Climate Change and Environmental Risks in the Financial and Private Sector and Opportunities for Green Finance
# Table of Contents

Acknowledgments .................................................................................................................. iv

Acronyms and Abbreviations ................................................................................................. v

Executive Summary .................................................................................................................. vi

1 Climate and Development in the Philippines .................................................................... 1

2 Financial Sector Authorities’ Response to Climate Risk .................................................... 4

2.1 Financial Sector’s Vulnerabilities from Climate Change .................................................. 4

2.2 Supervisory and Policy Response from Financial Sector Authorities and Recommendations .................................................................................................................. 6

2.2.1 Banking Sector ................................................................................................................. 6

2.2.2 Disaster Risk Finance ....................................................................................................... 9

2.2.3 Insurance Sector ............................................................................................................. 12

3 Barriers and Opportunities to Deepen Green Finance and Investments ............................... 15

3.1 Government Initiatives on Green Finance and Investments ............................................ 15

3.1.1 Financial Sector ............................................................................................................. 16

3.1.2 Private Sector ................................................................................................................. 18

3.2 Barriers to Green Finance and Investments ...................................................................... 20

3.3 Stimulating Green Finance and Investments ..................................................................... 23

4 Barriers and Opportunities to Promote Uptake of Green Investments by Private Sector 26

4.1 The Role of the Private Sector in Climate Mitigation Actions ............................................. 26

4.2 Barriers to Promote Uptake of Green Investments by Private Sector .............................. 27

4.3 Selected Case Studies on Firms Making Green Investments ............................................ 30

4.3.1 Circular economy .......................................................................................................... 30

4.3.2 Electric vehicle industry ............................................................................................... 31

4.4 Recommendations ......................................................................................................... 32

4.4.1 Use price signals .......................................................................................................... 32

4.4.2 Remove or lower regulatory obstacles .......................................................................... 33

4.4.3 Fill knowledge gaps ..................................................................................................... 33
Acknowledgments

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The background paper contains updated and synthesized analysis and recommendations from the Philippines Financial Sector Assessment Program (FSAP) Technical Note on Climate Change and Environmental Risks and Opportunities, Policy Paper on Assessment of Incentives for Green Investments and Recovery, and new research conducted by the team.
<table>
<thead>
<tr>
<th>Acronyms and Abbreviations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<td>BSP</td>
<td>Bangko Sentral ng Pilipinas</td>
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<tr>
<td>CCC</td>
<td>Climate Change Commission</td>
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<tr>
<td>DOE</td>
<td>Department of Energy</td>
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<tr>
<td>DOF</td>
<td>Department of Finance</td>
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<tr>
<td>DOLE</td>
<td>Department of Labor and Employment</td>
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<tr>
<td>DTI</td>
<td>Department of Trade and Industry</td>
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<tr>
<td>ESG</td>
<td>Environmental, Social, and Governance</td>
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<tr>
<td>ESRM</td>
<td>Environmental and Social Risk Management</td>
</tr>
<tr>
<td>FI</td>
<td>Financial Institution</td>
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<tr>
<td>FSAP</td>
<td>Financial Sector Assessment Program</td>
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<tr>
<td>FSB TCFD</td>
<td>Financial Stability Board - Task Force on Climate-related Financial Disclosures</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GEMC</td>
<td>Growth and Emerging Markets Committee</td>
</tr>
<tr>
<td>GFDRR</td>
<td>Global Facility for Disaster Reduction and Recovery</td>
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<tr>
<td>GHG</td>
<td>Green House Gasses</td>
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<tr>
<td>FDI</td>
<td>Foreign direct investment</td>
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<tr>
<td>IACSF</td>
<td>Inter-Agency Council on Sustainable Finance</td>
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<td>IAIS</td>
<td>International Association of Insurance Supervisors</td>
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<tr>
<td>IC</td>
<td>Insurance Commission</td>
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<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
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<td>INDC</td>
<td>Intended Nationally Determined Contributions</td>
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<td>IOSCO</td>
<td>International Organization of Securities Commissions</td>
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<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<tr>
<td>IRR</td>
<td>Implementing Rules and Regulations</td>
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<td>LGU</td>
<td>Local government unit</td>
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<tr>
<td>KYC</td>
<td>Know-Your-Customer</td>
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<td>MDB</td>
<td>Multilateral Development Banks</td>
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<td>MFI</td>
<td>Microfinance Institution</td>
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<tr>
<td>NDC</td>
<td>Nationally determined contributions</td>
</tr>
<tr>
<td>NDRRMC</td>
<td>National Disaster Risk Reduction and Management Council</td>
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<tr>
<td>NDRRMF</td>
<td>National Disaster Risk Reduction and Management Fund</td>
</tr>
<tr>
<td>NGFS</td>
<td>Central Banks and Regulators Network for Greening the Financial System</td>
</tr>
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<td>NPL</td>
<td>Non-performing loan</td>
</tr>
<tr>
<td>PDP</td>
<td>Philippine Development Plan</td>
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<tr>
<td>PEP</td>
<td>Philippine Energy Plan</td>
</tr>
<tr>
<td>PIRA</td>
<td>Philippines Insurance and Reinsurance Association</td>
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<tr>
<td>PSA</td>
<td>Philippine Statistics Authority</td>
</tr>
<tr>
<td>SEC</td>
<td>Securities and Exchange Commission</td>
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<tr>
<td>SBN</td>
<td>Sustainable Banking Network</td>
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<tr>
<td>SBN</td>
<td>Sustainable Banking Network</td>
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<tr>
<td>SIF</td>
<td>Sustainable Insurance Forum</td>
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<td>SFF</td>
<td>Sustainable Finance Framework</td>
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</table>
Executive Summary

The Philippines faces substantial economic costs from climate change and the private sector must take meaningful action on adaptation and mitigation to reduce them. The country is vulnerable to both extreme events and slow-onset problems, making adaptation critical. While it cannot eliminate climate change's costs entirely, adaptation can substantially reduce them. In turn, many adaptation measures also contribute to mitigation, and many mitigation measures generate local co-benefits, such as reduced air pollution. Despite being a low GHG emitter, the Philippines' emissions are growing, mainly from the energy, agriculture, and transport sectors.

