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ACCELERATING GREEN INFRASTRUCTURE FINANCING IN MEXICO TOWARDS SUSTAINABLE ECONOMIC GROWTH

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Mexico faces a difficult set of economic challenges. Low oil prices have increased fiscal pressure on the government, whilst the election of President Trump and regional geopolitical uncertainty pose broader threats to its economy. Within this context, the Mexican government is focused on its fiscal balance, which requires increasing the impact of limited public resources. This calls for a strategic approach to leverage private sector investment in economically sustainable projects.

At the same time, as a country highly vulnerable to climate impacts, Mexico must also deliver its ambitious emission reduction, clean energy targets, and adaptation plans. Despite having implemented major energy sector reforms, it remains unclear how the country will finance its Nationally Determined Contribution (NDC). Current policies, along with weak implementation of some of them, have generated questions about whether the scale and pace of investment needed to deliver the transition will be sufficient to deliver the NDC. Given the dynamic and long-term nature of these challenges, there is a strong case to bolster current ad hoc measures with a more enduring approach.

Institutional reforms are needed to bolster sustainable economic growth and ensure capital flows to investments that are resilient to a range of future climate and energy scenarios. Institutional innovation can provide Mexico with the financial expertise, risk mitigation instruments, patient capital and transaction enablers needed to successfully deliver its low carbon and climate resilient transition. This approach would unlock private investment in climate resilient infrastructure whilst lessening the burden on public resources.



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I. Context

Shifting Mexico's economy onto a climate-resilient pathway is an ambitious task that will require a significant upfront pulse of investment. Mexico's current level of infrastructure investment, at 1.6% of GDP, is the lowest in the Latin America and far less than the 5% that has been recommended to reduce the infrastructure investment gap¹. Climate resilient infrastructure is particularly critical to Mexico as 71% of its economy is vulnerable to climate-related disasters². According to Mexico's National Infrastructure Plan only 36% of infrastructure investment will come from the private sector. It is therefore essential that public finance is channelled towards investments in economically sustainable projects.

Mexico has already demonstrated global leadership in working to build and finance a climate-resilient economy. It has integrated its climate change objectives into national policy making, and has taken important steps towards mitigating and managing the effects of climate change. For example, in 2012 Mexico was the second country in the world to introduce a Climate Change Law. This leadership has been further strengthened by its NDC³ commitments under the Paris Agreement on Climate Change, as well as through low carbon financial innovation⁴. For example, Mexico issued the first multi-peril multi-region catastrophe bond globally, and Nacional Financiera (NAFIN) was the first regional public bank to issue a green bond (USD 500m in 2015 to finance nine wind projects)⁵. Banobras issued its first sustainable bond on September 2017⁶.

Looking forward, Mexico has pledged to reduce its greenhouse gas emissions by 22% by 2030, with an additional contingent target of 36%⁷. Moving towards decarbonisation of the energy sector, which accounts for 70% of total greenhouse gas (GHG) emissions, will be critical for achieving this objective⁸. In particular, the power sector share of fossil fuel-based- generation was 79% in 2014⁹. Additionally, a large

¹ Serebrisky et al. 2015. Financing Infrastructure in América Latina and the Caribbean: How, How much, and by Whom?

² See <http://www.worldbank.org/en/news/press-release/2017/08/04/bonos-del-banco-mundial-proporcionaran-a-mexico-us360-millones-en-proteccion-ante-catastrofes>

³ <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Mexico/1/MEXICO%20INDC%2003.30.2015.pdf>

⁴ However, its NDC are not aligned with 1.5C. See <http://www.eluniversal.com.mx/entrada-de-opinion/articulo/gustavo-alanis-ortega/mundo/2017/06/3/una-oportunidad-para-mexico-y-al>

⁵ Mexico is among the 10 top countries who have issued green bonds. See <https://uk.reuters.com/article/us-climatechange-agreement-greenbonds/green-bond-deals-hit-record-100-billion-in-year-to-date-data-idUKKBN1DF1Q0>

⁶ See <http://www.economiahoy.mx/mercados-eAm-mexico/noticias/8586559/09/17/Banobras-coloca-primer-bono-sustentable-para-proyectos-de-fomento-social.html>

⁷ This is contingent on a global carbon price agreement, access to finance and technology transfer. These pledges are relative to BAU scenario of emissions projections based on economic growth in the absence of climate change policies. This commitment indicates decoupling of GHG and energy use from economic growth, reducing emissions intensity per unit of GDP by 40% with peak emissions around 2026

⁸ See https://www.climatelinks.org/sites/default/files/asset/document/2017_USAID_GHG%20Emissions%20Factsheet_Mexico_0.pdf

⁹ IEA, Energy Economic Outlook, Mexico, 2016
<https://www.iea.org/publications/freepublications/publication/MexicoEnergyOutlook.pdf>



percentage of the national consumption of Gas in Mexico, (81% by April 2017¹⁰) is imported from the United States. Estimates suggest that emissions reductions in the power sector will account for nearly one-third of the total required reduction¹¹. Decarbonisation of the power sector is also essential to deliver low carbon strategies in other sectors, notably transport.

