing shortages, and inefficient services.<sup>73</sup> Latin America's cities lack urban planning, have weak institutions, have few public spaces, are marked by segregation and exclusion, and are places of inequality and insecurity. Their governments need to intervene decisively, using institutional reforms and investment programs to transform these urban areas and make them more competitive.

Cities, not regional poles as previously thought, will be the sources of growth, innovation, and quality of life improvements. As forecast by a McKinsey study, competition between cities will increase as they seek to lure companies seeking locations with advantages for global activity. Successful urban areas will be the ones that improve services, enhance national and international connectivity (the Internet), ensure water and electricity supplies, raise levels of education and healthcare, provide talent pools of technical specialists and other experts, secure efficient and reliable financial systems, cultivate cultural activity, and provide citizens with two important benefits: an improved quality of life and increased productivity.

Latin America's serious challenges will come from new Asian cities being designed to attract new businesses, technologies, and cultural activity.

That means long-term planning must also become a priority for Latin American governments. Despite declining population growth, cities will continue to expand. As incomes rise, people will expect more square footage per resident, meaning there will be more households but with fewer members. City planners from specialized institutes around the globe propose raising density to 12,000 inhabitants per square kilometer and they advocate occupying empty or abandoned areas, restoring degraded areas, and adopting urban designs for walkable cities that put conveniences within access of residents. They call for energy-saving rules for housing, reduced CO<sub>2</sub> emissions, and increased public spaces. They recommend against placing highways in the middle of cities.

How do we move forward and derive benefits for Latin America's urban areas? If the modern city is a pivotal factor in development strategies, it should be a central component of national and long-term planning and political programs. Latin American governments must become familiar with what other cities are and will be doing. The elevation of urban planning in Latin America will be mandatory if the region is to provide better services and be more competitive.

## 5. Tackling climate change

Rising temperatures, changes in rainfall, ascending sea levels in coastal areas, floods, and tornadoes are some of the foreseeable consequences of climate change, as indicated in global risk scenarios.<sup>74</sup> There is an intense debate about the effects of CO<sub>2</sub> emissions and human activity on global warming, a debate that becomes more uncertain in light of the possibility of discontinuities or abrupt breaks in the gradualness of natural phenomena. The leading teams of specialists suggest the need for sensitivity analysis in order to anticipate and avert disasters in the most vulnerable regions where the poorest populations live.<sup>75</sup>

The main dangers include water shortages that affect health and food supplies. Glacial melting, shifts in rainfall, the depletion of aquifers, late and early arrival of seasons, and other extreme climate changes will impact food security. Some scenarios for 2050 point to a decline in crop yields, with smaller yields from irrigated land (especially

in South Asia), a rise in the price of meat, and lower calorie availability.<sup>76</sup> In addition, the advantageous positions of countries with large surface area and water availability (Canada and Russia) and the shortages in countries of sub-Saharan Africa and Asia will influence the power structure between regions. In the coming decades, attenuating measures could include rural systems that use tube-well technology, watershed protection, rainwater collection, water conservation, technical education for communities, and the advancement of technology.<sup>77</sup>

There are also concerns about damage to biodiversity, species, genotypes, communities, ecosystems, and biomes. Ecosystems will continue to be degraded by deforestation, stream diversion, declining water levels in rivers, pollution of freshwater, and acidification of the oceans. The disappearance of the Arctic ice cap and the possible exploitation of significant parts of Amazonia would accelerate this process, raising the planet's temperature by about 2° C, which is regarded as a dangerous threshold.<sup>78</sup>

How can these risks be contained? Through swift national and international action, such as the curbing of deforestation (the cause of large-scale CO<sub>2</sub> emissions and soil erosion), greater reforestation, the establishment of new protected areas, and implementation of aquaculture regulations designed to safeguard biomass and the environment. Such action could push higher agricultural yields—without expanding land area currently under cultivation—and involve training for small and medium producers. Local communities could be empowered, new information systems set up, and technological innovation to find drought-resistant varieties encouraged. Infrastructure is also important, from rural roads that facilitate agricultural production to dams that hold water in drought-vulnerable basins. Pivotal issues to be considered include flood protection, coastal safeguards against rising sea levels, and efficiency improvements, particularly those that cover leaks, wells, meters, and education. Equally important would be the creation of vast marine parks and the processing of large plastic waste.

The danger associated with climate change has strengthened the call for “inclusive green growth.” But this must come with simultaneous action on three fronts: social inclusion (to eliminate or reduce poverty), stewardship of the planet's natural capital, and creation of high-quality jobs. These goals are complementary and mutually reinforcing.<sup>79</sup> The unequal relation between the causes and

consequences of climate change make it more difficult to reach agreements on reduction of emissions. The Sustainable Development Goals represent a great collective commitment and the new challenge is to monitor and ensure their fulfilment. This is one of the main challenges to world governability (see Figure 11).

A disconnect emerges when scenarios anticipating a surge in the middle classes are set against potential dangers arising from climate change. No matter how much technology advances, there seems no way to extend current consumption and production patterns for billions more people in a way that is sustainable for the planet. This incongruity should sit at the front line of strategic thinking. It is crucial that future scenarios be examined so as to quantify the scale of the technological and political effort needed to neutralize this potential crisis.

## 6. Citizens' empowerment and government reform

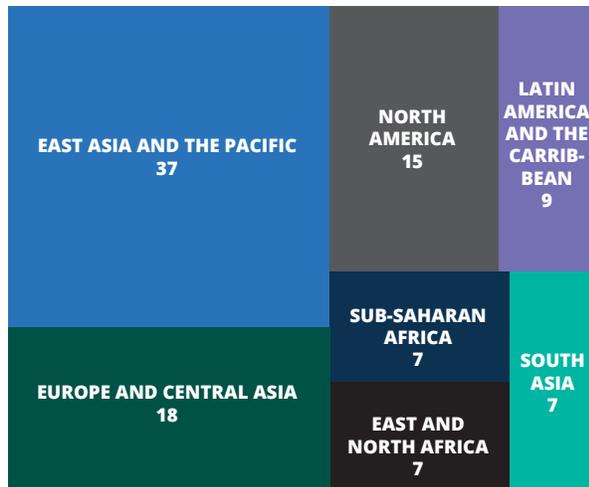
Citizen awareness is accelerating exponentially, influenced by many factors. Worldwide illiteracy has declined; according to UNESCO, the literate population will rise to 90 percent in 2030, from 84 percent in 2010.<sup>80</sup> Educational differentials between men and women are narrowing, prompting a sharp increase in demand for higher education. The growth of Internet use is exploding. In 2015, some 3.4 billion people (46 percent of the world's population) had access to the Internet. Of course, there were large regional differences: in North America, 88 percent of the population (314 million people) had access; in Europe, 74 percent (604 million) were linked to the Internet; Latin America had 56 percent (345 million) of its residents with access to the Web, and in Asia 40 percent of the population (or 1.6 billion people) were online.<sup>81</sup>

Thanks to massive computing capacity, wireless technologies, platforms, mobility, and lower prices, the digital divide between and within countries will narrow even more. Optimistic scenarios suggest that global Internet penetration could near 90 percent in 2030.

Aspirations related to freedom and democracy will be a dominant trend in the coming decades. Political rights will be protected and promoted more openly. Women will have a greater presence and assume leadership, and indigenous peoples will demand equality and dignity. Younger generations will be more aware of their rights and better positioned to require respect for those rights. Expectations

### FIGURE 11. REGIONAL SHARES OF TOTAL GREENHOUSE GAS EMISSIONS, 2011 (%)

Source: World Resources Institute, Economic Commission for Latin America and the Caribbean (ECLAC) on the basis of Climate Analysis Indicators Tool (CAIT) 2.0, 2014.



will be transmitted swiftly. There will be increased demand for a healthy environment, quality education, good health care, livable cities, and regional equality.

Citizen empowerment will accompany the rise of the middle classes, whose demands for participation and well-being will increase. The middle classes will challenge governability as it is practiced today. If resource-poor countries with fragile states fail to grow and create employment, instability could spread, hindering democratic ambitions. Power becomes dispersed.<sup>82</sup> Reforms to facilitate governability should include strengthened civil society institutions, institutionalized channels for participation that take into account the procedures of representative democracy, decentralization, and consolidated local power.

Even knowing this, it is difficult to discern how recalibrations will affect the ability to govern. Changes could unfold gradually and peacefully, or they could be abrupt and dislocating. Under an adverse scenario, demands for greater autonomy and social mobility could overwhelm existing institutions. Paradoxically, technological developments coupled with perceived citizen risks, such as social unrest, violence or terrorism, could also lead to government control and loss of individual privacy and freedom.

To manage this complexity in a democratic manner, a state must have suitable personnel, transparency, and proper resources and functions. It must also be able to reinforce its regulatory duties so as to limit abuses and foster competitive productive development in a context of sustainable social protection. The bustle of information blurs the focus on priorities, with the risk that political and social cohesion is weakened. Governments should make greater efforts to communicate priorities, enhance transparency, and design new systems of government, aligning institutional objectives and improving the division and coordination of tasks.<sup>83</sup> Is the state apparatus in Latin American countries capable of this? Looming challenges cannot be tackled with organizations that are inefficient, opaque, clientelist, and corrupt. If the state and the political parties are not reformed, governability could become elusive and democracy would be weakened. Short-termism increases vulnerability. Democratic consolidation requires a permanent capacity for long-term foresight to anticipate the future and improve decision-making in the present. These trends and other countries' experiences must be explored and actions anticipated.

Challenges of national governability are matched by problems of global governability. As power becomes more dispersed, the world could be exposed to fragmentation, a weakened right of authority, and more conflict. Historically, the absence of a hegemonic power and the coexistence of several similar national powers have increased the risk of conflict.<sup>84</sup> Problems could worsen if alliances are fragile and there is no coordinated power to ensure compliance with agreements.

Multipolarity without collaboration among countries would leave space for prolonged local disputes or international criminal organizations and terrorist groups. "Virtual governments" with no fixed geographic location could threaten chemical, biological, nuclear, or cyber-attacks.<sup>85</sup> States will have to cooperate to avoid undesirable scenarios, consolidating supranational institutions through broad and democratic agreements.

Leadership is key. To deepen democracy, countries will have to educate future citizens and train leaders who listen, persuade, and coordinate with others at the national and international levels. A better world is one in which governments can increase cooperation and lessen violence. In the future, Latin America could play a more active role in this regard.

## E. UNEXPECTED EVENTS: HOW DO WE DETECT THEM?

Alongside the large-scale trends influencing the future are events that, while less probable, can also affect outcomes and even cause a change in course. If they are aware, national leaders may take appropriate steps with agility. Among the events underscored by experts are:

- The acceleration of climate change and possible rises in sea levels, with adverse effects on coastal populations, as well as temperature shifts that exceed predictions. The ramifications for agriculture, rainfall, and health could be greater than recent studies have anticipated.
- Cyber-attacks on electrical, communications, financial, services, logistical, and food-production grids. If at least 5 billion people are interconnected by 2030, the targets for terrorist attacks will be innumerable. Armed forces will continue to include cybernetic systems in their arsenals as weapons of mass destruction. Experts maintain that such dangers have already supplanted nuclear threats. “Do-it-yourself” surveillance and weapons systems will likely become more common, enabling new kinds of crimes and conflict. In addition, do-it-yourself enthusiasts may use synthetic biology to produce and release harmful substances into the environment—either accidentally or on purpose.
- Food insecurity sparked by increased prices and the imbalance between production and demand in dry zones or water-scarce areas. This event could seriously affect the world’s poorest citizens.
- Aging populations and connected concerns about financing for social security systems, fiscal weakening, low productivity, and waning competitiveness, especially in Europe.
- Geopolitical tensions in the South China Sea, East China Sea, and Indian Ocean. China’s economic growth and its military power can leave its neighbors feeling insecure. The United States will seek to support its allies in order to limit China’s influence, with all the attendant risks. The Middle East and the India-Pakistan border will continue to be conflict zones with global repercussions.<sup>86</sup>
- Along with the aforementioned scenarios, one must include more conventional unpredictable risks, such as pandemics, terrorist or fundamentalist groups, or the threat from groups with nuclear capability. Although the human tendency is to foresee dangers, it is important also to scrutinize the possibility of unexpected events with positive consequences.