This background paper examines the Philippine financial and private sectors' responses to the adaptation and mitigation challenges of climate change. On adaptation, it provides an overview of the financial sector authorities' supervisory and policy response to climate change vulnerabilities. However, a knowledge gap exists on Philippine firms' exposure to climate risks across sectors and regions, making it challenging to formulate adaptation actions by the private sector. On mitigation, the paper analyzes barriers and opportunities to deepen green finance and investments and promote the private sector's uptake of green investment, proposing policy recommendations for the Government of the Philippines.

The financial sector plays a fundamental role in allocating capital towards socially desirable activities and facilitating the engagement of businesses in developing and supplying goods and services consistent with a transition to a greener economy. Because of this, the government continues to develop the financial sector through the introduction of legal and regulatory changes that create the enablement environment conducive to such green investments that can be funded through the financial sector. Once again, there are concerns about the financial sector's capacity to help channel funds towards climate change mitigation and adaptation, but also about this sector's vulnerability to climate-related risks.

The Philippines financial sector is highly vulnerable to climate risks and has an important role to play in reaching the country's climate goals. Through the credit channel, climate change and natural disasters pose significant risks to financial system stability. The IMF-World Bank Financial Sector Assessment Program (FSAP) 2020 shows that typhoons have a significant impact on banking sector solvency and nonperforming loans, confirming the significance of credit risk materialization brought on by physical risks. The stress testing results show that climate change in the next 20 to 40 years may significantly worsen the impact of a severe typhoon on bank capital, especially in tail events such as a joint shock with both a severe typhoon and a pandemic. Also the banking sector is exposed to transition risks due to a sizable 8-percent loan exposure to coal-based power generation. Importantly, Philippine insurers face the challenge of considering climate-related risks—physical and transition risks—and the multifaceted nature of climate change in their business models, compelling them to update their risk management tools, strategies and procedures, and change their pricing and reinsurance coverage. As financial sector plays a key role in transforming the real economy by addressing market failure and changing the cost of capital, addressing climate-related financial risks is critical to improve the Philippines ability to mobilize the much-needed resources to reach climate goals.

The Department of Finance and financial sector regulators have taken the lead in fostering the development of green practices in the financial sector and new financial instruments. The Department of Finance (DOF) and the Bangko Sentral ng Pilipinas (BSP) launched the Sustainable Finance Roadmap in 2021 that provides a comprehensive framework and action plan on greening the financial system and financing of sustainable activities. The DOF also issued sovereign green, social and sustainability bonds framework to encourage public and private investment in green
projects and issuance of sovereign green bonds. Building on the BSP’s Sustainable Finance Framework for all regulated banks mandating the incorporation of sustainable finance principles in their corporate governance and risk management practices, the BSP is issuing a series of guidelines for banks. The Securities and Exchange Commission (SEC) has played a key role in fostering green and sustainability bonds by issuing regulations formalizing the use of the ASEAN green bonds and sustainability bonds standards in the country. The Insurance Commission (IC) is taking concrete steps to facilitate the development and supply of catastrophe insurance products by local insurers, for instance through the pooling of risks among catastrophe insurance providers and facilitating the transfer of such risks to international reinsurers.

**Building on recent initiatives, financial sector regulators can build capacity to better understand and manage climate risks.** The BSP and the IC have yet to undertake substantive efforts to integrate climate and environmental risks in their supervisory approach. Given the materiality of these risks, both entities should undertake an extensive risk assessment to improve their understanding and raise awareness of the impact of climate change risks on the financial sector and supervisory objectives. These entities should also strengthen data collection and monitoring of regional and sectoral exposures to climate and disaster risks. At the same time, BSP should further integrate climate risks, and broader environmental risks, in its supervision by integrating climate risks in its macro-prudential stress testing framework, and issue updated stress testing guidelines to the banking sector incorporating climate risks.

The financial sector regulators should advance initiatives on climate risk disclosures to foster transparency. The BSP under the Financial Sector Forum has initiated efforts to start harmonizing the climate risk disclosure framework across financial sector. Overall, there is significant room to incorporate climate risk disclosure into the Basel Pillar 3 framework for banks\(^1\), as other supervisors have been doing (see, for example, the European Banking Authority, EBA). In addition, the content of the disclosure should be aligned to best international standards: Financial Stability Board’s Task Force on Climate-Related Financial Disclosures (FSB TFCD) Recommendations (governance, strategy, risk management, metrics and target) and International Sustainability Standards Board (ISSB) Climate-related Disclosures.

Addressing several market and institutional barriers could catalyze green growth, that is, economic growth and development that ensures that natural assets continue to provide the resources and environmental services. Total domestic corporate issuance in the Philippines stands at $7.2B equivalent, about 13 percent of issuance was green. With limits in public spending, there is great need, but also a significant opportunity for the private sector to contribute to green inclusive growth, including finance for climate resilience and mitigation efforts. To scale up emerging initiatives in the financial sector, several measures could be considered.

- **A green finance taxonomy should be introduced to support measuring and labeling of green and sustainable financial products.** It is currently difficult for Philippine financial sector stakeholders to identify green projects and assets. A taxonomy is a classification of green and sustainable (and unsustainable) economic activities established to clarify which investments are environmentally sustainable in order to help investors make greener choices. It could form the backbone for labeling green finance products, set prudent regulations or build benchmarks. Recently, the European Union and China introduced such taxonomies and useful insights can also be drawn from green bond taxonomies and FSB TCFD recommendations. For the Philippines, it is advisable to build on, and align efforts as much as possible with, these global best practices, potentially in coordination with ASEAN partners. The recently issued

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\(^1\) Pillar 3 of the Basel framework, as published by the Basel Committee on Banking Supervision, seeks to promote market discipline through regulatory disclosure requirements.
Sustainable Finance Roadmap has tasked the Financial Sector Forum (FSF), an interagency initiative led by the BSP, to develop a green finance taxonomy (informed by the ASEAN initiative) that can help to better define green and sustainable financial products. Coordination will help to provide investors with consistency, which will better stimulate investment.

