



Low carbon development in Latin America

by Joana Castro Pereira

In Latin America, the high economic dynamism experienced at the beginning of the 21st century reduced poverty, but also led to the creation of negative externalities such as increasing greenhouse gas (GHG) emissions responsible for climate change. Latin America's current development paradigm relies on extractive industries (mining, oil, gas, and timber) and the expansion of agribusiness activities. Yet this model is inconsistent with the low carbon development path outlined in the Paris Climate Agreement, and jeopardises Latin America's economic, energy, and climate security. Latin American countries share a number of features that are relevant to the transition to low carbon development. A low carbon set of policies in the region is fundamental for protecting the environment, fighting climate change, attracting foreign investments, reorganising the region's economies, and creating new opportunities for social development.

Environmental risks in Latin America

Latin American countries account for nearly 9.5% of global GHG emissions (Brazil and Mexico are the region's largest emitters). In 2008, approximately 40% of GHG emissions in Latin America were from agriculture, forestry, and other land use. In recent years, emissions from deforestation have fallen drastically; however, emissions from the energy sector are rising, because the region has shifted towards more carbon intensive fuels. Due to population and GDP growth, Latin America's total energy use is projected to grow by more than 80% by 2040.

Water crises are perhaps the greatest security risk in the short and medium terms. Water is the element that links the complex web of food, energy, climate, economic growth, and human security. Intensified by the effects of climate change, water crises will probably hamper economic growth, and fuel social unrest. Their potential impact is strengthened by population density, as Latin America is the world's most urbanised continent. In 1950, 40% of the region's population was urban; currently, nearly 80% of Latin America's population lives in urban areas.

Deforestation rates in the Brazilian Amazon are also a reason for concern. As reported by the Brazilian National Institute for Space Research, in 2016 the Amazon has suffered the largest reported forest loss since 2008. Compared to 2015, deforestation increased by 29%, and between August 2015 and July 2016, the forest lost almost 8,000 km².

Challenges and opportunities

Unlike many emerging countries, whose electric energy comes mostly from fossil fuels, the electricity of several Latin American countries is mainly hydroelectric. However, the region's great hydropower potential remains to be explored, since most of this is located in areas that could negatively affect biodiversity, Amerindian people, and natural landscapes. Nonetheless, the region is extremely rich in a vast array of other renewable energy resources such as solar, wind, geothermal, and biomass.



Furthermore, some of the world's most valuable biomes are located in Latin America. The Amazon's vast and rich natural resources could be the basis for the development of a green knowledge economy – although this would imply reaching zero deforestation in the forest, as well as fighting biopiracy practices. In addition, by protecting soils and reducing the use of fertilisers, many Latin American countries would have an important role to play in mitigating transformations in the nitrogen cycle already in progress. Moreover, as some Latin American countries are among the world's largest producers of agricultural commodities, promoting low carbon agriculture practices in the region is essential for tackling climate change. Despite this fact, the lack of technological and financial capacity and/or the weak political will of various national governments have hindered Latin America's transition to a low carbon path.

Dealing successfully with low carbon development issues – as well as averting climate change – can only be achieved through international cooperation. This is a key area for European investments and building partnerships between the EU and Latin American countries. Currently, the renewable energy sector seems to be the most promising sector. According to the Renewable Energy Country Attractiveness Index by EY, the following six countries from the region are among the most attractive ones for renewable energy investments:

- **Chile** is Latin America's leading solar market. The country also holds enormous potential in terms of wave and tidal energy, and it would be an ideal location for wave energy research and development. Nevertheless, technological and financial insufficiencies have hampered the efforts to convert such energy into electric power. In addition, Chile is located in an area of intense volcanic and seismic activity, and thus has excellent conditions for geothermal power generation.

- **Mexico** is one of the sunniest and windiest places in the world. The country also has high potential in biomass and geothermal power generation. However, Mexico has yet to develop most of its renewable energy resources. The short-term energy policies followed by the Mexican government focus on the country's oil resources and do not consider the long-term value of using renewable energies (i.e., stability in energy prices and energy security). Furthermore, public institutions that provide electric energy to the country are forced to use the cheapest source, that is, fossil fuels. There is also a lack of technological capacity for developing energy sources such as geothermal power.

- **Brazil** is Latin America's largest renewable energy market. In the green energy domain, the country has

focused on hydropower and wind thus far; however, if the Brazilian government develops encouraging investment conditions, new solar energy development could possibly match investments in wind power. The country has also potential and expertise in terms of bioenergy production: international technical cooperation and investments could open Brazil to the development of bioenergy production with carbon capture and storage (BECCS). Furthermore, recent droughts have been affecting the hydroelectric capacity of some of the country's largest hydroelectric power plants, drawing attention to the fact that Brazil has to reduce its dependence on hydropower.

- **Argentina** is one of the windiest countries in the world and the northern part of the country has great solar potential. However, Argentina relies on fossil fuels for about two-thirds of its power; wind and solar together produce less than 0.5% of the national power mix. Because the country depends on costly imported energy, the new government has declared 2017 as the 'Renewable Energy Year', seeking to attract foreign investment in the wind and solar power sectors. Consequently, several energy auctions will probably take place in Argentina over the next few years.

- **Peru** has potential for wind, solar, hydro-geothermal and biomass power, namely in the Amazon and Andes regions. Nevertheless, these regions do not possess the associated transmission infrastructure to distribute electricity to the rest of the country. Peru is heavily dependent on fossil fuels and the Peruvian government does not have a plan that adequately explores Peru's capacity for generating energy through renewables. Both the government and the private sector have hitherto focused on developing natural gas resources rather than renewable energy.

- **Uruguay** has strong potential for developing wind power. In 2007, the country had virtually no wind generation; in 2015, wind provided an average of 17% of total electricity generation over the year. Uruguay has also favourable conditions for solar, biofuels, and biomass power.

To meet all its green energy potential, Latin America needs innovative technologies to develop low carbon energy sources. As some European countries are already conducting advanced research in this field, cooperation between the two blocs could be highly beneficial – but the conditions to attract such investments still need to be developed.

Joana Castro Pereira is a Postdoctoral Fellow at the Institute of International Relations of the University of Brasília.