## II. CHALLENGES AND OPPORTUNITIES FOR LATIN AMERICA IN THE NEW GLOBAL SYSTEM

A recurrent review of global trends and scenarios provides policymakers with a scope that surpasses the short term and extends beyond purely national issues. Many questions arise from analysis of how these trends may influence Latin America's long-term development. It would behoove political actors to scrutinize these tendencies and prepare for surprises, to know when and how to grasp opportunities, and to facilitate political agreements for future actions. To contribute to this dialogue, I will identify areas that require systematic analysis if better public policies and investment programs are to be designed. Government units, international organizations, and independent think tanks should be bolstered so they can monitor these scenarios and policies with a long-term perspective.

Why does the region lag in foresight studies and strategic thinking? The technical and political capacity for planning was developed in the 1950s and 1960s on the basis of the methodologies and political convictions of the time. Globalization and the speed of change shattered those planning concepts. The international market took primacy and planning ministries were weakened. As change and uncertainty accelerate, new concepts have gained relevance. The public sector has been increasing its regulatory capacity, and emphasis has been placed on improving public policies and project evaluation. The concepts of foresight and strategic thinking have gained traction but there is insufficient administrative and intellectual capacity to push forward. Technological foresight studies have been produced more regularly in Latin America, but their association with innovative businesses has been slight and their impact on decision making feeble.<sup>87</sup>

Three of the main reasons for the lag are worth mentioning: the prevalence of market mechanisms and the decline of strategic thinking, the economist culture dominated by short-term macroeconomic equilibrium, and the disconnection between long-term analysis and government decision-making. In short, there has been no strong appreciation of a long-term vision that supports governmental action, and there has been inadequate resource allocation.

Latin America's few long-term studies have been sporadic, lack continuity, and tend to be more projective than

prospective. With few exceptions, there generally is no public institution responsible for integrating sector studies so as to make them more coherent in each country.

### A. FORESIGHT CAPACITY MUST BE STRENGTHENED

Latin America's lag could be quickly overcome. Future studies and analysis are gaining momentum in both developed and emerging countries. In the former, long-term studies and strategy design have been strengthened. Although these studies were driven by geopolitical considerations, the analysis quickly deepened to cover economic issues, investment opportunities, and political and social risks. Foresight studies from international organizations and academic and business think tanks have proliferated. Some governments are now creating strategic planning units.

In Latin America, there is greater interest in future planning. Governments, international organizations, universities, independent research centers, and business groups are climbing on board. Several notable studies have emerged.

#### LONG-TERM STUDIES IN LATIN AMERICA

- Brasil 2022<sup>88</sup>
- Visión Nacional 2030 (Mexico)<sup>89</sup>
- México 2042<sup>90</sup>
- Proyecto País: 2012–2025 (Chile)<sup>91</sup>
- Surfeando Hacia el Futuro: Chile en el Horizonte 2025<sup>92</sup>
- Latinoamérica 2030 (Millennium Project and University of Denver)<sup>93</sup>
- Proyecto Plan Perú 2040<sup>94</sup>
- Visión Colombia 2019<sup>95</sup>
- Estrategia Nacional 2010/2025 (Ecuador)<sup>96</sup>

- Un Viaje de Transformación Hacia un País Mejor, 2030 (Dominican Republic)<sup>97</sup>
- América Latina 2040 (CAF)

There are differences between Latin American studies and those of Asia, as evidenced in the reports *China 2030*,<sup>98</sup> *India 2039*,<sup>99</sup> *Asia 2050*,<sup>100</sup> and *Australia in the Asian Century*.<sup>101</sup> Most Asian countries' lack of natural resources has obliged them to move decisively in new directions. As a result, the countries are more ambitious and more creative in their efforts to penetrate productive niches. They base growth on the capacity of their human resources, education, and technology. Their political resolve to do so has involved the whole of society.

For example, a 2050 goal in the report *Asia 2050: Realizing the Asian Century* is to recover the same proportion of world GDP that Asia had more than three centuries earlier. And take note: while Asian studies refer to the twenty-first century as the "Asian century," Latin Americans talk of the "Latin American decade" when commodity prices are in the upward part of the cycle, and then the idea recedes and the resolve weakens.

Indeed, some Asian studies use Latin America as an example of an undesirable outcome. For instance, *América Latina 2040*<sup>102</sup> and *Chilean Development through Asian Eyes*<sup>103</sup> underline the shortcomings that explain Latin America's lack of dynamism: low levels of investment, modest improvement in productivity, the state's timidity with long-term projects, excessive inequality, the

predominant role of ideology, and a lack of pragmatism in debates about the state and the market.

In the Asian Development Bank's study, Latin America is used to illustrate the pessimistic scenario: "The Middle Income Trap scenario assumes that ... Asia would follow the pattern of Latin America over the past 30 years. This could be treated as the pessimistic scenario and a wake-up call to Asian leaders."<sup>104</sup>

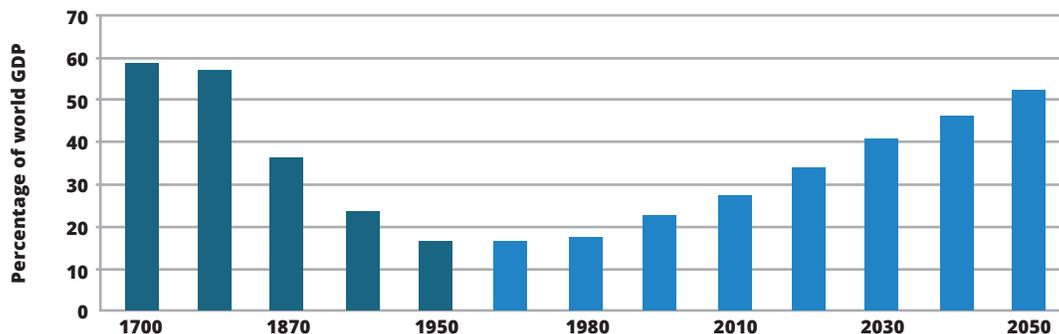
If there is no significant change in Latin America, the policies now underway could widen the productivity gap between the region and Asia. Can Latin American countries escape from the middle-income trap while deepening democracy, ensuring more social inclusion, and securing environmentally sustainable growth?

Figure 13 compares the successful case of South Korea to those of Brazil and South Africa. In light of long-term trends and the experiences of successful countries, Latin Americans should ask themselves how development strategies must be changed to free them from the middle-income trap.

Most Latin American countries have to remedy shortcomings that compromise their future development. There is some consensus on four of those shortcomings: a) weak institutions, lack of participation and, in some cases, violence and corruption—all factors that compromise democracy; b) modest productivity growth and low rates of savings and investment—factors that hinder growth; c) inequality and scant social protection—factors that constrain a sense of community; and d) poor quality of education and low innovation capacity.

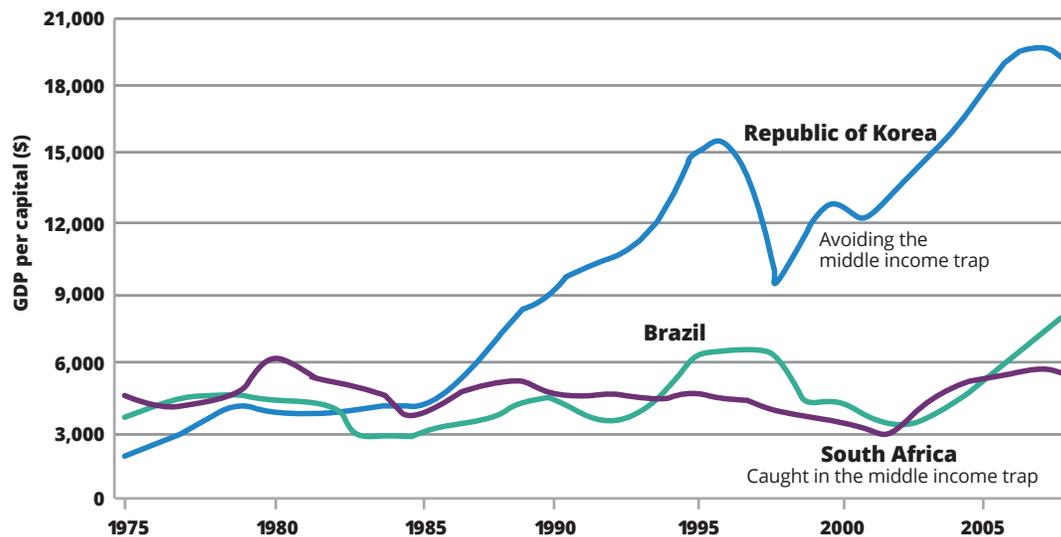
**FIGURE 12. ASIAN SHARE OF WORLD GDP, 1700–2050 (PERCENTAGE)**

Source: Asian Development Bank (2011). *Asia 2050: Realizing the Asian Century*. Manila, Asian Development Bank. [www.adb.org/publications/asia-2050-realizing-asian-century](http://www.adb.org/publications/asia-2050-realizing-asian-century).



**FIGURE 13. ESCAPING THE MIDDLE INCOME TRAP?**

Source: Asian Development Bank (2011). *Asia 2050: Realizing the Asian Century*, Executive Summary. Manila, Asian Development Bank.



## B. HOW TO ENHANCE FIVE STRATEGIC GOALS

A review of a range of Latin American leaders' political statements about how to increase growth and equality reveals convergence on at least five long-term goals:

**1. Consolidation of democracy.** Institution building, citizen power, local government and development of civil society, transparency, women and indigenous persons' rights, security, and international agreements on democratic global governance.

**2. Transformation of the productive structure.** Competitiveness and specialization, sound macroeconomic management, creation of decent jobs and worker training, high-quality education for all, technological innovation, and development of small and medium enterprises (SMEs).

**3. Social inclusion.** Reduction of poverty and inequality, elimination of discrimination, a social welfare network, provision of high-quality public goods and services including housing, healthcare and education, collective public spaces in cities, public transportation, and digital communications networks.

**4. Latin American cooperation and integration.** Enlarging the regional market, reaching agreements on trade, investment, tax, infrastructure projects and energy, political coordination and joint action to ensure fair global norms,

to bring about changes in international institutions, and to support world governability.

**5. Action on climate change.** Food security, prevention of natural disasters, green technologies to reduce pollution, deforestation and loss of biodiversity, efficient use of energy, water, and infrastructure.

Public officials know that social demands and electoral challenges are priorities that call for immediate action. Having a strategic goal helps to avoid muddling through on those responses. When specific decisions lack meaning or a sense of direction and are perceived as piecemeal, it becomes difficult to coordinate actions and obtain citizens' buy-in. If long-term planning does not evolve, countries may lose opportunities—either by omission or ignorance—rather than become beneficiaries of the global phenomena. That is why a pure short-term perspective is losing ground.

The following attempts to specify how analyses of interactions between national objectives and global trends may detect factors that should be priorities in devising effective strategies.

### 1. Democratic governance and citizen empowerment

The impact of information and communication technologies on democracy and the management of government affairs will become even more transformative. Many countries

are beset by opacity, corruption, and a concentration of power. But rising educational levels and standards of living that grant increased autonomy to members of the middle classes will spur demands for new forms of participation, transparency, and local power.

Trends are positive and democracy continues to expand globally, as shown in Figure 14. The issue for the future is the quality of democracy. Several scenarios are apparent. Younger generations born into democracy, with more education and a greater affinity for new technologies, will spawn new forms of participation in public life. Demands for equity, transparency, and participation are part of a global phenomenon that will quickly spread from one country to another. The turbulent Arab Spring is an example, as are Spain's *indignados* movement and student demonstrations in Chile, Brazil, and Colombia. New technologies will empower civil society in ways unknown, requiring prompt responses by governments.