The policy framework for achieving this energy system transformation is set out in Mexico's Energy Transition Law, which specifies that the minimum share of clean energy¹² in electricity generation should be 25% by 2018, 30% by 2021 and 35% by 2024. Currently, there is no consensus about whether Mexico is going to achieve its goals for either emission reduction or clean energy. A recent study by WWF shows that Mexico is three years behind achieving its goals for two reasons: the electricity sector has yet to show a sharp reduction in emissions from 2015 onwards; and the closure of virtually all conventional thermal power plants by the years 2019 and 2020 now looks unlikely¹³.

A stronger signal from the government of its intention to move onto a climate resilient pathway would do much to unlock private investment in climate resilient infrastructure, which in turn would lessen the burden on public resources. But it is also clear that financing Mexico's transition will be beyond the reach of public budgets alone; the private sector will be key in ensuring investment needs are met¹⁴. This is especially true given the current fiscal environment in Mexico and the focus on reducing public debt as percentage of GDP¹⁵. The government must signal through regulations, strong incentives and first-mover actions that, financing climate change is still a priority.

i. Scale of the investment challenge

Mexico's NDC doesn't specify how mitigation and adaptation actions will be financed, which is the case for most other countries. Where estimates do exist, they differ significantly. The National Institute of Ecology and Climate Change (INECC) calculates that the cost of meeting Mexico's NDC will be USD 136bn between 2016-2030, whereas the International Finance Corporation (IFC) estimates a total of USD 791bn

¹⁰ National Hydrocarbons Commission CNH See: <https://portal.cnih.cnh.gob.mx/estadisticas.php>

¹¹ See <https://www.e3g.org/library/mexicos-indc-harnessing-opportunities-in-the-power-sector>

¹² According to the Electricity Law, clean energy definition includes hydrogen, nuclear, efficient cogeneration and thermal plants with capture and storage.

¹³ See: http://awsassets.panda.org/downloads/wwf_reporte_componente_mitigacion_prodesen_1.pdf

¹⁴ UNFCCC 2007: recommended focusing on the role of the private sector investment as they constitute the largest share of financial flows (estimated at 86%).

¹⁵ Because of the fall in oil revenue since 2014 has forced fiscal consolidation and budget cuts in the country. In 2018, it is expected a further reduction on public expenditure see <http://www.elfinanciero.com.mx/economia/recorte-presupuestal-dara-mexico-ventaja-en-competitividad-meade.html>

for the same period¹⁶. Different modelling and scenarios lead to the huge gap however both estimate that the power sector accounts for half of the total costs¹⁷.

Mexico boasts some of the most plentiful solar energy resources in the world. The solar irradiation in the country is larger than other major solar investors, like Germany (60% higher), and at the same level as several of the best locations in the world, including Chile and Middle East North Africa (MENA) region. It also has some of the largest geothermal assets in the world, but not much development has occurred in the last decade. Finally, Central Mexico has one of the highest wind resource potentials in the world¹⁸.

Mexico's investments in renewable energy have been principally funded by equity (often large international energy companies) and Multilateral Development Banks (MDBs)¹⁹. This is reflected in investment figures from 2015, which totalled USD 2.3bn with only 32% from Mexico itself²⁰. National Development Banks (NDBs) have played an increasingly significant role in the financing of renewable energy, energy efficiency and climate projects, but have done so while also investing in gas and oil.

Recent reforms have also introduced some market mechanisms to attract investment to the energy sector and show that the growth of clean energy is possible, including: clean energy certificates as an integral part of the design of the electricity market, long term contracts and auctions locking in prices for generators of clean energy (for a period of 15 years), capacity (15 years) and Clean Energy Certificates (20 years)²¹.

These mechanisms are a sign of progress and will help to create the right environment for attracting investment. However, on their own they won't be sufficient to guarantee the redirection of capital flows from fossil fuels towards renewables. Renewable infrastructure investments are riskier as often their supply chain is untested and the financing mechanisms are immature. Like other emerging economies, political and currency risks are a further deterrent to investment. Therefore, if Mexico is to achieve sustainable economic growth in the long term a more strategic approach to facilitate investment is required.

