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North America's Energy Revolution

La révolution énergétique en Amérique du Nord

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1. L'Accord stratégique transpacifique de partenariat économique (TPP) est un accord de libre-échange régional en négociation regroupant 12 pays de l'Asie-pacifique, dont le Canada. Les pays participants sont l'Australie*, Brunei Darussalam, le Canada*, le Chili*, les États-Unis, le Japon, la Malaisie, le Mexique*, la Nouvelle-Zélande, le Pérou*, Singapour* et le Vietnam (les pays marqués d'un astérisque ont déjà un accord de libre-échange avec les États-Unis).
2. Les négociations regroupent les 10 pays membres de l'ASEAN ainsi que la Chine, le Japon, la Corée du Sud, l'Inde, l'Australie et la Nouvelle-Zélande.

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Mexico has a huge potential for becoming, once again, a major energy player in the years to come

Energy cooperation in North America became a reality during the negotiations of the Canada-US Free Trade Agreement (CUSFTA) in 1989. It became even stronger during Mexico's negotiations to build on CUSFTA and create the North American Free Trade Agreement (NAFTA) in 1994. Based on CUSFTA, Canada guaranteed energy supplies to the US; through NAFTA, Mexico began liberalization of cross-border energy trade in gas and electricity, although maintaining state monopolism on upstream and downstream activities. Since the inception of NAFTA to the present, security concerns – mainly coming from the United States (US) – have spurred cooperation and coordination framed under ad-hoc mechanisms, such as the North American Energy Working Group (NAEWG), created in 2001, or the Security and Prosperity Partnership (SPP), launched at the trilateral level by then President George W. Bush, in 2005. However, the decisive driving force of continental integration of energy markets in North America has not been intergovernmental cooperation, but rather policy choices and market restructuring that have taken place in each of the North American partners addressing their own energy challenges and concerns. From those policy options and market restructuring, what became decisive is the so-called "energy revolution" that was initiated in Canada and followed with impressive success in the US.

The US Energy Revolution

This energy revolution is impacting both energy supply, by making available a huge amount of non-conventional hydrocarbon resources (tar sands, and shale/tight oil and gas), and energy demand, by focusing on energy conservation, and substitution, by promoting the entrance of renewables (mainly in electricity generation) and the marketing of hybrid and plug-in vehicles. The leading country of this revolution is the US, which since the turn of the century launched a myriad of policies targeting technology innovation for exploiting and marketing both non-conventional fuels and renewables, conservation, and a new generation of automotive engines able to substitute liquid fuels with electricity or fuel-cells. The results are becoming apparent since the turn of the present decade: Canada has become a tar sands power house while the US has rapidly increased the domestic supply of non-conventional oil and gas, and expanding the market for non-conventional automobiles. According to most recent figures released by the US Department of Energy (EIA, 2013), domestic American oil production will peak to 9.5 million barrels daily (MBD) in 2016, a historical record during the past 40 years, while the natural gas boom will be maintained in the long run, making the US a net exporter of this fuel at the turn of the next decade. If current trends prevail, the net use of imported energy source (mainly crude oil and petroleum products) will fall from 16% of total con-

sumption in 2012 to 4% in 2040 (Ibid: 2) In other words, the US – and at any rate overall North America – will become a fossil fuels self-sufficient country in the years to come.

Mexico's Radical Reforms

Unlike Canada and the U.S., the panorama of the hydrocarbons in Mexico became rather critical, to say the less. After a downward reclassification of proven reserves by PEMEX, a state-owned oil company, in 2002, the three types of reserves that the company traditionally typifies (proven, probable and possible) have persistently declined to barely stabilize in the last years in a total of 44.5 million barrels of oil equivalent (MBOE). From this stock, proven reserves (13.9 MBOE) equal to 13 years of current production (including natural gas liquids). Crude oil production peaked in 2005, reaching 3.3 MBD to progressively decline in subsequent years. In 2012 the production was 2.6 MBD, a fall of almost 24% compared to what was achieved in 2005. The same thing has happened with exports, which peaked in 2006, with an amount of 1.8 MBD to decline at 1.3 MBD in 2012, a fall of 31% (PEMEX, 2013).