The lower middle classes' fear of falling back into poverty may become a force for instability, triggering mass mobilizations. Social movements cannot serve as substitutes for institutions or political parties. They lack the general representation needed to lead changes. If poorly managed, processes for change could become

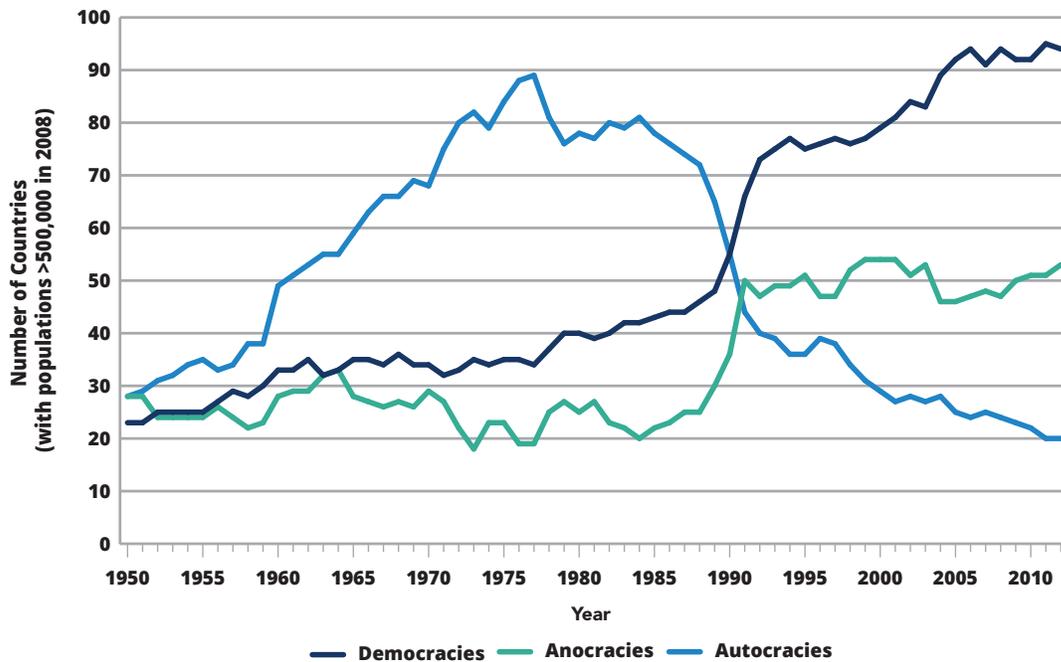
disorderly, courting populism and triggering political instability. In order to channel these new phenomena it is necessary to anticipate the trends and processes. Societies are becoming more complex, and if governments persist with vertical forms of relationship they will be bypassed. New forms of cross-cutting and local dialogue will have to be instituted, along with changes that are conducive to greater citizen empowerment and participation. If they are anticipated, well managed, and involve knowledge of experiences elsewhere, countries could generate positive institutional change over time and bring about strengthened political parties, transparency, openness, equality of opportunities, and decentralization.

On the flip side of this, the future could see governments increasing their technological capacity to control citizens. Persistent political instability in the absence of institutional channels for dialogue can fuel a push toward authoritarianism and constraints on freedom. As a result of the security demands arising from terrorist threats or organized crime, and nurtured by conservative thinking that favors the status quo, this risk could intensify.

In many Latin American countries, the relationship among the state, civil society, and the market is biased in favor of the latter when civil society shows modest levels of

**FIGURE 14. CHANGES IN REGIMES**

Source: prepared by Jack A. Goldstone for a presentation at the Woodrow Wilson Center, February 26, 2013.



organization and the state apparatus is weak in its regulatory capacity, and shows little transparency or technical competence. Governability will depend on the ability to effect timely reforms that regulate the markets, to confer more power on intermediate institutions and on civil society, to limit economic concentration, and to strengthen public action. Regulatory capacity is essential to assure a market that allows for competition and to avoid a concentration of economic power. Reform of the state to achieve more transparency and efficiency is also necessary. Forging the proper bonds between social movements, political parties, and the democratic institutional apparatus is a challenge. New forms of citizen participation are required in order to maintain governability during the changes.

Democratic consolidation seems to be irreversible, but new dangers—among them indefinite reelections, control of media, the seclusion of elites, opacity, corruption, and inequality—could compromise the deepening of democracy. Citizen awareness will be less accepting of inequality, discrimination, and abuses in elitist societies, and citizens will demand tax reforms and the expansion of social rights. To foster democracy, it is important to monitor the political practices that spring from new socioeconomic and technological phenomena.

With clarity and political will, Latin America has the potential to become a region of peace with a well-established democracy and a relevant global advantage. Such an achievement would require extended consensus building, the protection of human rights, and a strict adherence to basic democratic principles, rules, and behaviors.

That said, national governability will increasingly be conditioned by global governability. In a multipolar and interconnected world, uncontrolled phenomena in one part of the world can be transmitted quickly to other parts, with unforeseen consequences. Latin America's regional agreements will help mitigate those consequences and influence important global regulation of financial, commercial, and environmental issues. Regional agreements will also address security in the face of organized crime.

A multipolar world will require new alliances to counterbalance possible fragmentation and to reform international institutions. Globalization will require more state power, not less, and democracy at the global level needs more democracy at the national level. International organizations, duly reformed, and global NGOs will expand their role. Latin America could play a more active part

globally if the region strengthened its own political and economic cohesion. The Community of Latin American and Caribbean States (CELAC) could help close the gaps between South America, Central America, and Mexico, complementing the Union of South American Nations (UNASUR). Moreover, basic steps could be taken to standardize common elements of the free trade agreements signed by each country, with rules of origin, so as to expand the scope for regional integration, along with regional projects in infrastructure. An active convergence between the Pacific Alliance and MERCOSUR will help develop new projects and harmonize policies. Regional cooperation could spread quickly on issues such as *multilatina* companies, tax agreements, and military-spending transparency. Countries could also reach joint agreements on global issues such as climate change, financial stability, and the reform of international organizations.

What kinds of alliances are useful for the region and for each country? Some will be permanent; others will be temporary, flexible, and geared to specific issues. A long-term view and knowledge of foresight studies in the developed countries could provide valuable input for Latin America as it considers how the region's alliances can help expand its global presence.

## 2. Productive transformation for competitiveness

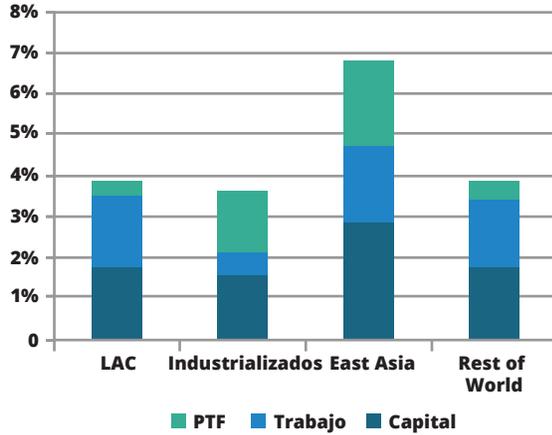
Unlike successful countries in Asia and Scandinavia, Latin American nations still have much to do in order to reach a higher level of economic complexity. Most Latin American countries have achieved sound economic management, but they depend excessively on commodity exports and prices, and accord insufficient priority to the search for alternative scenarios. Good macroeconomic management is decisive but is not enough. Macroeconomic policies are essential to preserve fiscal balance and to avoid currency overvaluation. They are a necessary but insufficient condition; bolder national and regional policies are needed. The absence of strategic objectives and political agreements has hobbled Latin America.

Figure 15 shows the relative weakness of Latin America and the Caribbean (LAC), especially compared to East Asia. Total factor productivity (TFP) is a measure of innovation's contribution to GDP growth.

Recent studies point to complexity as the variable that most closely correlates to growth and development.<sup>105</sup> Productivity improvements require simultaneous efforts in the quality of general and technical education, training,

**FIGURE 15. TOTAL FACTOR PRODUCTIVITY BY REGION**

Source: created by Jose M. Benavente with data from the IMF following the methodology used in the 2003 Brookings Institution report *The Empirics of Growth: An Update*.



scientific and technological research, and infrastructure (transportation, energy, and telecommunications). It also requires policy geared toward innovation and specialization.

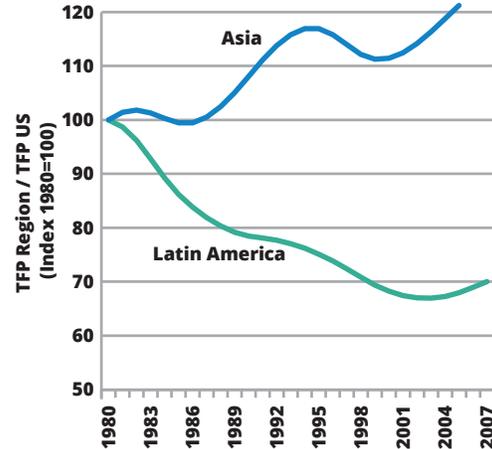
As Figure 16 shows, the productivity gap between Latin America and Asia is not narrowing; on the contrary, it is widening. The type of growth that has marked the last decade—expansion spurred by buoyant raw materials prices, low interest rates, and abundant liquidity—never persists. The recent report *Señales de Competitividad de las Américas 2012*<sup>106</sup> by the Red Interamericana de Competitividad (RIAC) notes that while there is a convergence of per capita GDP, there is a divergence of per capita R&D spending, a crucial element of productivity and future development.

Scientific and technological development must focus on areas in which countries have comparative advantages (with the idea of preserving them and keeping the lead). But they should also prioritize areas where new advantages could be acquired in agriculture, materials, solar energy, biofuels, biotechnology, communications, computing, and nanotechnology. This should be implemented in conjunction with businesses and research centers.

Progress will not be made unless the state more actively coordinates public-private action with research centers, financing new projects and training experts. What traditionally has been called industrial policy is being gradually introduced into the menu of options in Latin America.<sup>107</sup> International studies highlight the need for

**FIGURE 16. TOTAL FACTOR PRODUCTIVITY (TFP) IN LATIN AMERICA AND EAST ASIA**

Source: Santiago Levy and Norbert Schady (2010). "Latin America's Next Challenge: Social Policy Reform." Washington, DC, Inter-American Development Bank. Mimeographed document.



a concentrated effort and they invite Latin American countries to innovate and learn from the Asian experience.

There are only scant links joining scientists and companies, and the dialogue between science and policy is limited. Such gaps could be narrowed with systematic government support, contact with institutions in developed countries, and coordinated efforts within and between Latin American countries.

One of the main concerns in establishing new policies is a reduction of the productive, territorial, and social duality that characterizes Latin America. That requires greater social inclusion and the vigorous development of SMEs. Progress must be made simultaneously on both fronts, productivity and social inclusion. Achieved well, they are mutually reinforcing. If progress on the production structure and competitiveness falls behind pro-equality policies and social spending, that circumstance might weaken economic underpinnings, cause political instability, and create difficulties for democratic governability. Figure 17 indicates which countries have improved the combination of social policies with productive innovation, with democratic stability and environmental sustainability.

