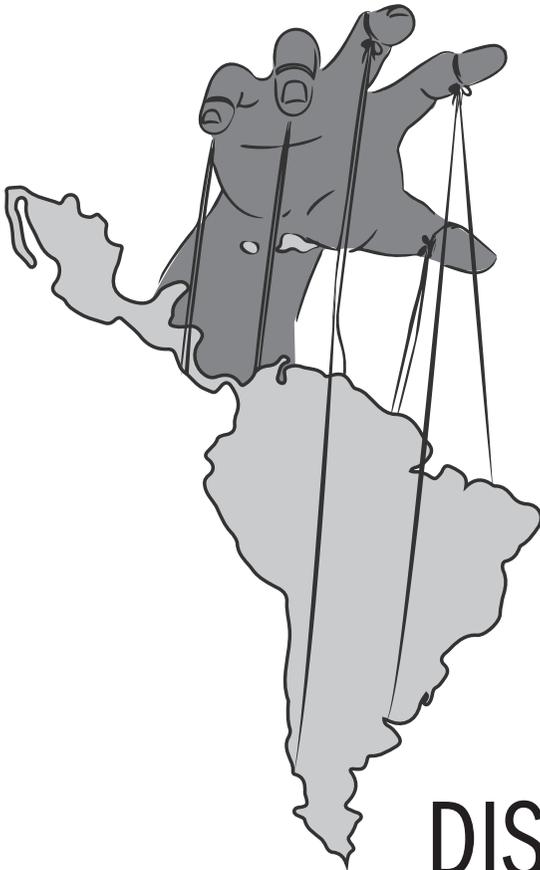


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Energy Innovation: The Case for Regional Leadership and the Tool to Boost Productivity to Advance Long-Term Growth

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There are three elements that point to energy innovation as the tool to both improve productivity and to create the conditions to support regional leadership.

First, *political consensus*. In 2015, the international community reached consensus about the challenges that humanity is facing for its long-term livelihood in terms of habitability on earth and in terms of the wellbeing of mankind.

Second, energy is the largest contributor to greenhouse gas emissions, and given the *energy outlook*, this sector has the biggest potential to contribute to a sustainable development path if there is an effort to incorporate an “energy efficiency first” business model and a switch towards renewable energy and clean fossil fuels.

Third, *international cooperation*, because basic science, research and development, and innovation are areas in which knowledge is transmitted only through open platforms of exchange between individuals, institutions, and countries, and only then breakthroughs can happen. If we join these three elements, energy innovation becomes the tool to boost productivity in Latin America.

POLITICAL CONSENSUS

In September 2015, as part of the celebration of the 70th anniversary of the creation of the United Nations Organization, the heads of state and government and the principal representatives present at the UN headquarters decided to adopt the 2030 Agenda for Sustainable Development.

They committed to promote the sustainable development agenda in its three dimensions—economic, social, and environmental—in a balanced and integrated manner, for which it is essential to guarantee lasting protection of the planet and its natural resources, and where there is universal access to a supply of affordable, reliable, and sustainable energy.

In particular, in Goal 7 the United Nations established the following:

“ . . . 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix; 7.3 By 2030, double the global rate of improvement in energy efficiency 7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and

advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology . . .”

On 15 June 2018, the G20 energy ministers committed themselves in their joint statement to promote the energy transition through innovation in energy systems, to make them cleaner and more sustainable.

On 12-13 December 2018, the ministers of the Latin American Energy Organization (Olade) met to celebrate the 45th anniversary of Olade’s creation and to discuss an agenda forward that included integration, energy transitions, and the role of innovation in the development of the energy systems of the future for the region, identifying the need to collaborate further, promoting joint research and development.

ENERGY OUTLOOK

According to the International Energy Agency (IEA), global energy demand will increase 30 percent by 2040, or the equivalent of doubling the energy consumption of China and India together, and in Central and South America it will grow 40 percent. In the IEA’s New Policies scenario, it is estimated that two-thirds of world investment will focus on renewables, insofar as they continue to be the lowest-cost alternative for new generation of electricity. To boost this growth, it is necessary to invest in the development of technologies and policies to enter new markets and make existing markets more competitive.