II. The rationale for a new approach

In recent years there has been a significant political focus on delivering policies and reforms to help Mexico achieve its clean energy targets. These can be divided into

16 This figure could be greater as it doesn't include mitigation objectives like forestry and agriculture, nor adaptation financing needs.

17 See: <http://dialogos.cnds.inecc.gob.mx/index.php/dialogos/uscuss>

18 See <https://www.greentechmedia.com/articles/read/sunny-mexico-an-energy-opportunity>;
<http://www.nortonrosefulbright.com/knowledge/publications/134776/renewable-energy-in-latin-america-mexico>

19 Climatescope 2016

20 See http://www.kas.de/wf/doc/kas_49669-544-2-30.pdf?170725132529

21 IEA, 2016. Mexico Energy Outlook



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two categories: market reforms and creation of additional funds focused on low carbon investments.

- The key market reform has been the Electricity Law, which unbundled electricity generation and distribution – allowing smaller investments in renewable energy – and allowed private investors to invest in new capacity by loosen the restrictions for private producers to generate electricity. The Electricity Law also introduced long-term term auctions reserved for clean technologies, and, from 2018, a secondary market to boost clean energy - market participants are required to source a certain percentage of their electricity from clean sources or purchase clean energy certificates.
- Mexico also has several funds to promote and finance the clean energy sector and measures designed to reduce emissions, such as the Fund for Energy Transition and Sustainable Energy Use (FOTEASE), the Sustainable Energy Fund (FSE), and the Mexican Climate Fund²².

The funds are funnelled through the NDBs. They have also provided financing to renewable projects and have some experience in the market and have a track record of supporting social development goals and implementing government policies. This is usually done by using the federal budget and not their own funds, increasing the pressure on the country's treasury. NDBs have a unique role in supporting development and economic growth, relative to MDBs. This comes from their deep local knowledge, relationships, and understanding of local markets. NDBs also have a larger threshold for taking risks than other local financial intermediaries and a good track record of supporting social development goals and implementing government policies. In Mexico, there are seven NDBs and each of them are targeting specific market segments, from SMEs (NAFIN), Federal Infrastructure (BANOBRA), industry (Bancomext), agriculture (FND), and housing (SHF)²³.

However, according to a recent study by the InterAmerican Development Bank, NDBs are facing a range of constraints that prevent them from being more effective in helping facilitate the investment needed to achieve Mexico's NDC, including technical capacity, governance, regulatory, and policy constraints. It is worth mentioning that NDBs in Mexico face some of the same constraints as commercial banks, e.g. Basel III regulations²⁴. Discussion with several NDB representatives confirmed the findings from the IDB²⁵. They also reveal an insufficient clarity regarding their roles in financing Mexico's NDC.

Despite the fact most of the Mexican NDBs have expressed a desire to help accelerate Mexico's transition and are increasing their level of investment in low carbon infrastructure, it is unlikely to be enough to meet Mexico's 2020 and 2030 goals, as this is not the sole focus of their mandate and they have acknowledged that they

²² Climate Change Fund is currently being under reform.

²³ There are other NDBs, but their targets are on saving and financial inclusion (BANSEFI) and the Mexican army (Banjercito)

²⁴ See https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2341519

²⁵ We have carried out interviews with experts in the largest NDBs, Banobras, Bancomext and NAFIN.

can't dedicate all their resources towards this objective²⁶. This is also reflected in an analysis by the IDB which found that, in 2015, Chilean NDBs had invested USD 983m in their local low carbon economy, whilst Mexican NDBs had invested only USD 641m - less than 6% of the total portfolio given by NDBs in that year²⁷.

Part of the challenge is that there is no single public body that holds responsibility for ensuring that Mexico's actions are aligned with its low carbon objectives. Mexico has a long track record of developing a variety of ad hoc responses to investment challenges, which have failed to effectively address the underlying issues in delivering Mexico transformation to a low carbon and resilient economy.

Key barriers to financing the energy transition in Mexico include:

- Risks for developers and off-takers of low carbon electricity and other green services due to the lack of enough long-term contracts, which exacerbates challenges around securing sufficient upfront investment²⁸;
- Currency risks for foreign direct investors;
- Lack of operational data and historical precedent on default rates on green projects hindering accurate assessment of risk and return;
- Policy risks such as retroactive adjustment of fiscal support schemes;
- The financial sector has insufficient familiarity with innovative technologies;
- Limited green infrastructure project expertise to arrange and price deals appropriately. Most Mexican banks don't have financial instruments adapted to specific sectors such as energy efficiency, and the interest rate offer is higher than the offer for consumer credit²⁹;
- Lack of a bankable project pipeline as there is insufficient experience from project developers. NDBs and the Mexican Association Bank have expressed that this is an issue for providing finance to certain projects;
- Small project size deters banks from investing resources to develop their low carbon finance capacity.