- **A national platform on green finance could increase knowledge among banks and other financial institutions to originate and manage green investments.** Capacity at financial institutions to originate and manage green loans and investments is limited. BSP could facilitate capacity building via a national platform on green finance, and there are good examples relevant to the Philippines such as the Sustainable Finance Platform in the Netherlands. The platform should encourage commitments from senior management and set up technical working groups to address green finance barriers and identify opportunities.

- **Innovative capital market instruments should be introduced to stimulate long-term investments in green and sustainable projects.** The availability of green capital market instruments is low, limiting long-term financing for green projects, and the country’s ability to attract investments from investors seeking green opportunities and impact. Philippines could leverage the initial positive results in developing local sustainable debt markets to expand green financing to a broader set of businesses. Based on a statistical benchmarking exercise, the average size of sustainable bond markets in the Philippines, at 1.14 percent of GDP, is 0.34 percentage points (or 43 percent) above its expected level. In this context sovereign green bonds could help raise awareness for the country’s pipeline of green infrastructure investments and diversify its investor base. Introducing innovative blended finance instruments, like strategic investment funds, could help leverage limited public spending for green projects with private capital.

**The role of the national development banks and the national guarantee fund could be expanded to support green activities more explicitly.** The role for national development banks as catalyzers for green finance is being explored in several countries. A national development bank sits at the nexus of policy and private sector lending, and it should operate where the market is unwilling or unable to provide finance. In Philippines three roles could be considered by these institutions (i) facilitating the structuring of financial transactions, including green bonds, and subsidizing initial transactions costs particularly for smaller companies that may have limited experience with capital markets; (ii) extending dedicated wholesale credit lines targeting specific green projects such as those identified by the Development Bank of Philippines as part of its analysis for use of proceeds in its green bond issuance through commercial to generate the necessary know how among the private financial institutions to target clients financing green projects; and (iii) deploying the resources of the Philippine Guarantee Corporation to target companies engaged in green projects.

**Further develop catastrophe risk insurance markets with support from the public sector.** Private catastrophe risk insurance penetration is low and likely to be further obstructed by increasing impacts from climate change and difficulties for insurers to transfer risks to international reinsurance markets. Introducing catastrophe risk insurance for households and farmers, and enabling better access to reinsurance through risk pooling by insurance companies will help spread risk, better manage government contingent liabilities, and enable timely and cost-effective coverage for damages from natural calamity. International good practices demonstrate that public-private partnerships help strengthening catastrophe risk insurance markets. In 2022, the government has established the Philippine Catastrophe Insurance Facility, which is in the process

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2 The Financial Sector Forum consists of the Bangko Sentral ng Pilipinas (BSP), the Securities and Exchange Commission (SEC), the Insurance Commission (IC) and the Philippine Deposit Insurance Corporation.
of securing a reinsurance protection and the efforts are underway to reform the Philippine Crop Insurance Corporation by the government.

Climate change poses significant risks for the financial sector, but there are also opportunities for deepening the financial sector to channel and incentivize green financial flows towards climate adaptation and mitigation. Going forward, the authorities should play an active role in integrating such climate risks in their supervisory approach and encouraging financial institutions to better understand and manage such risks through data collection, disclosure, and risk assessment. At the same time, authorities could take measures to address several market and institutional barriers to the deepening of green financial markets. These measures include the development of a green finance taxonomy, building a national platform on green finance to increase knowledge flows, introduce innovative capital market instruments, expand the role of national development banks and guarantee fund to support green activities and fully operationalize the PCIF to develop a sustainable market for catastrophe risk insurance.

In addition to measures to deepen green finance and investments, the Government of the Philippines recognizes that the private sector should play a large role in achieving the nation's climate mitigation targets. In the National Climate Action Change Plan 2011-2028 by the Climate Change Commission (CCC), the government identified the need to foster climate-smart business and financial sectors that can generate green jobs and contribute to direct capital flows towards activities that can make the country more resilient to climate change. The government has committed to the Nationally Determined Contribution (NDC) of 75 percent reduction in projected cumulative GHG emissions relative to business as usual (BAU) scenario by 2030, emphasizing the role that public-private collaboration will play in achieving the Philippines climate change adaptation and mitigation ambitions. This is consistent with an estimated USD 168 billion in investment opportunities that can generate 3 million cumulative new direct jobs in the Philippines between 2020 and 2030.3

The government has implemented and designed technology-push and demand-pull policies to accelerate adoption of green technologies by the private sector. Technology push policies currently in place include the Energy Efficiency and Conservation Act, Renewable Portfolio Standards, and a Moratorium on Greenfield Coal-fired Power Projects. Demand-pull policies include tax incentives under the Corporate Recovery and Tax Incentives for Enterprises (CREATE) Act and the Green Jobs Act, Green Energy Tariff Program, and support for research and development (R&D) for green technologies. As many of these legislations have only recently been implemented, it is too early to assess the impact of these policies although they are in the right direction. Other forms of governmental support, mainly grants and capacity building programs, for greening the private sector have yet to reach full potential.

Nevertheless, a lack of pricing of negative externalities of climate change, limited knowledge about the economic benefits of green technologies have undermined the business case for green investments. Private sector engagement on green growth is based, first and foremost, on pricing reforms that increase the profitability of clean energy investment and reduce that of more polluting technologies. The government has begun removing fossil fuel subsidies in the 1990s, and current subsides are relatively low compared with other countries, but it has not yet introduced an emissions trading scheme or carbon tax. Limited knowledge and awareness about the economic benefits of green technologies has also hampered demand for green investment. Existing policy instruments designed to support R&D and innovation may not be sufficiently targeted to generate green technologies applicable for Philippine firms.

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Although the recent regulatory reforms have liberalized the foreign direct investment (FDI) regime and incentive schemes targeting green sectors have been introduced, other barriers limit green investment. The government amended the Retail Trade Liberalization Act, the Foreign Investment Act, the Public Service Act, and the Renewable Energy Act in 2022. These amendments substantially liberalized the FDI regulatory regime and increased the chance for the economy to receive the advanced green technology and management practices to sectors previously restricted. Existing incentive schemes aimed to facilitate firm entry into green sectors and uptake of green investments have been slow to be implemented and not targeted enough to promote uptake of green investments by firms. Lowering non-tariff measures and enhancing protection of IPR could lower the cost of imported green technologies and incentivize foreign firms to bring and license the latest technology without concerns about piracy. Broadly speaking, limited competition, high trade costs, and restrictive business regulations compound the existing barriers for firms to undertake green investment.