CLEAN ENERGIES

To achieve the goals of electricity generation by 2040 and to have a cleaner and more sustainable energy matrix, investment in renewables requires an annual growth of 6.5 percent. This demands a more accelerated deployment of all renewable technologies, which requires

investment in technological development that allows increasing the use of natural resources at more competitive prices; as well as strengthening the transmission and distribution infrastructure that allows integrating a large amount of intermittent generation, and that can incorporate technologies that adjust to the new trends of automation and digitalization. The challenge is to provide reliable, affordable, and emission-free energy.

ENERGY EFFICIENCY

To moderate the growth in primary energy demand, it is essential to promote energy efficiency measures that help us move towards less intensive forms of economic activity in energy such as services or light industry, particularly in emerging economies. It is estimated that between 2016 and 2050 the growth rate of global primary energy will increase 1 percent annually (versus 2 percent between 2000 and 2016) due to energy efficiency policy, particularly in industry. To continue with this trend, investments of close to \$1 trillion are required by 2050, for which it is necessary to invest in research and technological development to improve buildings (thermal insulation, space conditioning, and lighting), accelerate the electrification of transport, and promote super-efficient energy management systems in industry. The challenge is to reduce energy intensity, or the energy required to generate a unit of gross domestic product.

CLEAN FOSSIL FUELS

The consumption of fossil fuels will continue to grow in the coming decades due to the increase in petrochemicals and the demand for aviation and cargo transportation. To meet this growing demand, the approval rate for conventional crude projects must be doubled and the production of unconventional resources (shale) must increase by at least 10 million barrels per day by 2025, the equivalent of

current production from Russia. However, to meet these requirements and make them compatible with the 2030 Agenda for Sustainable Development, it is necessary to invest in technology development to eliminate fugitive emissions, reduce associated gas flaring, and deploy carbon capture, use, and storage technologies. The challenge is to reduce and eventually eliminate the carbon footprint of fossil fuels.

INTERNATIONAL COOPERATION

Building a new company or preparing a new product for the market takes a lot of time and a lot of capital. In the early stages of the process, governments finance basic science; in the last stages, when technologies are cost-competitive, companies implement them on a large scale. The intermediate space, where a great idea is validated and refined again and again until it can be commercialized, requires a different investment approach.

Acknowledging this different approach in investing on 30 November 2015, the presidents of Brazil, Chile, and Mexico joined other 17 countries in an initiative called Mission Innovation (MI) to accelerate global innovation in clean energy. Members committed to double their research and technological development budget in clean energy between 2015 and 2020, and at the same time encourage the private sector to invest in disruptive technologies.

This call to action was joined by the private sector deciding to collaborate towards the same goal as MI. A group of 23 business leaders decided to create Breakthrough Energy Coalition (BEC). It is an initiative of private investors who committed to create a fund of \$100 billion, with the purpose of investing it in the countries of MI in order to accelerate the development and deployment of clean energy technologies.

In addition to BEC, the CEOs of the 10 largest oil companies in the world created the Oil and Gas Climate Initiative (OGCI) with the aim of investing in projects against climate change. For this purpose, they created an investment fund where each company will contribute \$10 million a year until reaching \$1 billion, to invest in three areas: CO₂ recycling, CO₂ reduction, and reducing fugitive methane emissions.

However, there is still that intermediate space where there are no investment vehicles or institutions that can link early-stage research and development, and deployment and commercialization of new technologies.

Latin America can boost productivity and advance long-term growth by using energy innovation. First, if the countries take advantage of these existing initiatives (MI, BEC, OGCI), given that they already have the political commitment (SDGs), and the growth prospects for the region are strong (energy outlook). Second, take leadership in creating an investment vehicle that focuses on the intermediate space in which neither governments nor the private sector invests.

Olade can be the convening institution of such an initiative. According to the Barómetro de la Energía de América Latina y el Caribe 2018, 75 percent of the population in the region perceive that there would be a positive impact from a stronger integration coming out as a result of focusing on research and innovation, and knowledge transfer.

Olade has a wide representation in the region with 27 countries from Latin America and the Caribbean, and in the XLVIII Ministerial in Montevideo, they approved a change in its bylaws to allow for the participation of private, international, and non-governmental organizations. Through its wide regional representation, a small fraction of investment per member

country and organization, Olade can create the scale for the investment vehicle to focus on that particular segment of the innovation ecosystem, and finally promote regional leadership learning from the experiences of Brazil, Chile, and Mexico in ML.

NOTES

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¹³OLADE, *Barómetro de la Energía de América Latina y el Caribe 2018*, December 2018, <http://biblioteca.olade.org/opac-tmpl/Documentos/oldo422.pdf>.