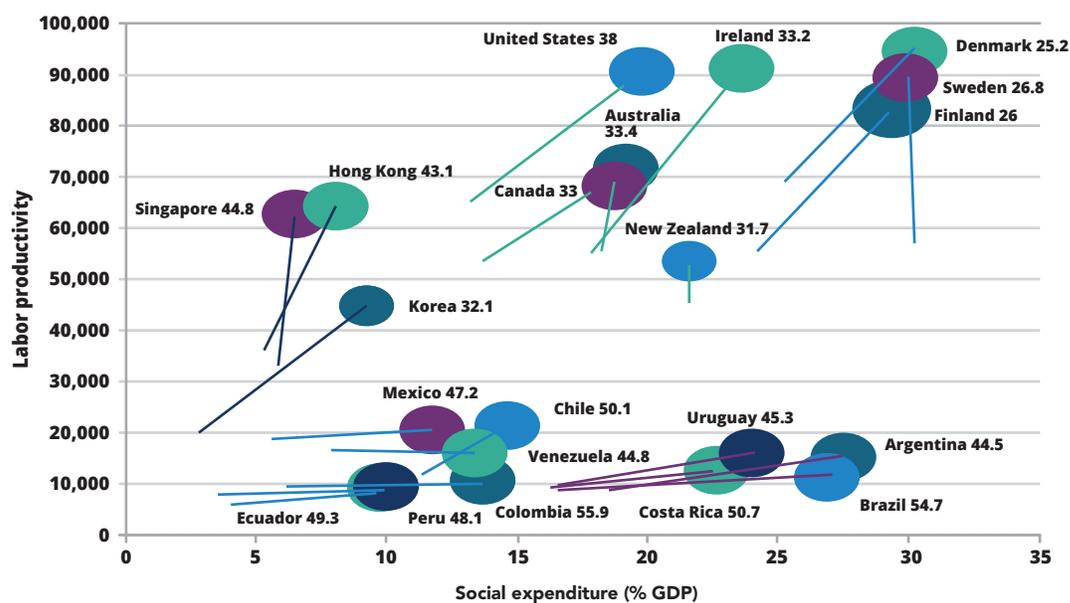
The enormous concentration of production within a few firms and its limited interaction with and stimulus to SMEs constrain entrepreneurship. Future productivity depends on the creation of small and medium firms in the goods and services sectors, improvements in technology and

**“While R&D’s share of GDP grew systematically in the advanced economies between 1999 and 2009, in Latin America and the Caribbean the improvements were modest on average ... In 2009, R&D investment in the region was equivalent to 0.69 percent of GDP, compared to 0.55 percent in 1999. In OECD countries during the same period, the share rose from 2.16 percent to 2.4 percent. In Latin America and the Caribbean, moreover, initiatives to improve R&D investment are concentrated in a few countries. In 2007, 60 percent of the region’s R&D spending was made by Brazil, which invests 1.09 percent of GDP on R&D—the highest share in the region.”**

Source: Red Interamericana de Competitividad (2012). “Señales de competitividad de las Américas 2012.” [http://www.riacreport.org/INFORME\\_FINAL.pdf](http://www.riacreport.org/INFORME_FINAL.pdf).

**FIGURE 17. SOCIAL EXPENDITURE, PRODUCTIVITY, AND INCOME DISTRIBUTION (GINI)**

Source: Cimoli, Mario et al. (2015). “Productivity, Social Expenditure, and Income Distribution in Latin America,” *Production Development Series*. Santiago, Chile, ECLAC. Using data from INDSTAT4 2013, UNIDO; World Development Indicators, World Bank; COMTRADE; Laborstat, ILO; CEPALSTAT; OEC.



management, young entrepreneurs with financial backing and risk capital, and the ability to penetrate markets with new export products.

Groups must be set up to monitor other countries' experiences with industrial policy. Comparative analysis of successful countries in Asia and Europe could guide policymakers and politicians to a new way of thinking. It is also necessary to observe new policies being discussed in the United States and Europe in areas such as infrastructure, labor training, quality education, energy (shale gas), public financing of innovation in knowledge-intensive goods, and big data processing.<sup>108</sup> Latin American governments and international organizations should foster and finance study groups.

#### a. Education to enhance innovation and equality

Education will be the main arena for competition among countries. It is commonly stated that education is the key to innovation, growth, and equal opportunities for all. Across the board, Latin American countries have heralded education as a national priority, and this aim will become the main priority, but such assertions remain more declarative than effective.<sup>109</sup>

Even the most advanced Latin American countries fall below the OECD average.

Coverage of tertiary education is still low in Latin America. But drivers are strong and over the next decade it is possible to reach or even surpass 50 percent coverage in the cohort aged 18–25 in higher, technical, or university education.

South Korea has already surpassed that level of coverage and is seeking to complement its young peoples' training outside the country, as Figure 20 shows. This, too, is significant, given that Latin America falls behind in this area.

The numbers of foreign students in the United States is illustrative. In 2014, 974,926 students from other countries studied at 3,000 accredited colleges and universities in the United States. Figure 20 shows that Latin American nations are greatly underrepresented.<sup>110</sup>

It is striking that South Korea, with a population of 50 million, has almost the same number of students enrolled in US institutions as Latin America and the Caribbean, a region with a population of 600 million and a geographic neighbor to the United States. This demonstrates how

different Asian countries' development strategies are from those of Latin America as regards higher education and the leveraging of opportunities at US universities. The comparison is particularly striking with respect to the number of students in science, technology, engineering and mathematics (STEM) fields.

Latin American countries have made limited efforts to improve the quality of teachers, to determine the number of technical specialists and people with postgraduate qualifications who need to be trained, to define the content of curricula, and to cultivate values that are crucial in a changing world. Countries of the region should define long-term goals and act persistently to achieve them. South Korea and Finland's success shows that it is possible to move faster.

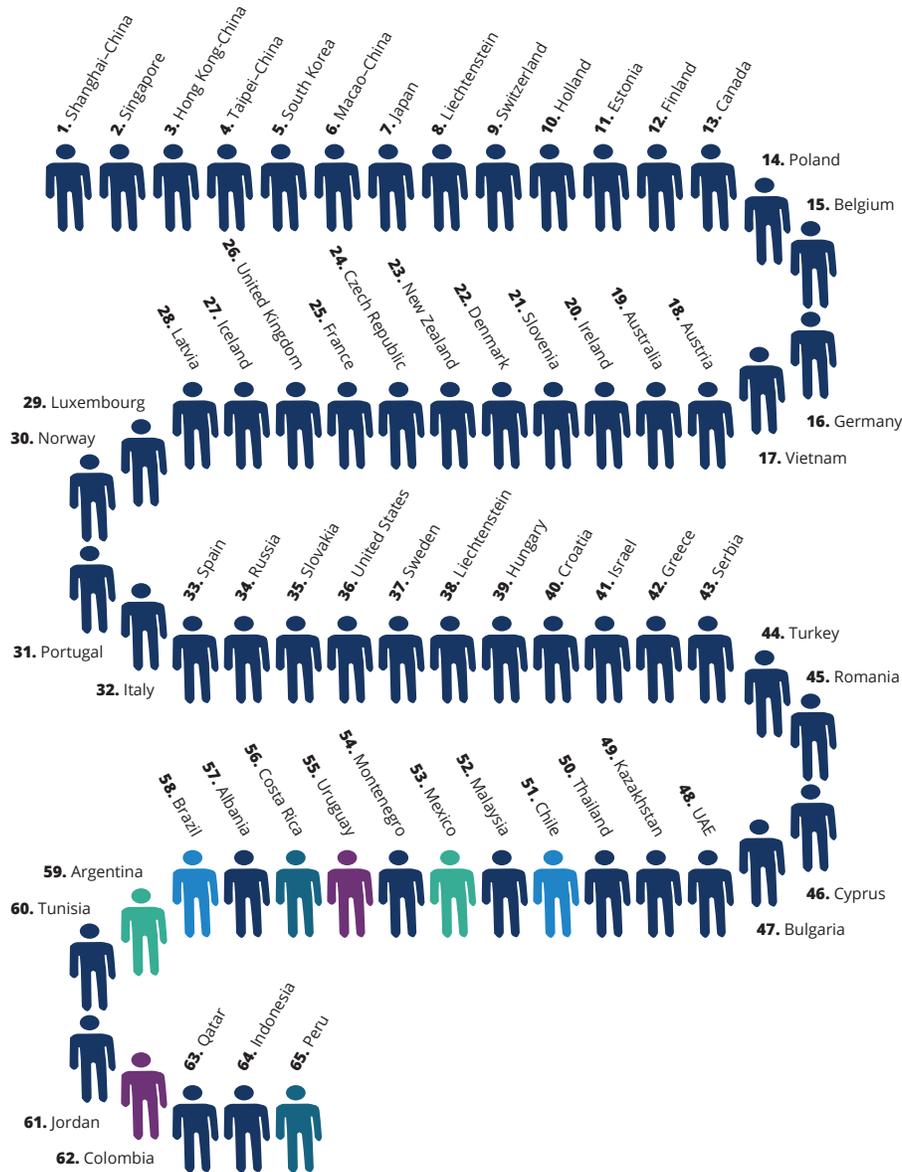
Technological change will increasingly affect education from two angles. First, new technologies offer innovative methods for teaching and learning, both through neurosciences and digital platforms. Specifically, they allow students to take courses online and to attain a greater level of personalized attention. Second, technological progress will require the teaching of new knowledge and competencies to develop the capacity for innovation, both in hard skills (mathematics, science, reading, the humanities) and soft skills (emotional, teamwork, multicultural, interdisciplinary, addressing real problems). Furthermore, as productive transformations and automation accelerate, new educational contents and methods will be necessary to help people to adapt. Artificial intelligence, robotics, sensors, and mass data analysis will swiftly reduce the number of routine jobs and create new ones.<sup>111</sup>

Some studies warn of high turnover, such as in the United States, where 47 percent of current jobs will be automated.<sup>112</sup> These trends call for lifelong training courses to build the skills and capacities needed for the adaptability of the labor force.

The new issues to be monitored include how students learn better, the curricula that should be prioritized in a changing world to face global problems, the role that memory plays when information is so readily available, how to improve cognitive skills, and the use of technology.<sup>113</sup> Are we using the best practices and policies? There is an urgent need for educational foresight studies that look ahead to 2030 and deduce the effects of global trends on Latin American countries.

**FIGURE 18. RANKING IN MATHEMATICS, 2012**

Source: Bos, María Soledad et al. (2013). "América Latina en PISA 2012: ¿Cómo le fue la región?" Washington, DC, Inter-American Development Bank.



**b. Competitiveness, energy and natural resources**

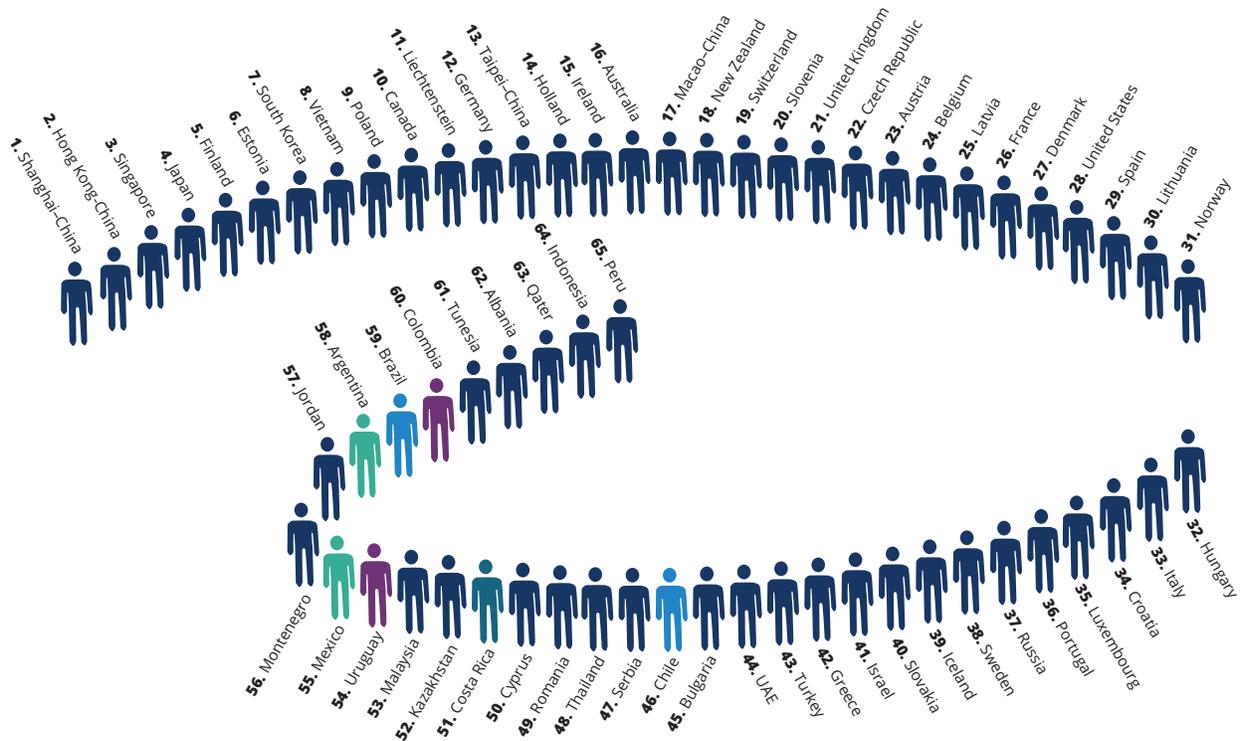
Transforming the productive structure and specializing in new activities does not mean neglecting the export of natural resources. Rather, it means making the most of them to increase the complexity of the productive base and to avoid a return to the production and export of raw materials. For Latin America, the potential is huge if natural resources are matched by innovative technologies that can lower costs, reduce CO<sub>2</sub> emissions, devise new products and

services, improve logistics and financial services, and link with other internal activities.