Policy recommendations to increase innovation and diffusion of green technologies for the private sector include are grouped into three groups: (1) using price signals; (2) removing or lowering regulatory obstacles; and (3) filling knowledge gaps.

- Price signals could be corrected by using an emissions trading scheme or carbon tax, as well as fines and penalties imposed on firms that fail to comply with the minimum energy performance set by the Energy Efficiency and Conservation Act. Removal of perverse incentives such as subsidies for energy use in agriculture and transport could create incentives for better resource management for firms. Implementation of existing legislations aimed to support the private sector to engage in green investments, namely CREATE and Green Jobs Act that provide tax incentives should be accelerated. Non-tariff measures on importation of green technologies could be lowered.

- Ensuring efficient and effective implementation of the recently passed FDI liberalization reforms would bring technology, financing and management techniques required to deploy green technologies at scale. Consistent enforcement of measures designed to protect IPR could also lower potential concerns of foreign firms. Designing and implementing streamlined certification and verification processes for green technologies, goods, services and jobs could increase uptake of tax incentives available through CREATE and Green Jobs Acts. Continuing implementation of Ease of Doing Business and Efficiency Government Service Delivery Act and digitizing the Bureau of Customs operational processes would benefit firms, including those engaged in green technology deployment.

- Without evidence, policymakers miss an opportunity to design and evaluate implementation of policies that would correctly incentivize the private sector to undertake climate action based on evidence. The government should collect and analyze firm-level data on operations, financing, use of technologies, and managerial capacity to investigate constraints that hinder firms from adopting green technologies. Assessment of business regulations and investment climate in key sectors, including energy, transportation, manufacturing, and agriculture, could highlight regulatory, legal, institutional, and technological constraints that hinder adoption and diffusion of green technologies. It should also monitor implementation progress of existing policies and programs targeted for firms to undertake climate actions. These would include CREATE (DOF and DTI), Green Jobs (CCC and Department of Labor and Employment (DOLE)), firm capability and technology adoption support programs (DTI and Department of Science and Technology (DOST)), R&D grant programs (DOST), among others. Philippine Statistics Authority (PSA) and DTI, in partnership with investment promotion agencies, private sector and academe, could build and maintain a database to monitor the volume of the domestic and foreign investment in strategically important green technologies and firms.
## Main policy recommendations

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Urgency</th>
<th>Pathway</th>
<th>Dev Impact</th>
<th>Lead Agency</th>
</tr>
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<tbody>
<tr>
<td><strong>Financial Sector Supervisory Response</strong></td>
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<tr>
<td>Perform in-depth environmental risk assessments of the impact of climate and environmental risks on banks and insurers.</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>BSP, IC</td>
</tr>
<tr>
<td>Improve information collection and monitoring of relevant climate and environmental risk metrics.</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>BSP, IC</td>
</tr>
<tr>
<td>Develop capacity to stress test prudential impacts of climate change.</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>BSP</td>
</tr>
<tr>
<td>Implement Sustainable Finance Framework by issuing additional guidelines for banks on climate stress testing and climate-related disclosures taking account of FSB TCFD recommendations and ISSB, while ensuring harmonization across financial sector regulators.</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>BSP</td>
</tr>
<tr>
<td>Introduce disclosure guidelines on reporting of environmental and climate risks for insurance companies, taking account of FSB TCFD recommendations.</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>IC</td>
</tr>
<tr>
<td>Build capacity to monitor and supervise uptake of the Sustainability Reporting Guidelines for PLCs and evaluate whether a mandatory approach is needed.</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>SEC</td>
</tr>
<tr>
<td>Conduct an analysis on how investors are integrating sustainability factors into investment decisions and risk management and issue guidelines</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>SEC</td>
</tr>
<tr>
<td>Develop risk-based regulation and supervision methodologies that address insurers’ catastrophe risk accumulation and transfer practices.</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>IC</td>
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<tr>
<td><strong>Deepening Markets for Green Inclusive Growth</strong></td>
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<tr>
<td>Set up a national platform for green or sustainable finance.</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>BSP</td>
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<tr>
<td>Accelerate the development and use of a harmonized taxonomy of green finance and investments</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>BSP, SEC, IC, FSF</td>
</tr>
<tr>
<td>Consider issuing sovereign green bonds within the context of country’s debt management strategy.</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>DOF</td>
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<tr>
<td>Explore the potential for blended finance instruments to stimulate green investments.</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>DOF</td>
</tr>
<tr>
<td>Fully operationalize Philippines Catastrophe Insurance Facility (PCIF) to deepen the catastrophe risk insurance market for households and SMEs.</td>
<td>High</td>
<td>+</td>
<td>+</td>
<td>IC</td>
</tr>
<tr>
<td>Explore the opportunity for further reprioritizing development banks (DBP, LBP) for green growth.</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>DOF, BSP</td>
</tr>
<tr>
<td>Facilitate the development of green financing by the local banking sector through the provision of partial credit guarantees for green activities to commercial banks.</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>DOF, PhilGuarantee</td>
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<tr>
<td>Recommendations</td>
<td>Urgency</td>
<td>Pathway</td>
<td>Dev Impact</td>
<td>Lead Agency</td>
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<tr>
<td><strong>Supporting the Private Sector to Undertake Climate Actions</strong></td>
<td></td>
<td>A</td>
<td>M</td>
<td></td>
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<tr>
<td>Use environmental taxes to discourage harmful activities: Establish a carbon tax or emissions trading scheme to put a price on GHG emissions.</td>
<td>High</td>
<td>++</td>
<td>++ ++</td>
<td>DOF, DOE</td>
</tr>
<tr>
<td>Accelerate implementation of existing legislations aimed to support the private sector to engage in green investments, namely CREATE and Green Jobs Act that provide tax incentives. This includes designing streamlined certification and verification processes for green technologies, goods, and services, and jobs.</td>
<td>Med</td>
<td>++</td>
<td>+</td>
<td>DOF, DTI, CCC, DOLE</td>
</tr>
<tr>
<td>Lower non-tariff measures on importation of green technologies.</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>DOF, NEDA, DTI</td>
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<tr>
<td>Enhance implementation of measures designed to protect intellectual property rights.</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>DTI</td>
</tr>
<tr>
<td>Collect and analyze firm-level data on operations, financing, use of technologies, and managerial capacity to investigate constraints that hinder firms from adopting green technologies</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>PSA, DTI</td>
</tr>
<tr>
<td>Lower barriers that impede competition, ease of doing business, and trade facilitation.</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>DTI</td>
</tr>
<tr>
<td>Monitor implementation progress of existing policies and programs targeted for firms to undertake climate actions.</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>DTI, DOF, DOST</td>
</tr>
<tr>
<td>Monitor the volume of domestic and foreign investment in strategically important green technologies and firms.</td>
<td>Med</td>
<td>+</td>
<td>+</td>
<td>DTI</td>
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**Notes:**  
A: Adaptation pathway; M: Mitigation pathway; +, ++ indicate the expected magnitude of benefits in terms of increased resilience, reduced emissions, and overall development impact.  
1 Climate and Development in the Philippines