Given the scale of the challenges and pressing timelines that need to be met, a more coordinated approach to driving Mexico's transition should be considered. The efforts made by the NDBs and the Government in providing different funds should be recognised, but the success in achieving the NDC - including Mexico's clean energy targets - will require new approaches to more effectively finance low carbon projects, including through the mobilisation of private investment. Whilst there have been significant achievements to date, a step change will be needed to achieve a low carbon transition.

²⁶ Ibid; IDB 2015, The NDBs are greening their process but this doesn't mean more finance is going to be redirected towards low carbon infrastructure.

²⁷ This is a rough estimation, and should be taken as indicative as most of the NDB are still learning how to track their green projects.

²⁸ Only two long-term auctions have been issued, allowing CFE (only bidder) wholesale provision for 15 years extendable to 10 more.

²⁹ Conversation with Mexican Banks Association.



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III. The case for a green investment strategy

Mexico has made great strides in improving the regulatory environment to attract investment into its renewables sector. However, further progress is needed to improve the investment return/ profile of renewables, energy efficiency projects, and other low carbon infrastructure. Both the Energy Reform and National Energy Strategy stress the importance of creating mechanisms and incentives to finance low carbon infrastructure.

A low carbon and climate resilient approach would also benefit the wider economy:

- **Government Savings:** According to IRENA, accelerating the uptake of renewables could translate in an annual net saving of USD 1.6bn in Mexico's total energy system costs by 2030. If the benefits resulting from improved health and reduced CO₂ emissions are considered savings could reach USD 4.6bn and 11.6bn per year³⁰.
- **Increased Productivity:** Lower costs and more reliable energy would allow Mexico to manufacture more energy intensive intermediate parts domestically and therefore capture more of the global value chain, currently the lowest among OECD countries³¹.

The liberalisation of the energy sector, including electricity markets, has begun to attract private investors. However, it is critical that Mexico ensures that new investments are channelled towards medium to long-term solutions which will boost sustainable growth, rather than quick fixes. Investment needs to flow to 'least regret' options that will be resilient to a range of future energy and climate scenarios.

This is particularly pertinent given that Mexico's clean energy definition focuses on technology rather than the source of the energy, for example efficient cogeneration qualifies as clean energy although it is likely that it would use natural gas. Additionally, natural gas is exempted from the carbon tax³². Overinvestment in gas could in the long term affect the level of investment in renewable energy. Whilst gas-fired power generation may appear attractive in the near term, it also represents a riskier medium-term option, as gas power plants, which on average last for 30 years³³, may be subject to early retirement. IRENA's study shows that Mexico has some risk of stranded assets in the upstream sector³⁴.

Overinvestment in gas could also threaten Mexico's transition to a low carbon economy. Even ignoring asset stranding, investment in gas power may be riskier than

³⁰ IRENA, 2015. Renewable Energy Prospects: Mexico

³¹ Ibid.

³² Mexico carbon tax is very low around 5USD/t CO₂ compare to the global average which is between 20 to 30 USD/t CO₂

³³ See <https://www.edfenergy.com/energy/nuclear-new-build-projects/hinkley-point-c/news-views/gas-blog>

³⁴ IRENA, 2017. Stranded Assets and Renewables. How the energy transition affects the value of energy reserves, buildings and capital stock



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it appears. Although US gas is currently cheap, this could change in the future due to a variety of factors including cold weather and/or the results of the renegotiation of NAFTA. Furthermore, if the US changes the American Gas Act and begins exporting more LNG, prices could rise, affecting the whole of the Mexican economy, which accounts for most US exports.

Chile provides a useful lesson that reliance on a single country for gas imports creates an unstable dependency. Chile was previously dependent on imported gas from Argentina, but in the last decade the supply of Argentinean gas was curtailed several times, most recently in 2007. Chile has since been aggressively investing to diversify its sources of energy. Mexico should avoid making the same mistakes and instead focus on maximising its own sustainable natural resources.

Whilst there is a clear temptation for Mexico to encourage gas consumption from increasing domestic production, this also poses a risk. Mexico does have domestic gas resources – both shale gas and offshore – but there are significant challenges to their development; a reliable supply of gas is not guaranteed; and regional distribution issues remain unsolved, such as land rights and the disruption of local communities.