The foreseeable increase in global demand for materials, energy, and foodstuffs opens up unimagined opportunities for development and employment. Taking proper advantage of them for a strategy of productive transformation also requires each country to retain a larger share of the surpluses generated by exporting natural resources, and to use those funds to strengthen technological innovation,

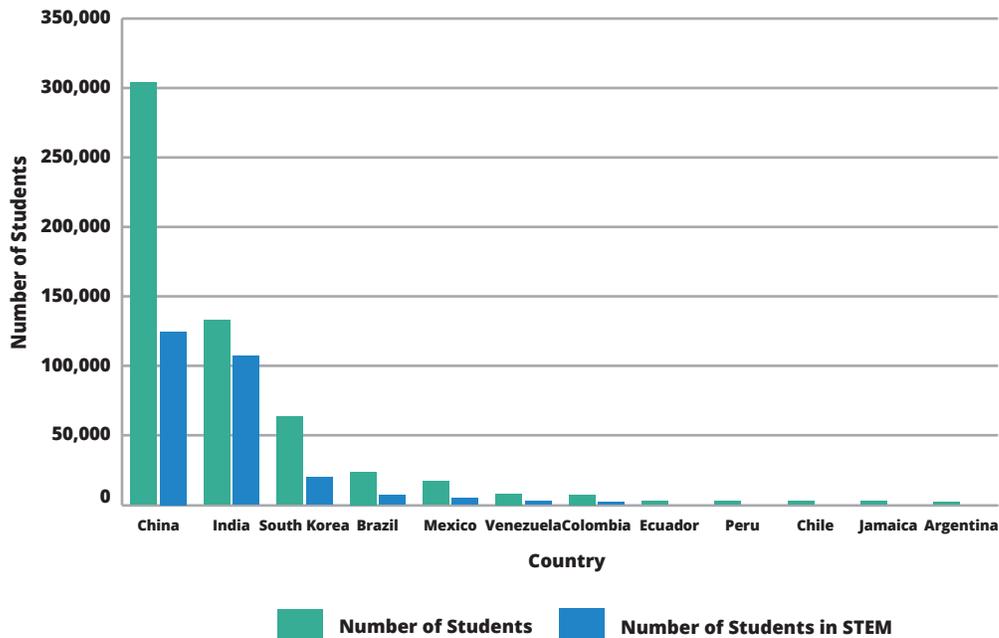
**FIGURE 19. RANKING IN SCIENCE, 2012**

Source: Bos, María Soledad et al. (2013). "América Latina en PISA 2012: ¿Cómo le fue la región?" Washington, DC, Inter-American Development Bank.



**FIGURE 20. NUMBER OF STUDENTS ENROLLED IN US UNIVERSITIES**

Source: Institute of International Education (2015). "International Student Totals by Place of Origin, 2013/14–2014/15." *Open Doors Report on International Educational Exchange*. <http://www.iie.org/opendoors>.



training, and enterprise. For this innovation, Latin America would need a mix of tax policies, management improvements in public companies, joint ventures with innovative international firms, stronger SMEs with good technology to supply the large firms, and large universities and other research centers.

This requirement is reaffirmed by the Economic Commission for Latin America and the Caribbean (ECLAC). A study requested by UNASUR on natural-resource policies in South America found that the tax system generates low revenues from minerals extraction, especially during periods when commodity prices surge. The tax system should be modified and regulatory and supervising capacity reinforced in order to increase fiscal revenues and the transparency of international firms' costs and earnings. In oil production, the existence of public companies has generated higher incomes to finance social expenses. Unfortunately, these same companies have shown poor results in terms of investment and technological development.<sup>114</sup>

Energy is another crucial factor for competitiveness. How could energy scenarios affect each Latin American country?

Shale gas in the United States, for example, has brought two great benefits, higher supply security and a lower production cost. The increase in the production of oil sands in Canada, shale gas in the United States, and oil from Latin America has created a significant drop in US fuel imports from sources other than the Western Hemisphere.

The global trade in fossil fuel is shifting. As it is replaced by gas, more US coal is becoming available for export to China and Europe. European purchases of Russian fossil fuels could decline. Growing demand in Asia and the availability of greater supplies from the Middle East—including the expected growth of Iraqi and Iranian oil production—may forge closer links between Asia and the oil- and gas-producing Arab countries. Chinese companies may continue to expand in Latin America so as to diversify their supply sources and play a global role like large western firms. Latin American oil producers should follow very closely the trends in oil demand, given the rapid development of other technologies to generate electricity and likely changes in the manufacture of electric cars to meet world commitments on emissions reduction. Figure 21 illustrates possible future oil consumption scenarios.

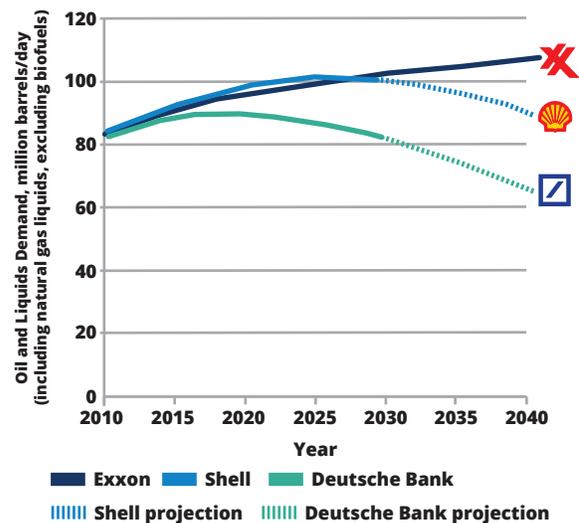
Photovoltaic solar technology is progressing and prices are falling dramatically, while nuclear energy will expand in China, India, South Korea, and Finland. Similar progress can be expected in the biofuels area.

How do these trends affect Latin American strategies? Every country faces a different situation. Some hold significant oil and gas reserves while others do not have enough and must invest in importing fossil resources to generate electricity and to fuel transportation. Oil in Brazil's Atlantic region and production in Mexico, Venezuela, Colombia, Ecuador, Peru, and Bolivia could increase in line with the future output of shale gas, especially in Argentina, which has large deposits in Vaca Muerta. These natural resources could give Latin America an advantage in generating low-cost electricity, raising productivity, and exporting fuels from a secure and stable region. Nonetheless, Central American and some Caribbean countries, as well as Chile, have no oil and gas. They will have to increase electricity production using renewable sources: solar, wind, bio, geothermic, and hydro. They will also have to introduce stringent energy-saving programs.

Efforts should be made to exploit hydroelectric power as a non-polluting and low-cost source. This is another advantage that Latin America enjoys relative to developed

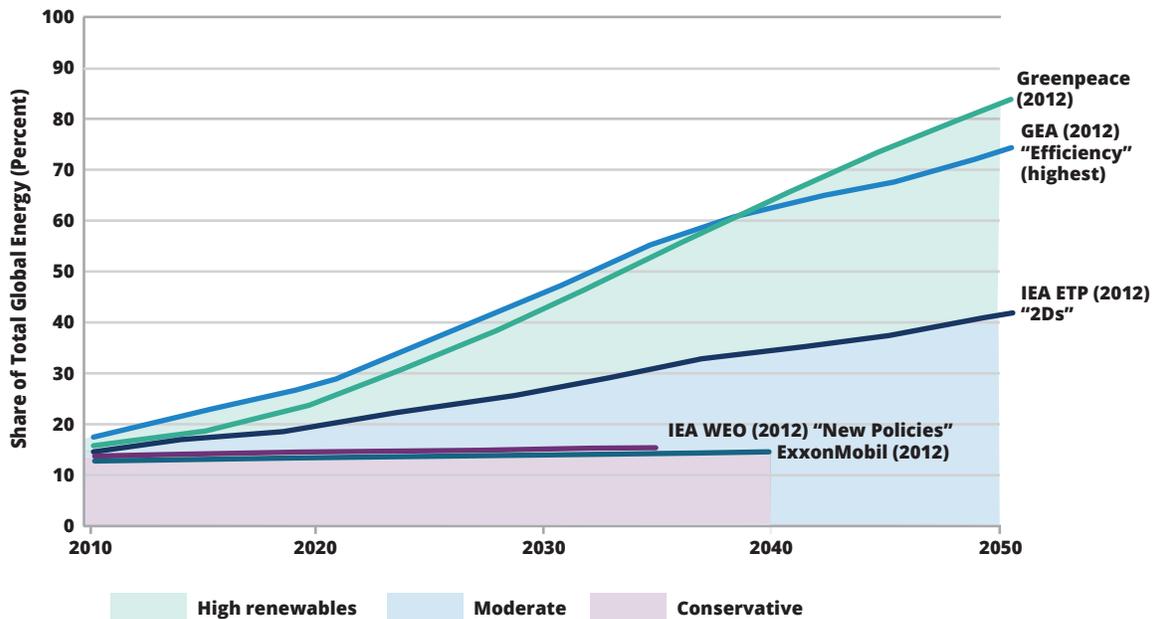
**FIGURE 21. THE OUTLOOK FOR ENERGY: A**

Sources: Exxon Mobil (2012). "The Outlook for Energy: A View for 2040"; Shell (2011). "Signals and Signposts (update)," corrected for natural gas liquids; Deutsche Bank (2010). "The End of the Oil Age, 2011 and Beyond: A Reality Check."



**FIGURE 22 CONSERVATIVE, MODERATE AND HIGH-RENEWABLES SCENARIOS TO 2050**

REN21 (2013). Renewables Global Futures Report. Paris, REN21.



countries with no new hydroelectric sources. But such projects have increased opposition by environmentalist groups, which will have to be reconciled through this process.

Developing renewables requires investment, research centers, and transmission networks. It would be useful if South American countries were to engage in energy integration, as the Central American countries have done. Integration of transmission lines would enhance electricity security and lower costs.

To make the right political decisions, countries must constantly monitor long-term global energy scenarios. It is a highly important priority for Latin American governments and international organizations to address this matter.

**c. Water, agriculture, and aquaculture**

Water consumption will continue to rise worldwide, with most of the increase going to agriculture. Additionally, it is estimated that by 2045 there would be a higher demand for human consumption, electricity generation (cooling), and manufacturing and mining, as Figure 24 shows. Latin America will have to take into account this crucial issue in order to maintain its comparative advantage in foodstuffs,

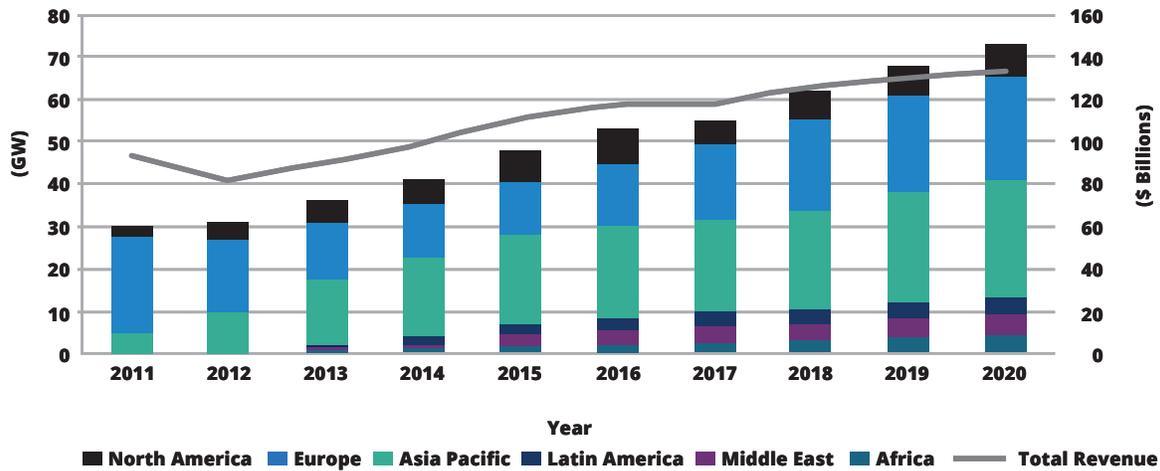
raise productivity in the energy and mining sectors, and improve citizens' quality of life.