The Philippines is one of the most vulnerable countries in the world to natural catastrophes and climate change. The Philippine Archipelago is located in the middle of the Pacific Typhoon Belt which encompasses the countries most exposed to tropical storms and other natural disasters, such as floods, droughts, landslides, earthquakes, tsunamis and volcanic eruptions. With one of the world’s longest coastlines along its 7,641 islands, the country is particularly exposed to extreme weather events, related to the Southwest, Northeast monsoons, El Niño/La Niña events and typhoons reaching the highest super typhoon status. On average, 20 tropical cyclones enter or develop within the Philippine Area of Responsibility, with 8 cyclones making landfall.\(^4\) 60 percent of the Philippines land area and 74 percent of the population is exposed to multiple hazards. These risks are reflected in several catastrophe and climate vulnerability rankings where the Philippines is consistently positioned at the top. The World Risk Report ranks the Philippines as third in disaster risk, and the Global Climate Risk Index Report ranks the archipelago as the fifth most affected country for weather-related losses—with 307 events between 1998 and 2018.\(^5,6\)

Rising temperatures increase both the frequency and intensity of weather-related natural disasters. Southeast Asia as a region is expected to suffer more under the consequences of climate change, compared to the rest of the world.\(^7\) The average historical increase of 0.14 °C per decade impacts less the frequency but more the severity of tropical cyclones and storms. Studies indicate that rising sea surface temperatures is correlated to the destructive power of tropical storms—due to higher windspeeds and increased precipitation. At the same time, heavier rainfall likely exacerbates the scope of floods, occurrence of flash floods and land/mudslides set off by typhoons. Moreover, while temperature increase does not affect the frequency of El Niño and La Niña events, it is likely that it aggravates their intensity, such as the El Niño from 2015/2016 being the strongest on record.

Economic and social impacts due to climate change pose serious risks for the country’s development agenda. Following a rapid development trajectory, the Philippines is the third largest economy in Southeast Asia with a GDP of USD 330 billion.\(^8\) Its economic activities are subject to natural disasters: storms that occur every five years engender losses amounting to 1 percent of national economic activity with local impacts reaching up to 23 percent following storms of the highest intensity.\(^9\) The Asian Development Bank estimates an average annual loss of USD8.4 billion or 2.8 percent of GDP from natural hazards and USD11.6 billion for storms alone since 1992.\(^10,11\) Over a longer period, Germanwatch reports a 0.61 percent loss of GDP between 1997-2016, positioning the Philippines as the fifth most affected country in the Long-Term Climate Risk Index.\(^12\) Moving forward, the Philippines is likely to be exposed to higher losses in terms of GDP than other Southeast Asian countries, for which an average loss of 2.2 percent of GDP is predicted by 2100 if accounting for direct market impacts only.\(^13\) In a recent study, rating agency Moody’s predicted a loss of GDP compared to a baseline scenario of 4.85 percent by 2048 for the Philippines under the most severe Intergovernmental Panel on Climate Change warming scenario (RCP 8.5).\(^14\)

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\(^4\) World Bank (2013). Getting a Grip on Climate Change in the Philippines.
\(^7\) Asian Development Bank. (2009). The Economics of Climate Change in Southeast Asia: A Regional Review.
\(^8\) IMF (2019). World Economic Outlook 2019
\(^10\) ADB (2018). Understanding Disaster Risk for Advancing Resilient Development
\(^13\) The inclusion of non-market impacts on health and ecosystems raises this number to 5.7 percent and further to 6.7 percent if catastrophic risks are also allowed for, compared to the business-as-usual scenario.\(^13\)
\(^14\) Moody’s Analytics (2019). The Economic Implications of Climate Change.
While weather and climate extremes affect a large range of economic activities, the rising sea levels pose a disastrous threat to coastal areas and the agricultural sector. Rising sea levels represent a key socio-economic risk as 88.6 percent of Philippine population lives within 100km of the coast. Under a scenario that emphasizes environmental protection and regional solutions, a 0.30m rise in sea level around the Philippines by 2045 would affect about half a million people. Rising sea levels, but also increased impacts from typhoons and droughts are likely to have a very significant impact on the agricultural sector, which represents 14 percent of national GDP and employs about a third of the labor force. Rice is the most important crop, accounting for more than 20 percent of agricultural gross value added. Rice serves as a dietary staple for over 80 percent of the population. Arable land already suffers from saline water intrusion and general soil salinity, particularly in the most populous island, Luzon. Moreover, changing rainfall patterns and ensuing droughts—such as in 1997-1998, due to El Niño and La Niña events - cause large-scale crop failures and dry out the country’s fishponds. In most pessimistic climate scenarios, this rice yield may drop by 75 percent by the end of the century compared to 1990, which is drastically lower than the projected world average.

