RENEWING MEXICO'S ENERGY FUTURE

DIAGNOSIS AND PROPOSALS TO ENCOURAGE DEVELOPMENT OF RENEWABLE ENERGIES THROUGHOUT THE COUNTRY

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EXECUTIVE SUMMARY

Mexico is facing a threat that puts its future economic development at stake: the difficulty of gaining access to energy inputs that are necessary for the development of its industrial and commercial activities, as well as to satisfy household and agricultural consumption.[1] In response, several political forces have proposed changes on the current regulatory framework. However, little has been said on institutional modifications of sustainable development, even when the country is highly vulnerable to exacerbated climatic phenomena, due to an increase on greenhouse gas (GHG)[2] emissions.

Our country has substantially increased its carbon dioxide (CO_2) emissions due to a growth policy that is primarily based on hydrocarbons. Only in the 1971-2010 timeframe, the aforementioned emissions increased in 330%.[3] But the issue that Mexico is currently facing goes beyond inter-generational moral and environmental values that might question what kind of nation we want to inherit to our children. The negative effects of climate change are tangible and have a real cost: from 2000 onwards, our country has suffered losses of up to 285.35 billion pesos.[4] In addition, approximately 1 out of every 5 Mexicans is currently living in municipalities that are highly vulnerable to climate change.[5]

With these concerns in mind, some legal targets were set in order to increase access to energy that will not put sustainable development at risk and that will help to ensure energy security throughout the country.[6] Specifically, the need to pursue an energy transition[7] towards renewable power sources[8] that will allow the country to continue its productive activities uninterruptedly and in a sustainable way was established.

The opportunity to boost such a sustainable development relies on generating more electricity from renewable sources. However, this is a major challenge. While from 1996 to 2012 Mexico increased its installed capacity in 28 GW, the country should now upscale its capacity to 40.81 GW in the 2014-2026 timeframe, given that the gross energy consumption is expected to grow at a 3.97% annual rate, which requires an investment of around 1.342 billion pesos.[9]

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[1] See *An Energetically Insecure Mexico: Diagnosis and Proposals to Ensure Mexico's Future Energy Supply*, Center of Research for Development civil association, 2013.

[2] Greenhouse gases are: water vapor, carbon dioxide, methane, nitrogen oxide, ozone and chlorofluorocarbons.

[3] *CO_2: Emissions from Fuel Combustion Highlights*, IEA Statistics, International Energy Agency, 2012, p. 48.

[4] *National Strategy on Climate Change: 10-20-40 Vision*, Mexican Federal Government, 2013, p. 14.

[5] *Ibid.*, p. 4.

[6] The Center of Research for Development civil association (CIDAC) defines energy security as the Mexico's ability to attain quality energy resources at competitive prices needed to boost its economic development and growth.

[7] CIDAC defines energy transition as diversifying the energy basket in order for Mexico to achieve a sustainable development, in other words, to enable the execution of the country's activities without damaging the environment.

[8] Renewable power sources are those whose origin comes from natural processes that are able to be transformed into energy. Due to the fact that they are regenerated in a natural way, its availability is continuous. They should not be confused with clean energy, which consists of renewable power sources plus nuclear energy.

[9] *A Light for National Competitiveness: A Reform Proposal for the Mexican Electric Sector*, Center of Research for Development civil association, 2013, p.13.

Tackling this challenge using a major expansion in power generation through renewable energy is plausible but is certainly not an easy task, due that the aforementioned sector involves many grey areas. On one hand, there are several obstacles that hinder its benefits and limit its maximum potential development. On the other hand, there are several areas of opportunity that might improve it under a regulatory and favorable policy framework. Thereby, the main hindrances for Mexico to achieve a transition towards a more diversified energy basket are:

a. A current lack of knowledge over available technologies, as well as its costs and benefits.
b. A limited electric network that prevents the flow of power supply originated from renewable energy, along with a remote location and access difficulties.
c. A regulatory framework that still assigns a competitive advantage for fossil energy sources via inefficient and perverse subsidies; and,
d. A limited supply of financial products for the development of renewable sources.

In addition to the aforementioned obstacles, there are four aspects of the renewable source sector that would have to be considered in discussing secondary legislation in a potential energy reform:

i. *The as of yet non-exploited potential expansion of renewable sources in the generation and use of electric energy*: renewable sources only had an 18% involvement in 2012's electricity production[10], so there is a goal of increasing that participation in 17%, especially due to the fact that 61% of greenhouse gas (GHG) emissions come from electricity created from fossil energy sources;
ii. *The growth potential of electricity demand within the industrial and agro-industrial sectors*: since 60.25% of GW/hour sales belong to this sector and saving programs in energy costs such as net metering represent larger profit margins for companies, as well as a possible use for marketing strategies while offering a socially-responsible corporate image, which can be reflected in greater sales;
iii. *The growth potential of electricity demand within households* because it represents 22.99% of GW/hour sales and saving programs in energy costs such as net metering might convert into investment projects that can be profitable from 3 to 11 years, depending on the tariff scheme a user might have, in addition that they might operate as empowering frameworks for individuals while reducing their GHG emissions and reinforce their green social conscience; and, finally,
iv. *The potential of generating electricity in the short and medium term with different renewable resources such as wind, solar and geo-thermic energy:* even though Mexico has a world-class potential in each and every one of these resources, generation of electricity from them remains low.

Taking this into account, the Center of Research for Development (CIDAC) elaborated five recommendations for Mexico to achieve an energy transition towards a larger inclusion of renewable sources in its energy basket that may provide sustainable production activities as well as economic development:

[10] This figure includes major hydro-electric companies. Gross energy generation using this technology represented 12% of total power generation during 2012.

1. Creating and executing a policy to enhance renewable energy that is linked with an innovation policy and productivity increase within the sector that, in addition to addressing each type of technology's specific needs, it will also consider comparative advantages of the national industry.
2. Promoting a broader dissemination of costs and benefits of renewable energy in order to: eliminate current asymmetry between potential users and those who provide technology; reduce investors' uncertainty regarding feasibility of renewable energy; and, finally, enhance development of more financial products that are adequate to each project's needs;
3. Strengthening the regulatory framework of renewable energy and regulatory bodies. Firstly, due to the fact that the typical area of opportunity of renewable energy is generation of electricity, the Commission for Energy Regulation (CRE) has to be provided with the power to determine tariffs in the electric energy's public service, in order to adequately reflect costs of the network. Secondly, since some renewable technologies might put pressure upon hydric resources as well as land zones in some of the project's potential areas, strong regulatory powers should be provided for the Secretariat of Environment and Natural Resources (SEMARNAT);
4. The open season scheme has to be modified in order to establish a figure that will guarantee the involvement of stakeholders in the development of infrastructure projects for electricity dissemination produced from renewable sources and, finally;
5. Subsidizing energy fossil fuels must cease and the specific cases ought to be focalized, not only because they are regressive and send the wrong message to energy consumers but also because they prevent equal and fair competition between fossil and renewable energies.

The aforementioned points are thoroughly described in the next sections. Particularly, points explained are: reasons why the country's energy basket must diversify (Section I), current state of renewable energy in Mexico and its progress compared to the rest of the world (Section II), current regulatory framework (Section III), obstacles for the sector's development in these kind of energies (Section IV), areas of opportunity and policies that might boost in Mexico in coming years (Section V) and, finally, conclusions provided within this report (Section VI).