Food production depends on water. Studies foresee significant threats to food security in some regions, especially in Asia, because of rapid urbanization.<sup>115</sup> Other studies maintain that it may not be difficult to feed 9 or 10 billion inhabitants if the right policies are adopted.<sup>116</sup> Prominent among these measures are investments to ensure efficiency, education on saving, regulating water rights, improving irrigation technologies, managing basins with community participation, adapting crops with genetic research for production that uses less water, and displacement to new land to address climate change. As mentioned earlier, this will entail adopting other measures such as replenishing aquifers, waste water treatment and water recycling, desalination, building canal infrastructure and small reservoirs, improving governance, and establishing new institutions and laws. Some trends, moreover, point to a fall in foodstuffs prices in the coming decade.<sup>117</sup>

As demand for animal protein grows, so will demand for animal feed. It is therefore crucial to position Latin America as a secure source of foodstuffs with efficient services, logistics, and technology that create increases in value

**FIGURE 23. ANNUAL SOLAR PV INSTALLED CAPACITY AND REVENUE BY REGION, WORLD MARKETS, 2011-2020**

Source: Solar PV Market Forecasts, Navigant Research (2013). <http://www.navigantresearch.com/wp-assets/uploads/2013/07/MD-SMF-13-Executive-Summary.pdf>.



added. These improvements could be joined by synthetic biology, which will have the potential to produce new kinds of foods at lower prices. The bioproduction industry is expected to reach US\$100 billion by 2020 alone. This technology, which needs only sun, sugar, algae and nutrients, can be located anywhere. Synthetic biology can also be used to develop new crops with desirable traits such as salt-tolerance, drought-tolerance, and pest-resistance. This technology may help address issues raised by climate change.<sup>118</sup>

There is also a marked trend of growth in aquaculture. The FAO expects aquaculture production to surpass fisheries captures in 2023.<sup>119</sup> In this field the Latin American countries have significant advantages in two oceans and the lengths of their coastlines.

**d. The new industrialization**

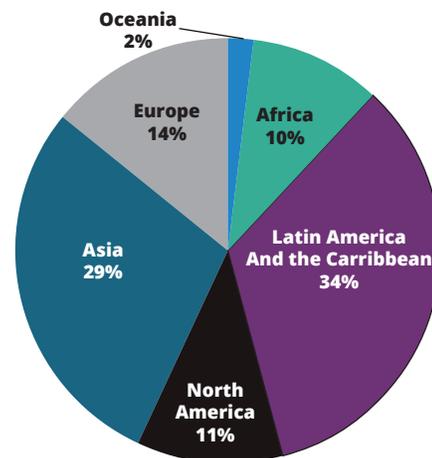
Innovation, a key to future development, will be closely related to manufacturing. This sector will be an important source of growth, and thus developed and emerging countries are seeking to foster industrialization and stay at the forefront. The strategic competition between the United States, the European Union and China will be an important driver of these innovations.<sup>120</sup>

Latin America will have to enter into this process more forcefully than in the past if the region is to overcome its still strong dependence on natural resources with low

value added. The countries of South America have a long tradition of industrialization policies, first linked to import substitution and later to exports. Nonetheless, there has been only modest progress on reaching higher levels of

**FIGURE 24. DISTRIBUTION OF WORLD WATER RESERVES, BY REGION, 2011**

Source: Comisión Económica para América Latina y el Caribe (CEPAL), *La Alianza del Pacífico y el MERCOSUR Hacia la convergencia en la diversidad* (2014), using data from the United Nations Food and Agriculture Organization (FAO) System of global information on the use of water in agriculture, AQUASTAT, <http://www.fao.org/nr/water/aquastat/main/index.stm> (accessed on January 6, 2014).



technological sophistication. The successful expansion of natural-resource exports, as well as market policies, along with the absence (with a few exceptions) of a state policy to generate new comparative advantages, have constrained this drive. Technological changes can propel or threaten natural resources. An example of a threat is the danger that graphene poses to copper. At the same time, however, there are possibilities of combining graphene and copper, with benefits if the matter is tackled in time. Enormous research efforts are underway in the United States, China, South Korea, Japan and the European Union. The latter has launched the biggest joint research project in its history.<sup>121</sup> There is scant research in Latin America.

Some characteristics of the new stage of manufacturing production, according to scenarios drawn up in developed countries, will be a) proximity to the consumer; production will be increasingly personalized, streamlined and design-centered so as to adapt quickly to local demands; b) products and services integrated into a single package, with rapid growth in services linked to the product; c) technologies and processes geared to saving energy, water, and resources; waste recovery, recycling and reusing materials; and d) global value chains located in countries with comparative advantages in natural resources.<sup>122</sup> Moreover, foresight studies expect automation to have a significant impact on employment, especially for people with low and mid-level skills.<sup>123</sup>

According to those studies, it will be a priority to focus on the following fields: a) training more people with high technical capacity, continuous training plans in companies, and development of digital skills; b) concentrating R&D capacity to narrow the gap between technological creation, development of a product, and its marketing; c) strong digital development and management of large databases; d) 3D printers, nanotechnology, and robotics; e) saving energy and materials, wasteless production; and f) active government participation to provide incentives for the agglomeration of bio, nano and electronic technologies.

Latin America can steer itself in the light of these criteria, and following analysis of successful experiences. First, there is a need to strengthen cross-cutting policies that affect general productivity. Essentially this is a matter of technical education, infrastructure, energy and water at attractive costs, and investment in science-technology-innovation.<sup>124</sup>

Second, it will be crucial to select priority sectors and activities in which to concentrate efforts, including digital education and the development of technological capacities

in computing, robotics, biotechnology, green production processes, with energy and water saving, recycling, and closer links to businesses. This will create stable and functioning spaces for public-private dialogue, with a preference for sectors that have comparative advantages, linking up to research centers. It will be equally important to set up research agreements among several countries of the region.

Third, there will be a need to foster Latin American businesses that develop regional value chains, and at the same time to induce the local establishment of international firms for integration into global value chains. A new push for manufacturing in Latin America demands monitoring of advanced manufacturing technologies, as well as high-quality staff.

### 3. Social inclusion to reduce inequality

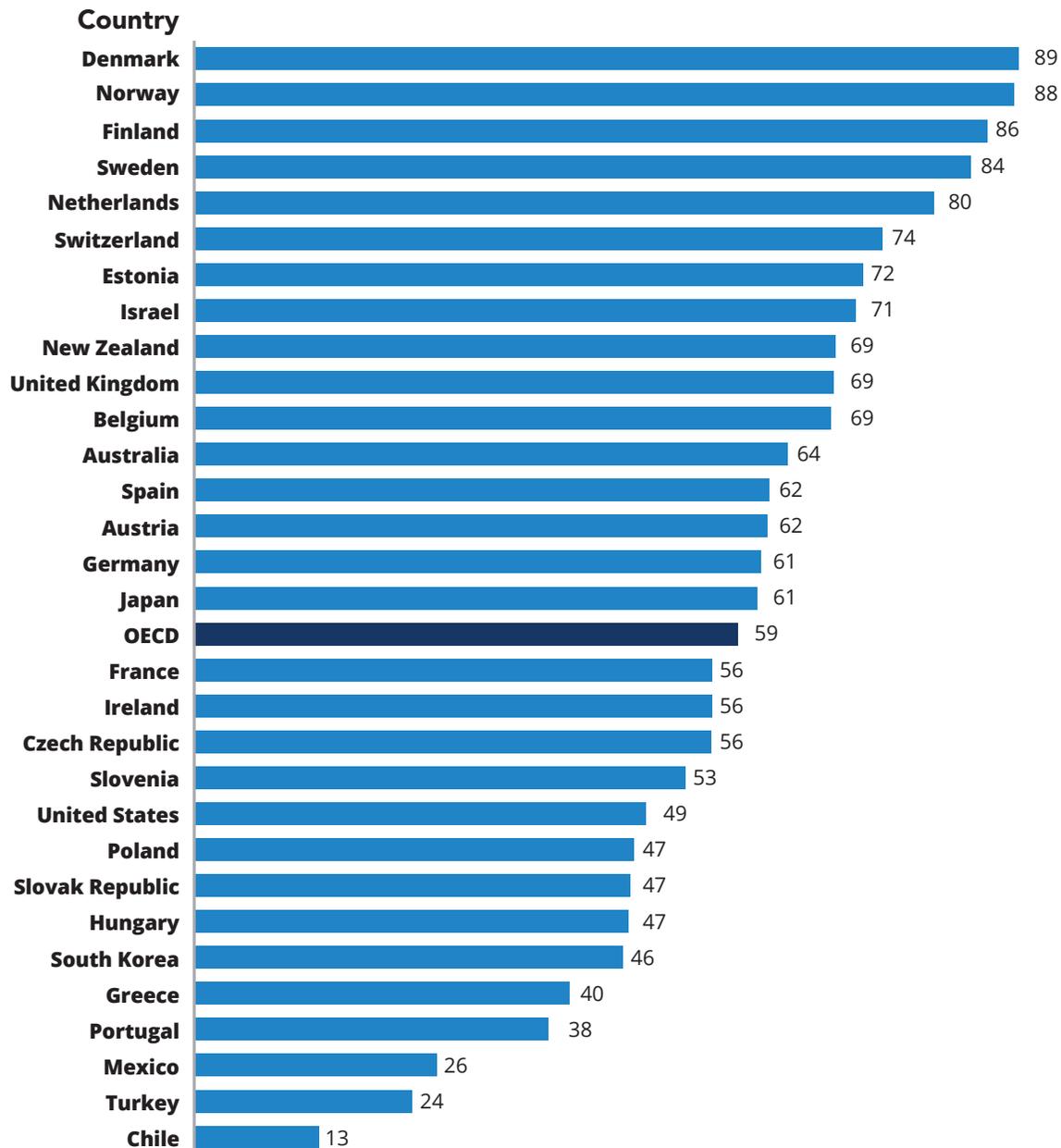
Without resolute political action, the scale and speed of global change will probably heighten inequality. People with financial capital who participate in the stock market, educated people who can better exploit technological change, and those with strong social networks hold an enormous advantage, independent of their merit. A large proportion of the younger generations may be left behind. Without appropriate action, robust market regulation, a state that provides public goods efficiently and coordinates strategic programs, an efficient tax system, and support for all levels of education, Latin American societies will see a persistence of segregation, segmentation and inequality, and development will be curbed.<sup>125</sup> Figure 25 shows that these ills also spur mistrust in democratic institutions, in politics, and even between people. This mistrust may pose a significant obstacle to Latin American development in the coming years.

What do international experiences reveal about the effects of inequality? They are both the cause and consequence of the lag in education and healthcare. Moreover, inequality sparks violence, endangers social peace, and holds back growth.<sup>126</sup> In countries with similar income levels, a higher degree of inequality reduces people's satisfaction.<sup>127</sup> By contrast, countries with lower levels of inequality make better use of everybody's talents, and they are more productive.