At the same time, the Philippines is affected by a range of other environmental issues, often interacting with and exacerbating the impacts of climate change. Socio-economic development has come at a cost for the Philippines. During the past century, the Philippines lost half of its mangrove forests to economic development, further aggravating the county’s vulnerability to rising sea levels and storm surges. This trend continues for some areas despite the declaration of protected areas. Coastal erosion also leads to destruction of coral reefs while higher sea temperatures create coral bleaching, impacting marine ecosystems. Deforestation for the development of crop- and grasslands poses a threat to biodiversity and the livelihoods of many population groups, while also contributing to the release of greenhouse gas emissions. Air pollution, predominantly from emissions from motor vehicles, is another problem, particularly in congested areas like Metro Manila. The World Health Organization ranks the Philippines third in Asia for most deaths due to outdoor air pollution.

The Philippines is a relatively low emitter, but emissions are growing. Per capita GHG emissions (1.98 mt CO₂-e in 2020) are among the lowest in East Asia, below those of Indonesia and Vietnam. However, emissions are expected to rise 217 MtCO₂-e in 2020 to 399 MtCO₂-e in 2030. The energy sector accounts for 54 percent of total emissions, while agriculture is the second largest source, accounting for a quarter of emissions. Transport is the biggest fossil fuel-consuming sector and the largest source of urban air pollution; moreover, emissions from transport is expected to more than quadruple by 2050. The overall share of fossil fuels in primary energy supply increased from 60 percent in 2010 to 67 percent in 2019 due to rapid growth of coal-fired power generation and sustained growth in oil demand from transport.

This background paper highlights how the Philippine financial and private sectors are responding to the adaptation and mitigation challenges imposed by climate change. On adaptation, it provides a synopsis of the financial sector authorities’ supervisory and policy response to the sector’s vulnerabilities from climate change. Climate change also poses a substantial threat to the private sector, yet there is little analysis on Philippine firms’ exposure to climate risks across different localities and sectors. This information gap makes it difficult for firms to understand what adaptation measures

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15 A rise of 1.00m by 2080 would affect 2.5 million people living in the Manila Bay coastal area, accompanied by a 5,000 ha land loss.
16 World Bank (2011). Climate Change Country Profile for Philippines
18 Investments in sea walls, drought- and heat-resistant crops represent effective adaptation measures. The rentability of such investments, depends crucially on the global CO2 mitigation to 450-550ppm (ADB, 2009; World Bank 2011).
19 World Bank (2013). Getting a Grip on Climate Change in the Philippines.
21 ADB (2009). The Economics of Climate Change in Southeast Asia
22 Ibid.
23 WHO Global Ambient Air Quality Database (update 2018).
firms can undertake. It also poses challenges for policymakers to leverage the potential role of the private sector in building resilience for the Philippine economy. On mitigation, it analyzes barriers and opportunities to deepen green finance and investments and to promote uptake of green investment by the private sector, with a list of proposed policy recommendations for the Government of the Philippines. The background paper does not offer deep dives on sector-specific vulnerabilities or mitigation action opportunities, because there is a significant gap on the recent, cross-sectoral, and regional firm-level data on operations, financing, managerial capacity, and use of technologies.
2 Financial Sector Authorities’ Response to Climate Risk

2.1 Financial Sector’s Vulnerabilities from Climate Change

The Philippines’ financial sector is highly vulnerable to climate risks. The country has high exposure to natural hazards (typhoons, landslides, floods, droughts, volcanic eruptions), strong dependence on a climate-sensitive agricultural sector, and vast coastlines where all major cities and the majority of the population reside. It lies in the world’s most cyclone-prone region, averaging 20 cyclones each year, of which 8 make landfall. In addition to the cost in terms of forgone output, productivity losses and fiscal and external sustainability, climate change poses risks to the soundness of financial institutions and stability of the overall financial system.

Climate and environmentally related financial risks originate from two type of sources:

- Physical risks originate from extreme weather events and gradual changes in climate, that can lead to economic costs and financial losses. Physical sources of risk can either be gradual in nature, such as rising temperatures and sea levels, and changes in precipitation; or abrupt, as in the case of extreme weather events. Economic impacts can either be insured, leading to underwriting losses for insurance companies, or uninsured, potentially leading to market, credit, and operational losses for a range of financial institutions (including both banks and insurers).

- Transition risks are related to economic adjustment costs during the transition towards a greener, carbon-neutral economy. These risks could be related to climate mitigation efforts, whereby abrupt policies to reduce CO2-emissions and therewith limit climate change, could have a significant impact on the economy. On a broader note, policy pressure to tackle environmental pollution and improve livelihoods, can also lead to significant adjustment costs for companies and households. Disruptive technological change, for example in moving to cleaner sources of energy, as well as changing consumer and market behaviors towards ‘greener’ products and services, could also result in structural economic shifts. When happening abruptly, the transition towards a greener and carbon neutral economy can lead to rapid revaluations of underlying financial assets and hence to market and credit losses.

Physical risks are already highly material for the Philippine financial sector. Typhoons, floods, droughts, as well as geological events like earthquakes and volcanic eruptions, can affect—and in fact are already affecting—credit, market, operational and underwriter risks, therewith threatening the profitability and solvency of banks and insurers. In general, the following key channels are identified:

- Natural disasters, particularly typhoons, have significant impact on credit risks. Disasters tend to affect repayment capacity of borrowers and can damage underlying collateral, potentially affecting a bank’s profitability and solvency. For the Philippines regression results show that the occurrence and size of a typhoon has a significant and sizable impact on the non-performing loan ratios, providing strong evidence for increases in defaults in the aftermath of a storm (details below). During interviews with BSP and banks, it was reported that rural and agricultural exposure, and therewith rural and cooperative banks, are most significantly affected by the impacts of typhoons. In contrast to universal banks, these banks predominantly operate in the regions and hold sizable exposures in loans for the agricultural sector (17.5 percent).

- Financial institutions operating in the Philippines face high operational risks from natural disasters. BSP reports that in the aftermath of storms and natural disasters, banks are faced with severe disruptions of operations resulting from damage to infrastructure and branches. These events impact the efficiency with which financial institutions can recollect loans, as well as their ability to support communities affected with first aid and loans for reconstruction.

