

electricity sector and the internal structure of PEMEX in particular.

However, this potential was practically ignored in the polemical and thematically one-sided media debate. In the months leading up to the reform, thousands of Mexicans responded to the call by left-wing opposition leader Andrés Manuel López for demonstrations against the government's plan. While López compared the reform of the energy sector to the loss of Texas

in 1836, calling Enrique Peña the new General Santa Anna,<sup>17</sup> chants of "The oil belongs to us!" could be heard from angry protesters and PRD supporters.

17 | Antonio López de Santa Anna was a Mexican general and politician. He lost Texas and went down in history as a national traitor.

The question of whether the new regulations constitute a long-term guarantee of the country's energy security is discussed sporadically, if at all, in expert circles and political contexts that are barely accessible to the public. The only political force which is aware of this shortcoming and argues for greater diversification of energy sources, energy efficiency and environmental protection is the Christian democrat party Acción Nacional, which has announced a commitment to a greater involvement of these issues in the negotiations surrounding the "secondary laws". Whether or not they are successful will become clear in a few weeks, when the second round of negotiations is concluded.

## PANAMA

*Jeffrey Calderon | Henning Suhr*

In May 2013, Panama experienced its most severe energy crisis to date. The water level in reservoirs fell to historic lows, resulting in hydropower plants receiving an insufficient supply of water. Around 50 percent of Panama's electricity is generated from renewables, with hydropower playing a particularly important role. The crisis led to a series of blackouts and government-ordered restrictions, even though the lack of rainfall had made the likelihood of a power shortage apparent. Industry, agriculture and business all suffered losses. Electricity rationing became necessary again in 2014. However, as electricity consumption measures were initiated earlier than in the previous year, the worst was avoided. Even so, the problems of energy shortage and lack of energy security remain. The total economic losses caused by electricity rationing during this year's crisis are estimated at US\$30 to US\$42 million.

Although Panama has just 3.5 million inhabitants, it is a country of contrasts. On the one hand, it has enjoyed above-average growth for years, and is in statistical terms a middle-income country. On the other hand, in addition to serious social issues, it is faced with major environmental problems such as forest and soil degradation, declining biodiversity, water pollution and the consequences of poor urban

planning, for instance with regard to waste disposal. Around two thirds of the population live in urban areas.

Various studies show that developing countries, in particular those located close to the equator, will be more seriously affected by climate change than other countries and regions.<sup>1</sup> Like other countries on the isthmus, Panama is increasingly feeling the effects of climate change. Rainfall in the rainy season is becoming more intense, causing landslides and flooding. The capital, Panama City, is especially affected. Estimates indicate that around 650 floods and 250 landslides occurred between 1990 and 2004, which in addition to causing damage to the environment, property and infrastructure also claimed human lives. This has made the Panamanian authorities very much aware of the problems caused by climate change.

It is estimated that by the year 2100 the damages, mainly to the agriculture and livestock industry, could amount to 18 to 19 percent of GDP.<sup>2</sup> Accordingly, the

1 | Robert Mendelsohn, Ariel Dinar and Apurva Sanghi, *The effect of Development on the Climate Sensitivity of Agriculture, Environment and Development Economics*, 2011, pp. 85–101.

2 | Diana Ramirez, Juan Luis Ordaz, Jorge Mora, Alicia Acosta and Braulio Serna, "Panamá: Efectos del Cambio

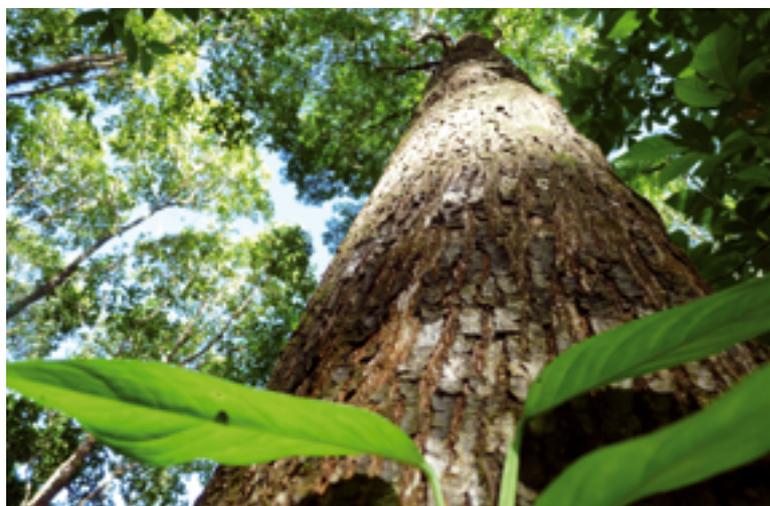
national environmental authority ANAM (Autoridad Nacional del Ambiente) has taken a number of steps to mitigate the negative impact of climate change on biodiversity and the quality of water, air and soil, and improve environmental management. Yet the country's most pressing environmental problems and challenges remain unresolved, such as forest and soil degradation, the extinction of certain animal and plant species, and the expansion of renewable energies. A comparison of ANAM's environmental reports for 2006 and 2011 reveals an increase in nature reserves, a reduction in greenhouse gas emissions and improvements in terms of environmental management. The National Climate Change Programme (Programa Nacional de Cambio Climático, PNCC) was instituted, combining the efforts of environmental and other civil society groups with those of the government. In the past, the country has devoted relatively little attention to environmental concerns.

Panama's electricity generation capacity is 1,426 megawatts, and is mostly based on hydropower and conventional thermal energy. The dependency on hydropower, which is subject to climate fluctuations, means that the country does not have a secure electricity supply. In 2013, 90 percent of the electricity generated was consumed by industry and business.