Programs to reduce poverty have become widespread in Latin America, but schemes to reduce inequality—and thus increase social mobility—have not. In the future, social policies in Latin America will have to be reinforced and also

**FIGURE 25. PERCENTAGE OF PEOPLE EXPRESSING HIGH LEVEL OF TRUST IN OTHERS, BY COUNTRY**

Source: OECD, Source: OECD (2011). "Society at a Glance 2011—Social Indicators." [http://www.oecd-ilibrary.org/sites/soc\\_glance-2011-en/08/01/index.html?contentType=&itemId=/content/chapter/soc\\_glance-2011-26-en&containerItemid=/content/serial/19991290&accessItemIds=/content/book/soc\\_glance-2011-en&mimeType=text/html](http://www.oecd-ilibrary.org/sites/soc_glance-2011-en/08/01/index.html?contentType=&itemId=/content/chapter/soc_glance-2011-26-en&containerItemid=/content/serial/19991290&accessItemIds=/content/book/soc_glance-2011-en&mimeType=text/html).



reoriented away from poverty reduction toward narrowing the gaps between rich and poor. As transparency and knowledge spread, inequalities and discrimination will become more evident. People will demand equal treatment at all levels—between urban and rural populations, capital cities and provincial towns, and men and women (especially for wages). Equal protection of indigenous peoples will also be expected. Citizens with higher levels of awareness

and education will be less submissive and less tolerant of injustice and abuses. There will be increased pressure on all governments for this protection.

Increased government spending will be required for social protection through pre-school education, housing, and healthcare, as well as the rising welfare costs that come with aging populations. These obligations, in turn, will

prompt tax reforms aimed at increasing revenue and efficiency. Projections of fiscal outlays over 10 or 20 years, and under different scenarios, will be a strategic planning requirement and part of foresight studies in every Latin American country.

To plot a course in the world now taking shape, countries will be better prepared if they forge new social and political pacts with real equality of opportunities, social inclusion, public goods, technology, and enterprise; this will only happen if they reach a greater degree of political consensus and build a more efficient and stronger state.<sup>128</sup> The political conviction to push ahead may be more forceful if societies are familiar with the possible scenarios, with Asia's drive forward, and with the debilitating consequences of stasis for both governability and productivity.

#### 4. Integration and new alliances in a multipolar world

To face global forces, nations will require greater regional integration and new alliances. Five global trends will influence the international positioning of each Latin American country: a) demographic change; b) the shift of economic and political power from the West to the East and South; c) expansion of the middle classes; d) faster urbanization; and e) regional coordination. Let us consider each of these.

- a) Population growth and population makeup will increase both the level and the composition of consumption. If countries with a youthful population can expand education and occupational training, they will enjoy a demographic dividend. They will have specialized, low-cost labor forces able to produce and export more. Their emerging middle sectors will grow and their consumption will increase.

That opens a positive scenario for Latin America. This greater demand will be marked by a larger share of foodstuffs and goods with high material content. Population growth in Asia and Africa will open up huge markets that could be supplied by Latin America. According to UN projections, by 2050 the world population will increase by 2 billion people, half of whom will be from Africa.<sup>129</sup> Close links between Latin America and Africa, an effort that Brazil has already begun, must be forged. Exploration of these markets requires detailed studies focused on the nature of this emerging composition by 2030. That would help guide the development of new

products. It would also help determine needed partnerships between Latin American companies and businesses in the host countries.

- b) In a new scenario marked by more diffusion of economic power and two leading forces (the United States and China), Latin American foreign policy will have to strive for a sound combination of initiatives with China (and with India, Indonesia, the Philippines, South Korea, Japan, and the Association of Southeast Asian Nations in general), as well as with the United States and the European Union.

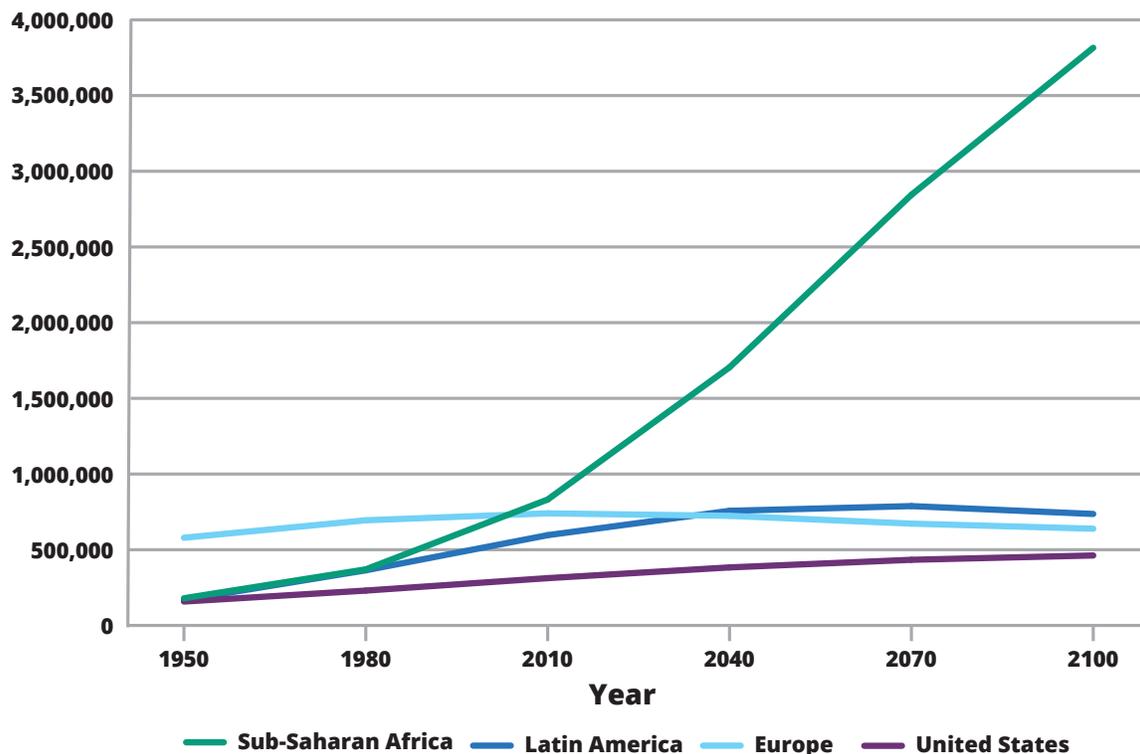
A strategy toward China could focus on food, energy and minerals, and on joint projects in manufacturing and infrastructure. Of importance will be how China and Latin America use their business strategies to find new ways of working and to create partnerships. Latin American countries should also establish financial links through Hong Kong and Shanghai—China's financial centers—and elsewhere in Asia, anticipating the internationalization of the renminbi, which is starting to operate as a global currency.

US and EU-directed initiatives should be geared toward agreements on education, energy, and the environment; trade and investment accords; and partnerships in higher education, science and technology. The decision of the United States and the European Union to conclude the Transatlantic Trade and Investment Partnership will have worldwide effects, especially if the two sides reach agreements in areas as diverse as emissions regulation, agricultural subsidies, intellectual property rights, financial services, and communications. Latin America should think about and prepare for these collaborations.

On the new map of global power, the Pacific region holds a privileged position. For Latin America, it opens a bigger opportunity. A "convergence in diversity" approach between the Pacific Alliance (created in 2012 among Mexico, Colombia, Peru, and Chile) and MERCOSUR is a promising course. The agreements of the Asia-Pacific Economic Cooperation (APEC) forum and the Trans-Pacific Partnership (TPP) are important and forward-reaching steps, which Latin America will have to counterbalance in order to maintain relations in line with the region's own strategic interests with China. The countries of the Pacific Alliance must be members or observers of the new agreements in Asia-Pacific, such as the Regional Comprehensive Economic Partnership (RCEP), the agreement between China, South

**FIGURE 26. TOTAL POPULATION: US, EUROPE AND SUB-SAHARAN AFRICA (THOUSANDS)**

Source: prepared by Jack A. Goldstone for a presentation at the Woodrow Wilson Center, February 26, 2013.



Korea and Japan, ASEAN+6, or others. To a large extent, de facto integration in Asia has emerged through value chains created by international companies (driving integration through supply chains and production networks), and legal frameworks have been created around them.<sup>130</sup> These agreements will configure a new regional order in Asia in both the economic and security spheres. The interaction among these agreements, and in particular between the two great strategic initiatives of the United States with Asia Pacific and Europe, will give rise to a new system of international rules that will chart the future course of the World Trade Organization, whose progress has been modest. Latin American countries should consider this jointly and strategically.

The Pacific Alliance countries have free trade agreements with the United States and with the European Union. If MERCOSUR reaches an agreement with the European Union in the future, this will enhance regional integration, opening the way to new trade agreements by standardizing criteria and setting common rules of origin among all Latin American countries. They could also pursue projects

on ports, highways, bi-oceanic corridors, transportation, digital integration, and services companies. Many such projects have already been studied by the Initiative for the Integration of Regional Infrastructure in South America (IIRSA). Lower transportation costs and greater logistical efficiency are keys to raising productivity.

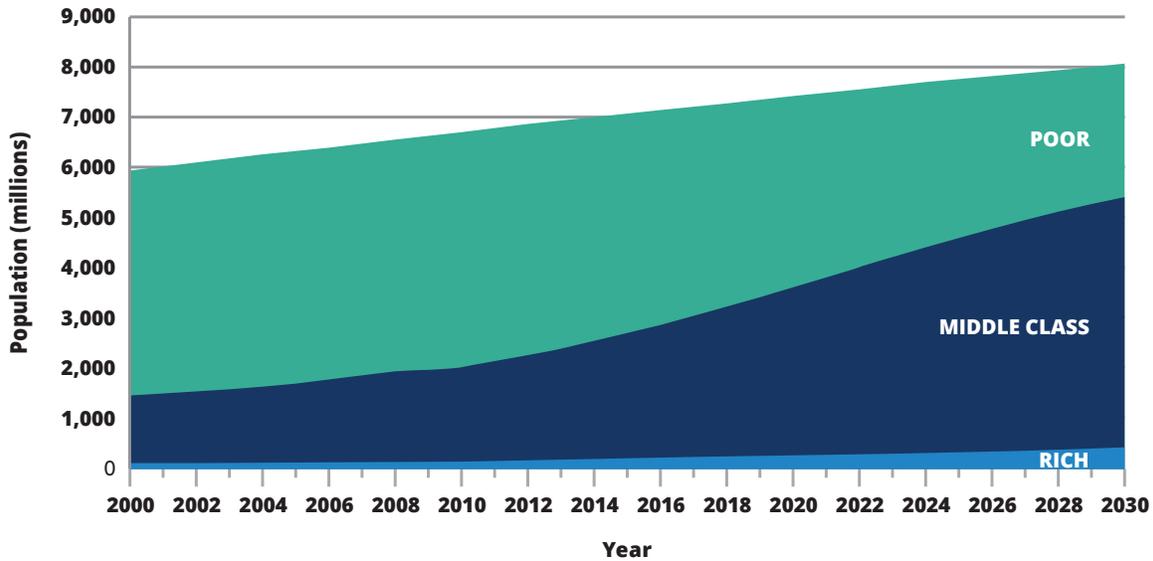
- c) With regard to the growth of the middle sectors, it is crucial that their new demands be studied. Attention must also be paid to distribution channels, to identifying and designing new products, and to joint action on the part of Latin American countries—undertakings that are beyond the ability of individual businesses or small governments.

Visualizing development scenarios in China, India, and Asia more broadly can help in the exploration of options for Latin American-Chinese and Latin American-Indian relations through 2030.

- d) Rapid urbanization and the emergence of new cities will have an impact on Latin America's development strategies. The region's cities will have to become more

**FIGURE 27. A SURGE IN THE GLOBAL MIDDLE CLASS**

Source: Kharas, Homi and Geoffrey Gertz (2010). *A New Global Middle Class: A Cross-Over from West to East*. Washington, DC, Brookings Institution. [http://www.brookings.edu/~media/research/files/papers/2010/3/china%20middle%20class%20kharas/03\\_china\\_middle\\_class\\_kharas.pdf](http://www.brookings.edu/~media/research/files/papers/2010/3/china%20middle%20class%20kharas/03_china_middle_class_kharas.pdf).



efficient and competitive, and their inhabitants' quality of life will have to improve. In 2025, some 315 million Latin Americans will live in the world's 198 biggest cities (those with more than 200,000 inhabitants); it is estimated that those cities will account for 65 percent of GDP.<sup>131</sup>

Urbanization will bring significant political, economic, and social change. Megacities will need large investments in order to improve services and to compete with other cities that attract international activities. Medium-sized cities will develop their potential and start planning for the future. Long-term urban planning should be a priority. In countries such as India, whose urbanization rate barely exceeds 30 percent, a mass flow of people to the cities is expected, with the subsequent urgent need for spatial planning.<sup>132</sup> In Latin America, the already high rate of urbanization will call for rectifying the problem of informal settlements, which in 2014 housed 30 percent of the urban population.<sup>133</sup>

**e) Strengthening regional agreements**

Each of these factors leads to shifts in power that give regional integration a predominant role. Such a conclusion is valid for economic reasons, and also because of security considerations. It is a conclusion that is ever more apparent

following the United Kingdom's vote to leave the European Union, given the potential impact of that development on the reordering of the EU. Without doubt the impact will be felt on the global economy and governability, especially as regards future power relations between the West and Asia.