- Market risks can arise from equity and bond holdings by banks and investors. Catastrophic events, as well as the slow-moving impacts of temperature and sea level rise, can affect the valuation of
investments. In the Philippines, banks can be affected in such cases through sizable investment portfolios, totaling 20 percent of total assets as of end-December 2018. About two-thirds (14 percent of total assets) of those investments are in government securities, with government bonds representing 8 percent of total assets. A small part of the total balance is invested in corporate securities (around 8.5 percent of total investments, or 1.7 percent of total assets).

- **Underwriting risks are present for the insurance sector.** Large scale disasters can affect an insurer’s ability to pay out claims. During interviews, industry stakeholders reported difficulties following large typhoons. The aftermath of Yolanda showed that the sector was significantly affected by claims as a result of typhoon damages, even though catastrophe insurance penetration is low. Yolanda also affected the micro insurance sector, which paid out over PHD 500 million in claims.

As an example of physical risks for the financial sector, the effects of typhoon damage on the non-performing loan (NPL) ratio were assessed for the 2011-2018 period. The NPL ratio is defined as the number of NPLs over the total bank loan portfolio of a region. The damage ratio for each typhoon year was calculated, which divides the total amount of typhoon damage by the GDP of the respective region. The panel regression shows that typhoon damage ratios have a significant and sizable impact on regional NPL ratios, after controlling for economic growth and the heterogeneity between regions. For a 1 percent rise in the typhoon damage ratio, the NPL ratio tends to rise by 0.66 percent in the same year on average. The impact remains severe up to two years later but loses its significance in the third year. The data aligns with remarks from market participants who observed similar patterns in affected portfolios.

**Climate change may significantly worsen the impact of a severe typhoon on bank capital, especially in especially severe events.** The results show that climate change in the next 20-40 years may significantly worsen the impact of a severe typhoon on bank capital, pushing the banking system well below the minimum regulatory capital adequacy threshold, especially in especially severe events such as a joint shock with both a severe typhoon and a pandemic (Figure 1). This result is based on a novel stress test conducted to assess the impact of severe typhoons on financial sector exposures. Following the assessment above, the stress test combines climate science analysis, catastrophe risk models, and a macro-financial model that measures the macroeconomic impact of physical capital losses. Macro-financial impacts were estimated for once in 25 years and once in 500 years typhoons. This was done for a current scenario (as of today) and a future scenario (mid-21st century) based on a severe globally accepted climate scenario (Representative Concentration Pathway, RCP, 8.5). For both the current and future scenarios, estimates of losses of physical capital due to the modeled typhoon impacts were used to calculate subsequent GDP and banking sector shocks. The typhoon shock is applied to a “normal time” baseline (pre-COVID) and to an extreme tail event where a pandemic and a severe typhoon materialize at the same time. The impact is measured for a time horizon of five years from the year the disasters occur.

**Philippine banks are also exposed to transition risks through holdings in polluting and CO2-intensive industries.** The literature on transition risks is mostly focused on so called stranded assets, i.e. assets that lose economic and financial value due to stricter regulations to reach climate goals, rapid changes in carbon neutral technology and changes in behavior of consumers and markets. In that sense, the sizable coal exposure of Philippine banks is notable: loans to power generation (from all energy sources) constitute about 10 percent of their total loan portfolio. Based on (limited) information provided by banks and specialists, it is estimated that about 8 percent of the total loan books of banks are currently invested in coal, making up a sizable proportion of the 10 percent of bank portfolios invested in power generation. Coal-based power generation contributes heavily to climate change and it is estimated that large amounts of coal may never be used if the world is to keep the average rise in temperature below 2 degrees Celsius. Globally, this exposes the coal industry to public and political scrutiny and pressure to close operations before assets have fully depreciated. Coal also faces
significant price competition from cleaner, alternative energy sources, most notably renewables which are falling in price.

Figure 1. The Impact of Climate Change on Bank Solvency through Typhoons

Source: Philippines Financial Sector Assessment Program Technical Note on Climate Change and Environmental Risks and Opportunities. This figure shows the impact of typhoons on bank capital relative to baseline over a period of up to five years after the initial shock materializes, for both scenarios described in the text. There is slight revision to the World Economic Outlook (WEO) forecast in January following October release.

2.2 Supervisory and Policy Response from Financial Sector Authorities and Recommendations

2.2.1 Banking Sector

This section builds on the joint FSAP and ongoing technical assistance work on supervisory guidelines for the banking sector. This section reviews assessment of BSP’s supervisory response to climate-related risks against a set of emerging global good practices in the areas of supervisory methodology, risk assessment, information collection and monitoring, capacity for stress testing, Network for Greening the Financial System (NGFS) membership, disclosure guidelines and sustainable investment. It then reviews current efforts and significant progress made since the FSAP assessment, including the launch of the sustainable finance roadmap and supervisory guidelines on environmental and social risk management. Based on ongoing work, the section will provide recommendations on supervisory guidelines on governance, risk management, stress testing and disclosure of climate-related risks.

2.2.1.1 Background

The Bangko Sentral ng Pilipinas (BSP) is stepping up its action on climate risk. The Sustainable Finance Framework (SSF) and the ESRM Framework provide a robust regulatory environment for embedding climate related financial risk in the banking regulation and supervision. For listed banks, the framework is completed by the SEC sustainability reporting guidance.

However, when compared with the upcoming Basel Committee on Banking Supervision (BCBS) Principles for the effective management and supervision of climate related financial risk, the Philippines exhibit points of improvements. The BSP should consider enhancing its regulatory framework in relation to (i) capital and liquidity adequacy, (ii) management of market and liquidity risk, (iii) stress testing. Moreover, it could be considered a stricter alignment of the disclosure framework
to the upcoming sustainability standards, for both listed and unlisted banks, and in future to leverage on Basel Pillar 3 framework.

2.2.1.2 Current Reform Initiatives and Remaining Gaps

The Sustainable Finance Framework (SFF, Circular n. 1085 series of 2020) laid the foundation for the integration of sustainability principles in the banks’ corporate governance and risk management framework. It defines duties and responsibilities of banks’ Board of Director which include the adoption of sustainable principles, the promotion of a culture that foster environmentally and socially responsible business decisions, the approval of an environmental and social risk management system (ESRM), the communication of sustainability objectives and policy across the institution, the adoption of an effective organization structure and adequate resources to ensure the attainment of sustainability objectives, and the integration of the sustainability agenda in the bank’s appraisal system.

