Policy Paper on Climate Investment in Brazil – *First Draft*

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Why Climate Finance is Crucial

Critical to the success of the Paris Agreement, the Nationally Determined Contributions (NDCs) consist of targets of reduction of greenhouse gas (GHG) emissions set by each country, which should collectively be able to limit the global temperature increase below 2^{o}C compared to the pre-industrial levels. (UNFCCC, 2015)

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In pursuing their goals, countries set climate change mitigation and adaptation actions[1]. And to put these projects into action and meet the 2ºC target, the planet needs climate-related investments between US$ 57 trillion and US$ 93 trillion by 2030 [McKinsey (2016)], of which US$ 23 trillion is in the emerging markets. (IFC, 2017)

Brazil, alone, has a climate investment gap of US$ 162 billion by 2030 to meet its ambitious targets of reducing greenhouse gases (GHG) emissions. (Brazil, 2015) This policy paper presents, from a comparative perspective, the landscape of the climate-investment policies in the world and in Brazil, highlights the climate-finance gap in Brazil, and suggests policy investments that may help Brazilian policymakers design climate-investment policies to close this gap.

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World Climate-Finance Snapshot: Policy Support and the Renewables Take-Off

Two years after the historic Paris Agreement, climate finance has just registered an average annual record of US$ 410 billion in the 2015/2016 period – Mitigation finance accounted for the bulk (93%), of which 74% was for renewables, whereas adaptation represented only 7%. (CPI, 2017) According to IEA (2017), renewables accounted for over US$ 282 billion– more than two-thirds of the total, reflecting the shift from government-set-in tariffs' policies to competitive auctions with long-term power purchase agreements, which in turn have led to

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[1] Mitigation involves combatting climate change, while adaptation means reducing the human vulnerability to the detrimental effects of climate change (e.g. extreme weather-related events, and food insecurity). An example of a growing, consolidated sector of mitigation is renewables (with some differences among its subsectors across countries), whereas expanding adaptation (e.g. smart agriculture, forestry, coastal protection) remains ~~as a challenge to take off~~ a challenge. There are some conceptual overlaps between mitigation and adaptation and accordingly they may be found in the same sector.

competitive costs along the value chain, crowding in private investments and thus becoming a cost-effective policy option for governments. In fact, while renewables are on the right track to meet their contribution to the global 2ºC target [CPI, (2017)], scale up adaptation finance remains as a challenge worldwide.

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Climate Finance in Brazil: Policy Support and the Wind Power Take-Off

Even with over 70% of its electricity coming from hydropower [ANEEL, (2017)], Brazil is a leading country in supporting renewables.[2] A turning point in the diversification of its energy matrix was the Alternative Sources Incentive Programme (PROINFA) in 2002 [ANEEL, (2017)], which followed an unprecedented national energy crisis in 2001, and therefore aimed to foster renewables to reduce the country's reliance on hydropower.

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In addition to PROINFA, the government allowed a 50% reduction of the tariffs that wind electricity producers are charged to access the transmission systems, set a revenue band system and a number of tax incentives, and enacted the new electric sector framework. (ANEEL, 2017) This regulation fostered creation of a competitive market, while guaranteeing electric supply and promoting tariff predictability, through auctions for the long-term contracting of energy by the distributors on the criterion of lowest tariff.

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[2] Even with 70% from hydropower, because the ~~largest~~ greater part of this is from large hydropower plants, ~~what is rises~~ it raises environmental concerns. In other words, at first glance, Brazil seems to have a clean energy mix, but the reality is that most of this hydropower comes from large hydro. Therefore, ~~the idea here is that~~ Brazil has been playing a role ~~is~~ in further development of wind and solar energy.

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As a result, wind power has become more competitive in state auctions[3] and led the expansion of renewables[4], with more than 16 GW of wind electricity already contracted through state auctions and 11.4 GW of installed capacity until September 2017. (ANEEL, 2017) It represents 7.4% of the national energy matrix, up from just 1.5% in December 2012. With less policy support, biomass and small hydro remain stagnated[5]. (ANEEL, 2017).

Regarding solar power, the Brazilian Electricity Regulatory Agency (ANEEL) launched the net metering scheme in 2012, allowing small solar energy consumers to sell their energy surplus to distributors. (ANEEL, 2017) However, distributors needed time to adapt their systems, and there was a lack of suppliers and installers of photovoltaic systems in Brazil. Thus, photovoltaic solar, the leading growing energy source in the world, is just a toddler industry in Brazil.