The threat of economic losses has boosted interest in wind and solar energy in recent years. Although late, a number of ambitious projects have been initiated in this regard. For instance, Central America's largest wind farm, near the provincial capital Penemoné, is scheduled to go online in mid-2014. The investment, worth US\$440 million, will cover around six to seven percent of Panama's entire electricity needs. Its 110 90-metre-high turbines will produce twice as much as those in Honduras, Nicaragua and Costa Rica. The wind farm belongs to the Panamanian Wind Union (Unión Eólica Panameña, UEP), which is steadily increasing its capacity. For instance, Panama's first solar farm was inaugurated in Herrera, in the country's central southern region, in February 2014. The project was executed by Italian company ENEL Green Power and financed by the Italian government. A second construction phase is planned, which will double the farm's capacity from 2.4 to 4.8 megawatts.

Germany's KfW Development Bank is also actively engaged in the electricity sector, financing grid connection in Central American countries with loans amounting to US\$65 million provided through the Central American Bank for Economic Integration (Banco Centroamericano de Integración Económica,

BCIE). Connecting the national grids is intended to improve security of supply. At the Central American level, under the cooperation in place between the BCIE, KfW and Germany's Federal Ministry for Economic Cooperation and Development (BMZ), renewable energy and energy efficiency projects have been financed to the tune of US\$280 million. Panama has a relatively high afforestation potential for carbon sequestration. According to a study conducted in 2003,<sup>3</sup> Panama has more than 1.5 million hectares classified as "Kyoto Area", which means they are suitable for reforestation.



*Former pastures are being reforested as diverse mixed forests that include native tree species such as the amarillo.*

#### AN ENVIRONMENT MINISTRY FOR PANAMA?

In some areas, Panama is a frontrunner. It possesses the world's second-largest free trade area, a globally important shipping canal, the world's largest shipping register, a highly developed banking and financial services sector, and one of the biggest airports in Latin America. However, in spite of the country's high degree of development, it also suffers from a number of shortcomings: Panama is the only country in Latin America without an environment ministry. The fact that this function is performed by ANAM, and only partially at that, demonstrates just how little importance is given to environmental concerns. A ministry normally gives important and substantial impetus to a green agenda and this is lacking. A study by the Instituto Ciudadano in 2014 and commissioned by the Konrad-Adenauer-Stiftung examined environmental

awareness and the perceived importance of renewable energies on the part of the Panamanian population, as well as its opinion on political engagement with regard to environmental policy. Some 93 percent of respondents stated that environmental protection is an important or very important issue for the future government, which will hold office from 2014 to 2019. Furthermore, around three-quarters of those surveyed declared themselves in favour of the creation of an

environment ministry, contradicting the assumption propagated by leading political and social figures that the majority of the population does not want a ministry instead of ANAM. The hope remains that the new government will respond to the population's wish with actions. So far, Panama has had no environment minister to represent it at international climate conferences.

## PERU

*Pedro Gamio Aita*

### PERU AND CLIMATE CHANGE

The Peruvian state is called upon to promote sustainable development founded on the interaction and balance between economic efficiency, social justice and environmental protection, with the goal of improving quality of life by means of responsible and sustainable management of natural resources. In Peru's constitution, protection of the individual and respect for human dignity are enshrined as the ultimate goals of society and the state, guaranteeing every person the right to "peace, tranquillity, enjoyment of leisure time and to rest, as well as to a balanced and appropriate environment for the development of his life".

Evidence of Peru's precarious environmental situation<sup>1</sup> can be found every day, anywhere in the country – a situation that is exacerbated by extreme poverty and pollution. Added to this are the effects of global warming.<sup>2</sup> The paradox lies in the fact that while Peru causes the same quantity of greenhouse gas emissions as Denmark or New Zealand, its income only amounts to between a fifth and a quarter respectively of that produced by these countries. Peru is therefore faced with a major challenge. A society that wishes to achieve greater development must understand its environment and the physical, natural, cultural and social resources at its disposal. Accordingly, strategic

planning of social and ecological aspects of economic activity is indispensable. Yet medium and long-term thinking is in short supply in Peru, while the public education system suffers from a lack of funding. Moreover, state policy elements are not interlinked in such a way as to favour sustainable development. Ecological institutionalism is closely related to ecological literacy, as well as to knowledge about best practices for interacting with nature, about the production of goods and the provision of services, and about the main challenges in the field of technology. If the population is not educated, and therefore not equipped to develop the capacity for sustainable resource management, the cost of climate change in the country could turn out to be much higher than previously assumed. Only the very highest degree of institutionalism and high-quality institutions will enable the country to implement an appropriate strategy for mitigation of the effects of climate change and the necessary adaptation. Ultimately, social conflicts arising as a result of the decline in quality of life pose a threat to governability. Accordingly, it is indispensable to reinforce the institutional and ecological empowerment of the country as part of a process of decentralisation and modernisation of the state. This process should be understood as economic and technological processes for the development of local and regional capacities, and not just as the creation of political bodies or as a means of gaining a higher budget. This in turn must be accompanied by the creation of systems for accountability and monitoring of the implementation of environmental regulations.

At the same time, mechanisms for public participation in the entire sphere of state administration must be reinforced. It is also important to strengthen environmental management so as to increase competitiveness, especially in terms of cleaner and more susta-

1 | According to the World Bank's CDF, environmental pollution causes damages amounting to 2.9 percent of the country's GDP.

2 | Everything depends on the decisions of the international community and the specifics of the long awaited agreement to reduce emissions to slow down the increase of global temperatures and ensure that it does not exceed two degrees Celsius. In this context, Peru could suffer damages totalling 4 to 20 percent of its GDP.