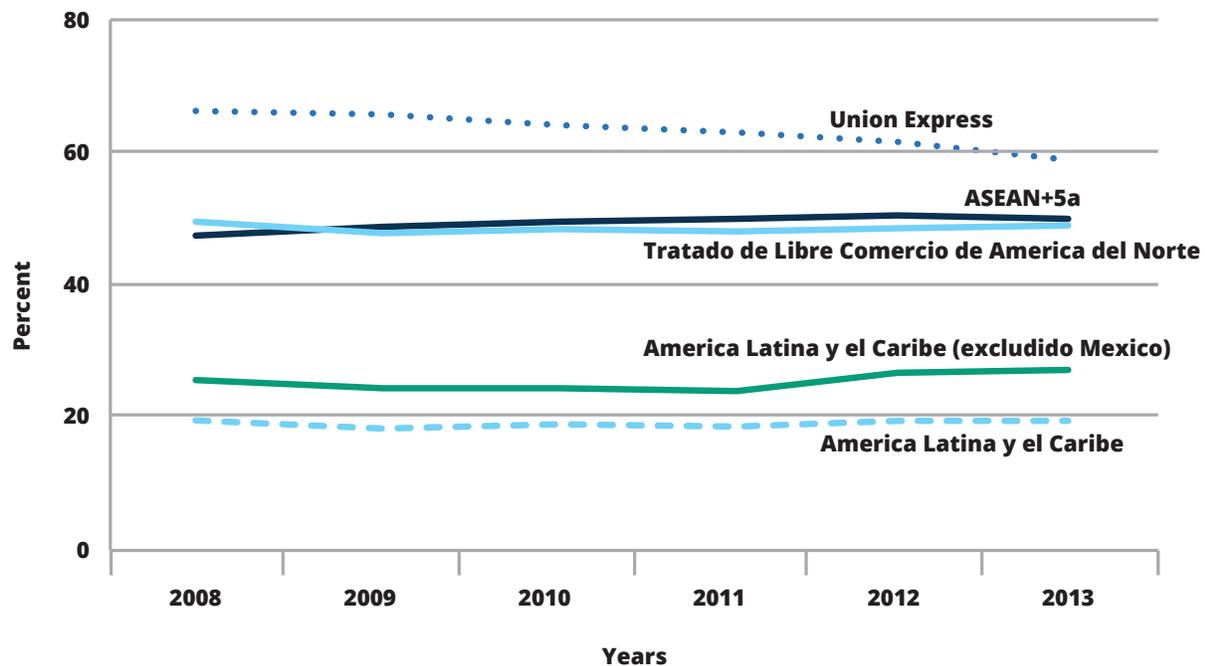
Intraregional trade in Latin America and the Caribbean, as a percentage of total exports, has always been below other regional agreements, as shown in Figure 28.

Two recent trends are the lower rate of growth of world trade compared to world economic growth, and the faster growth of trade in services compared to goods.<sup>134</sup> These two developments offer opportunities for regional integration. An enlarged and integrated market governed by congruent regulations would attenuate impacts originating in other parts of the world. The growth of Latin America's middle classes will expand this internal market appreciably, making regional integration more attractive. And integration would facilitate the expansion of Latin American businesses to other countries.

The pace of progress on this front will depend on future relations between Mexico and Brazil. If they manage to give priority to their common interests, this convergence will serve the other Latin American countries. If not, all will be weakened.

**FIGURE 28. SELECTED GROUPS: SHARE OF INTRA-GROUP EXPORTS IN TOTAL EXPORTS, 2008–2014**

Source: data from the Economic Commission for Latin America and the Caribbean (ECLAC), based on statistics from the United Nations, COMTRADE, and nations in ASEAN.



Systematic examination of world trends would also shed light on which alliances are more beneficial. Governments and international organizations would benefit from encouraging such studies, creating permanent venues for analysis.

### 5. Sustainable development and climate change

The manifestations of climate change will differ from country to country, and even between areas of the same country. Anticipatory models are still limited. However, hypotheses about the links between emissions and a rise in temperature, between rainfall and agriculture, between meltwater and a rise in sea levels, and between deforestation and biodiversity, point to scenarios that are troubling. In Brazil, for example, deforestation is a crucial factor, since the country is the world's fourth leading source of CO<sub>2</sub> emissions.<sup>135</sup> Looking to 2040 and beyond, forecasts for Latin America include a rise in temperature of 2–4° C, an increase in rainfall of 5–10 percent in some areas, and a reduction in rainfall of more than 20 percent in others.<sup>136</sup> Even the most optimistic scenarios forecast increased hurricane activity in Central America; threats to biodiversity, reefs, and coral; loss of Amazon rainforest; soil degradation and diversification; and forest fires.

These warnings mandate a follow-up on the climate-change scenarios for each part of the region. If measures are taken in advance, losses could be lessened and general conditions improved. A needed assessment of the costs of adaptation and mitigation programs can be done now. Preventative measures can be taken to protect poor populations, such as the relocation of housing, and infrastructure projects. Countries need to set standards, make assessments, and calculate the levels of investment required for dams, water pipes, and coastal protection.

Latin American governments should devise food security scenarios under diverse conditions for temperature and rainfall, and define the corresponding measures and plans. Some of these scenarios point to a reduction in the region's agricultural production.<sup>137</sup> And they expect the impact to be greater in the second half of this century. These scenarios should force governments to prioritize scientific and technological research in activities related to green growth. The foreseeable changes will most probably lead to changes in behaviors, consumption patterns, and production processes that will lead to stricter global regulations.

Further progress in biotechnology, renewable energy, biofuels, and public transportation will enable Latin America to address those challenges. New opportunities will arise from such changes, and the region's countries could join production chains for manufacturing food, photovoltaic solar panels, and electric car components.



The strategic goals announced by almost all Latin American countries—democracy and participation, competitive and sustainable productive transformation, and equality for social inclusions—are inseparable. Latin America's contribution to the well-being of its people and to a sustainable planet requires simultaneous measures in each of those areas.<sup>138</sup>

An inclusive country with better education is a precursor to the productive change that creates decent employment and fosters sustainable development. A democratic country will encourage participation and social inclusion. A competitive economy will allow social policies to be maintained. These three are mutually reinforcing.

Although our analysis has referred to Latin America as a region, we know that the situation in each country differs according to its level of development, natural resources, size, and policies and politics. To deepen our analysis, more studies are needed on individual countries and areas of activity. Such studies would be more efficient if they were conducted jointly using Latin American networks.

## C. HOW TO PREPARE

Since the 1990s, there have been efforts in Latin America to create networks and produce foresight studies. These largely originated with teams working in the fields of science and technology. The results have been modest.<sup>139</sup> Except in Brazil, and to a lesser degree Colombia, governments are not involved and the groups conducting these efforts lack the resources they need. Furthermore, these studies are divorced from everyday policy concerns and detached from decision-making. In most countries no public institutions produce and interlink sector and territorial studies.<sup>140</sup>

Foresight and strategy studies should be regarded as a planning tool, replacing the now-obsolete systems in operation since the 1960s. And they should be the

government's responsibility. Governments and international organizations should demand that their main programs and projects be assessed under a spectrum of long-term scenarios, with sensitivity analysis included.

Against this backdrop, there are two imperatives. National teams must be strengthened and made permanent. And a Latin American network for global analysis must be enhanced, based on previous experiences. Another proposal is for governments to set up a strategic center that can coordinate activities geared to long-term goals.<sup>141</sup>

The Inter-American Dialogue's "Global Trends and the Future of Latin America" project<sup>142</sup> and the Global Trends Report repository mentioned previously (supported by the Inter-American Development Bank) are promoting familiarity with global studies in the region.

In the developed countries, it is a priority to look over the long term. It is pointed out in the United Kingdom that short and inconsistent horizons constrain the capacity to govern, that medium-term foresight and financial planning are generally unlinked, and that public officials usually do not explore scenarios to deal with uncertainty, risk management, and future challenges.<sup>143</sup>

The signing of the Sustainable Development Goals will exert renewed pressure on Latin American governments to create the institutional capacity for strategic foresight studies and the linkage with public policies.

The strategic reports and consultations with experts from the different countries allow us to deduce some of the criteria for organizing this national function.

The following initiatives are worth creating or reinforcing:

- **Government strategic planning units** close to the presidency or to institutions responsible for public policymaking, and a reorganization of planning ministries. These units should also coordinate independent think tanks, universities, and strategic groups within public and private corporations.

France's Commissariat Général à la Stratégie et à la Prospective, recently created to replace the Commissariat du Plan that was set up after World War II and dissolved in 2006, is an example of such an effort.<sup>144</sup> The new commission has six functions: foresight, strategy, assessment, international comparisons, coordination, and public debate. A similar effort comes under a proposal to

improve the US White House's capacity for forward thinking. Three main lines of action are proposed: integration of foresight and policy, networking governance, and the use of feedback for applied learning.<sup>145</sup> Also of interest are the government centers Policy Horizons Canada, and the Strategy and Delivery Division, Department of the Prime Minister, Australia.

- **Foresight committees or working groups within Congresses** set up to explore long-term legislative issues and produce analyses at the political level. Notable examples are found in Finland (Committee of the Future, Parliament of Finland) and Chile (Comisión de Futuro, Senado de Chile). These committees provide a space for debate on forecasts and promote strategic thinking. Universities, corporations, and think tanks can use them as a place to participate and exchange views with politicians.
- **Nongovernmental study centers**, publicly financed, to analyze scenarios and train specialists. In addition to government units, it is indispensable to have independent centers with ample capacity to undertake research, produce global or sectoral scenarios, coordinate with correspondent groups in the armed forces, large companies or business associations, and join international networks. Governments should help these entities gain permanence, accumulate experience, and improve quality.
- **National and regional** coordination of networks made up of institutions and individuals working on foresight studies, as well as the establishment of teams and the training of experts in pertinent methodologies. Knowledge of global trends and scenarios is heterogeneous among Latin American countries.

Among the main networks are *Red Iberoamericana de Prospectiva* (RIAP); Millennium Project; Red Iberoamericana (RIBER), created in 2015; and the Programa Iberoamericano

de Ciencia y Tecnología para el Desarrollo.<sup>146</sup> Regional networking is necessary to develop common visions and adopt common positions in international organizations.

The process of designing new units or institutions for strategic foresight should include reviewing successful experiences. Some of the lessons learned include: reporting directly to the presidential level or the highest rank of government; assuming an advisory function—rather than a ministerial structure—that facilitates integration and coordination; and engaging in broad consultations with experts, in interaction with centers for research and innovation, and promoting wide participation of civil society organizations. Public private units have the advantage of being more stable yet resilient in the wake of government changes.

Foresight must assert itself in the political system. Politics, policy and foresight must be interlinked and provide feedback to each other. The political discourse must include medium- and long-term outlooks, a narrative that makes it possible to chart a course and to facilitate agreements. Thinking about scenarios and devising strategies must be the outcome of a participative process. This is not easy, since democracy entails constant electoral processes that demand attention be paid to the most immediate problems, and usually they involve frequent changes of course, while great challenges call for continuity and persistence.

Foresight could also be promoted as an instrument to protect future generations. In some countries, in fact, there have been proposals to designate advocates or an ombudsman for future generations.<sup>147</sup>

These ideas could materialize to the extent that citizens are better prepared and informed. If the essence of politics is to create a better future, foresight studies offer support to inspire action and mobilize society toward the desired outcome.

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