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The Gap of Climate Investment in Brazil

Although Brazil has enjoyed a take-off of wind power, investments in adaptation and other mitigation sectors remain stagnated. And to meet its ambitious targets of reducing CHG emissions[6]

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[3] From 2013 to 2016, wind power prices were between R$ 100/MW/h and R$ 200/MW/h, while biomass averaged R$ 220 R$/MW/h. Small hydro, which competes directly with large hydropower plants, had its prices between R$130/MW/h and R$ 225/MW/h, while large hydropower prices averaged R$100/MW/h.

[4] Renewables include wind, solar, small hydro (up to 1.8MW), and bioelectricity (biomass). Thus, it doesn't include large hydropower.

[5] Biomass contracted just 6.5 GW, but represents 9.2% of the Brazilian electricity matrix, slightly up from 8.1% in 2012, while small hydro contracted 2.2 GW and accounts for 3.3% of the installed capacity, nearly the same share it had in 2012.

[Brazil (2015)], Brazil has an estimated climate-investment need of US$ 1.3 trillion by 2030, of which US$ 318 billion by 2020[7] IFC (2016; 2017). It means annual investments of US$ 63.6 billion from 2016 to 2020, and additional US$ 98.2 billion between 2021 and 2030.

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Policy Recommendations

Policymakers should tailor policies and programs to scale up climate investment in adaptation and less developed mitigation sectors, including forestry, smart agriculture, and energy efficiency, as the bulk of Brazil's emissions come from agriculture, deforestation, and land use. In this section, first a six-step framework for climate-investment policymaking is suggested. Then, specific policies are suggested towards solar sector, which has great potential but is stagnated in Brazil.

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[6] Brazil (2015). The main Brazilian NDCs targets are: reduce emissions to 37% below the 2005 levels in 2025 and 43% below 2005 levels in 2030 and reach an energy matrix with 23% of renewables other than hydropower by 2030. See Brazil's submitted INDCS at: http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx

[7] IFC (2016): Of the investment potential of US$ 1.3 trillion in climate-related projects by 2030, US$ 318 billion should be made by 2020, of which: US$ 54 billion in the power sector – wind (US$ 32B), biomass (US$ 12B), solar (US$ 8B), small hydro (US$ 2B); and 264 billion in urban infrastructure – transport (US$ 209), smart buildings (US$ 50B), and waste and wastewater management (US$5B).

Six-Steps Climate-Investment Framework:

1. Define clear, quantitative targets.

2. Set a clear regulatory framework to enhance confidence and crowd in private investors.

3. Track good, bankable projects across sectors.

4. Provide capacity-building approaches to the following actors:

    - Project developers and local banks: Project preparation and management, and financial risk evaluation and mitigation.

    - Local communities (rural, urban, cooperatives, associations): technical and management skills (solar or wind decentralized or off-grid units, for instance).

5th. Set pilot: test, evaluate, and improve policy framework and business model.

6th. Implement, monitor, roll out, evaluate and enhance the programme.

Two approaches for policy-makers apply to the solar PV in Brazil:

1. Fostering distributed, small solar PV units to reduce complexity and costs by targeting the demand side (income, population and tariff), since demand elements have been determinant to the adoption of distributed solar PV in Brazil. For example, set a coordinated programme including central, state, and municipal governments and communities, and project developers.

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2. Targeting large centralized solar projects and set programmes to bring decentralized solar initiatives together to achieve economies of scale, as large projects have potentially greater impacts. Green infrastructure projects are particularly important for Brazil because they contribute both with NDCs and have positive externalities such as enhancing basic infrastructures to local communities, since the most suitable municipalities to solar PV and wind complexes are surrounded by very vulnerable, poor communities.

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Limitations of the Framework

Of course, these recommendations may be worthwhile, but there may have some challenges to implement them. First, the 6-steps framework should not be considered one-size-fits-all solution because some niches, states or municipalities face specific challenges. For instance, some very small villages in rural areas (where many large wind farms projects are built), lack institutions with basic knowledge to deal with the requirements of such projects. Thus, in such municipalities a capacity building approach should be considered before applying the framework.

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Conclusion

This policy paper raised the challenge of climate-finance in Brazil and suggested a framework for policymaking on scaling up climate-investment on the Country, in addition to a specific suggestion to approach the solar sector, due to the momentum this sector is enjoying. Finally, of course, this framework does not claim be considered a one-size-fits-all solution since some specific needs may be present, such as the lack of technical capacity of small municipalities, to which a capacity-building action may be considered beforehand.

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