IV. Bridging the gap – Green Investment Agency

Mexico has made good progress in energy market reform and developing new approaches to public-private risk sharing to secure the investment needed to deliver a low carbon and climate resilient economy. However, the transition will require the deployment and use of new technologies and business models across a whole range of sectors from energy to transport to agriculture and water management. It will require public and private cooperation on an unprecedented scale that should be underpinned by the following key principles:

- Targeting public money efficiently to de-risk and leverage private capital. Signaling government involvement and commitment to the market to promote market growth. Ad hoc programmes are quick fixes, but don't solve the underlying problems in the market. Mexico has a wide range of funds but they are only providing grants, and there is no framework to measure impact. Furthermore, this is one tool that can be used to leverage participation from the private sector.
- Creation and deployment of innovative financial instruments, such as pooling mechanisms. This could be particularly useful for projects with a return that is not commercially viable, by spreading the borrowing cost through syndicated loans, or increasing the availability of additional capital available to borrowers through securitisation schemes and concessional loans, among other instruments. This could attract a wide range of investors that have yet to participate in these opportunities, including institutional investors.



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- Providing early engagement on projects to provide a full range of tailored structured financing options. Complement lending activity by providing technical assistance services to facilitate smaller scale lending and reduce transactions costs.
 - Transparency on operational performance and loans losses to address market lack of data.
 - Coordinate Mexican climate finance investments by identifying the sector that needs to be prioritised. This is an ongoing work programme for SEMARNAT/INECC and needs to be accompanied by a financial strategy that could signal complementarity of the existing funding instruments in the country.

Given the dynamic and long-term nature of these challenges and needs, the current ad hoc approaches should be bolstered by a more enduring approach – focused on institutional innovation to provide Mexico with the financial expertise, risk mitigation instruments, patient capital and transaction enablers needed to successfully deliver its low carbon and climate resilient transition.

We suggest that a new independent dedicated green investment agency is needed in Mexico with capacity to focus on enabling the finance of the low carbon transition. The agency would have the following characteristics:

- **Specific mandate** to act as a catalyst to increase investment in the climate infrastructure sector, with its outcomes aligned to emission reductions. It should complement and enhance the work done by NDBs.
- **Public private risk sharing partnership:** this can help address the real and perceived risks, by co-investing alongside the private sector and building structures that can improve return. It could use different tools to leverage private sector participation from underwriting first losses to providing technical assistance. It should offer both equity and debt to get projects off the ground.
- **Experience in risk assessment for low carbon finance:** the agency would be able to accurately assess and mitigate risks in green finance and disseminate this know-how throughout the wider financial community. Furthermore, the agency could provide technical assistance to develop new projects, leading to a greater supply of potential investments and demonstrating a bankable pipeline of projects to other financial institutions.
- **Strengthen market confidence:** a dedicated public agent specializing solely in green infrastructure finance would send a clear signal of the Government's commitment to the low carbon agenda, which would then give private sector players greater confidence to invest.
- **Ongoing innovative capacity:** both Mexico's dynamic economy and the fast-evolving nature of the low carbon transition means that the sector's financing



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needs cannot be anticipated. Only a dedicated body will be able to continually innovate to meet contemporary financial changes. This is particularly important in periods of high risk and uncertainty, such as during the financial crisis of 2007/8. This agency could provide continuity and respond to the needs of the changing market, and design new and efficient financial instruments.

- **Bridge the policy gap:** advise the Government on subsequent policies required to unlock the market - and create the link between the financial sector and policy makers.

V. Conclusion

As Mexico faces future geopolitical and economic uncertainty it will be critical that the government find ways to boost domestic investment and shore up its reputation as an attractive country for foreign direct investment in green infrastructure. Public funds must be directed to projects that deliver the best long-term value, and leveraged by private capital to provide an environment for sustainable growth.

Further institutional innovation is required to accelerate the transition and send a strong signal to investors that Mexico is serious about delivering its low carbon transition, through a strong and credible investment narrative. This proposed green investment agency could be used as a means to open up opportunities for more flexible and effective policy making to drive market growth and supply chain innovation. Its proposed independence from Government, combined with a lean bureaucracy, are key elements to consider - to ensure any new entity created in Mexico can generate value through coordinating and leveraging existing government and NDB activity – rather than simply adding new institutions to an already crowded landscape.



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About E3G

E3G is an independent climate change think tank operating to accelerate the global transition to a low carbon economy. E3G builds cross-sectoral coalitions to achieve carefully defined outcomes, chosen for their capacity to leverage change. E3G works closely with like-minded partners in government, politics, business, civil society, science, the media, public interest foundations and elsewhere. In 2016, E3G was ranked the number one environmental think tank in the UK.

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