At the same time, imports of petroleum products, especially gasoline, have increased, because the processing capacity of Mexican refineries is overtaken and the construction of a new one is yet to be started. The production of natural gas, after having known a significant growth over the past decade, with 7 031 BCF of annualized production in 2009, began its fall to reach 6 385 BCF in 2012. With a domestic consumption whose growth has exceeded the increase in production, driven by electricity generation which has gradually shifted from fuel oil to gas, imports of natural gas have also hiked in the past few years, going from 592.5 MCFD in 2002 to 1,089.3 MCFD in 2012 (PEMEX, 2013).

The crisis witnessed by Mexico's energy sector prompted President Peña (2012-2018) to pass a radical reform which put an end to state oil monopolism, the energy regime that prevailed for more than 75 years, since the oil industry was nationalized in 1938, and that became an icon of state dirigisme and nationalism during most of the past century. Under the new energy bill Mexico's hydrocarbon resources remain a national wealth, though private participation is now allowed, via production/profit share contracts, in all value chains of the hydrocarbon and electricity industries. This institutional revolution sets the ground for an anticipated energy boom, this time south of the Rio Bravo, which could emulate the energy revolution which is taking place both in the US and Canada. According to the US Department of Energy, Mexico ranks 5th place according to her stock (545 trillion cubic feet) of technically recoverable shale gas resources (EIA, 2013a). PEMEX estimates the amount of prospective oil and gas resources in 54.5 MBOE and non-conventional hydrocarbon resources in 60.2 MBOE. In other words, Mexico has a huge potential for becoming, once again, a major energy player in the years to come if the institutional revolution is successful to attract the right companies with the right capital.

Trilateral Cooperation will Probably be Reactivated

All those major transformations taking place in the three countries, have not been the result of intergovernmental cooperation, or policy coordination among the North American partners, as NAFTA or SPP called for. On the contrary, the sudden changes that North America is witnessing at the policy and resource endowment level have been the product of energy constraints and policy and technological responses taken at the national and subnational domains. Though the energy revolution started with Canadian oil sands, the US policy environment that loomed since the first term of the George W. Bush Administration, became decisive for explaining the non-conventional hydrocarbons revolution that is taking place in this country. This revolution has made of the US a "non-conventional" energy powerhouse.

Until recently, the major players in the international market of hydrocarbons were divided among major producers/exporters of crude oil or gas (Saudi Arabia, the key countries of the OPEC, Russia, Norway, Mexico, Qatar and Bolivia) and large consumers/importers (U.S., Japan, countries of continental Europe). At present, the American energy revolution is impacting both production and consumption patterns. This seems to be a structural trend that will continue during the next two decades and will make of the US a net gas exporter and eventually a self-sufficient country in energy matters. Never a great producer of hydrocarbons, be it Saudi Arabia, Russia, or Canada, had achieved this double impact on world markets. Furthermore, the US has also the conditions to articulate a resource diplomacy that could give it the leverage for leading the entrance of non-conventional fossil-fuels as well as the marketing of alternative and renewable resources.

The continentalization of energy markets in North America will continue and become deeper in the years to come. The cooperative regime that failed to be implemented throughout NAFTA and SPP will probably be reactivated as a need to better exploit and regulate economies of scale, cross-border pipelines and exchanges, environmental externalities, risk and security concerns, price fluctuations and

resource allocation in petroleum and electricity industries whose cross-border regionalization is more and more driven through rapid technological change and shifting market preferences. The new cooperative regime will not necessarily follow the classic intergovernmental pattern of collaboration, as NAFTA or SPP attempted to settle. Most probably it will emerge from cross-border initiatives, that already exist, grounded at the sub-national or sub-regional level, such as the North American Electric Reliability Corporation or the Western Climate Initiative, or other that might be created for addressing specific needs and challenges provoked by a growing intertwining of the energy industries located in the three North American partners.

Towards a "Multi-Level" Governance?

Under this "multi-level" governance architecture that is about to emerge, the future of those interdependent industries will be commanded not just by addressing the policy choices coming from government regulators and public firms, but by taking into consideration the needs and policy preferences of private firms, consumers, technology innovators, environmental organizations, and other actors capable of impacting a multi-dimensional energy agenda. Last but not least, Canada and Mexico will cease to be typical crude/gas providers to the US and will be forced to diversify their fuels exports to Europe and Asia, putting pressure on global energy markets whose consequences (i.e. price volatility) are yet to be seen.

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