The SSF spells out also the Senior Management responsibility. Senior managers are responsible for the overall implementation of bank’s strategy in relation to the sustainability objectives. Senior managers should assess the relevance of the policy, considering the development of the business environment; facilitate the identification, assessment, monitoring and mitigation of environmental and social risk (E&S); assess the consistency of the operation and performance of personal with the bank’s sustainability objectives; inform the Board of Director on a regular basis of the bank’s exposure to E&S.

A critical role is assigned to environmental and social risk management system (ESRM). It should define the risk appetite of the bank; provide guidance in assessing E&S risks and tool for monitoring them, integrate E&S risks in the stress test, and identifying the personal responsible for overseeing E&S risks. The Audit and Compliance function should also incorporate in the respective program the assessment of adherence to policy related to the management of E&S risk.

The SSF requires also banks to disclose E&S risks in their annual report. Disclosure should include sustainability/strategic objective and risk appetite; overview of E&S risk management system; product and services aligned with international sustainability standards; banks E&S exposure per industry and sectors; information on existing or emerging E&S risk; other initiative to promote adherence to internationally recognized sustainability standards.

The subsequent Circular n. 1128/2021 on the ESRM Framework articulates how environmental and social risks (E&S) affect the credit risk management system and the operational risk management system (ORMS). The Board of Directors should set strategic E&S objectives and target covering short-, medium- and long-term horizon for the integration of E&S risks in lending operations. The objectives might include the expansion of sustainable financing. The senior manager should monitor then implementation of credit strategy, policies and procedures, ensuring that E&S risks are considered in the underwriting and pricing standards, and periodically report to the Board. E&S risks should inform credit policies and procedures, including metric, target and limits, due diligence, collateral, credit internal rating system, stress testing and scenario analysis.

The ORMS should identify, assess, monitor, report and manage E&S risk. Business continuity plans should consider the impact of physical and transition risk, as well as other E&S risk, covering the assessments of bank’s capability to withstand disruption, quickly resume operations, and continue to provide services to its clients. Banks should not be confined to historical data but should also consider available information from publicly available source or through collaboration with external organization. Metrics includes stakeholders engagement, trend analysis, SWOT analysis, catastrophe model. E&S risk should also be considered in the due diligence of third-party providers.

Banks should establish and effective system of internal control around E&S risk. This should include mitigating action, like for example, insurance coverage. If compared BCBS Principles for the effective management and supervision of climate related financial risk, the framework needs to be
strengthened in relation to capital and liquidity adequacy, management of market and liquidity risk, and stress testing.

The framework does not mention internal capital and liquidity assessment process (BCBS, 2022, Principle n. 5). We would recommend that BSP requires banks to incorporate climate risk on ICAAP and ILAAP. This can be done progressively, as the methodologies and data used to analyses this risk continue to mature over time and analytical gaps are addressed.

The ESRM is silent on market and liquidity risk (BCBS, 2022, Principle n. 9 and 10). The framework could be integrated requiring banks to assess how climate-related risk drivers could impact the value of the financial instruments in their portfolios, evaluate the potential risk of losses on and increased volatility of their portfolio, and establish effective processes to control or mitigate the associated impact. In the same vein, banks should be requested to assess the impacts of climate-related financial risks on net cash outflows (e.g. increased drawdowns of credit lines, accelerated deposit withdrawals) or the value of assets comprising their liquidity buffers. Where material and appropriate, banks should incorporate these impacts into their calibration of liquidity buffers and into their liquidity risk management frameworks.

While the SSF and the ESRM Circulars put emphasis on climate risk stress testing and sensitivity analysis, the Guidance on the conduct of stress test exercise has not been updated to integrate E&S risk. Updating Sec. 151 of the Manual of Regulation for Banks (Dec. 2018) would allow BSP to incorporate BCBS 2022 Principles n. 12 and 18. Climate risk stress testing exhibits some peculiarities, which warrants attention. For example, the time horizon for transitional risk scenario should be longer than the traditional stress test exercise; however, this increases the uncertainty surrounding the quantification of both exposure sizes and potential losses. Moreover, the traditional static balance sheet assumption is not realistic and Supervisors should consider management actions taken by banks to mitigate climate risk; nevertheless, ensuring comparability of outcomes in a dynamic balance sheet assumption is more complicated. In addition, disclosing individual bank’s results might not be opportune, considering the uncertainty attached to the exercise: a disclosure of aggregate results might strike the right balance between financial stability and market discipline.

2.2.1.3 Recommendations

To address these gaps, the government may look to strengthen the framework for climate risk disclosure. Firstly, there is room to incorporate climate risk disclosure into the Basel Pillar 3 framework, as other Supervisors have been doing (see, for example, the European Banking Authority (EBA)). Second, the content of the disclosure should be aligned to best international standards: Financial Stability Board’s Task Force on Climate-Related Financial Disclosures (FSB TFCD) Recommendations (governance, strategy, risk management, metrics and target) and International Sustainability Standards Board (ISSB) Climate-related Disclosures. Third, disclosure requirements for listed banks should become mandatory.

The Philippines supervisory authorities may also build capacity to better understand and manage climate risks and foster transparency. The Bangko Sentral ng Pilipinas (BSP) should undertake substantive efforts to integrate climate and environmental risks in their supervision and sector guidance and have already begun to do so. Given the materiality of these risks, BSP should undertake an extensive risk assessment to improve their understanding and raise awareness of the impact of climate change risks on the banking sector and supervisory objectives. BSP should also strengthen data collection and monitoring of regional and sectoral exposures to climate and disaster risks. At the same time, BSP should further integrate climate risks, and broader environmental risks, in its supervision by (i) integrating climate risks in its macro-prudential stress testing framework, (ii) considering onsite supervision of climate risk management, (iii) and integrating climate and environmental risks in its supervisory ratings. Recently, the Securities and Exchange Commission (SEC) has taken critical steps to ensure transparency by introducing sustainability disclosure.
guidelines for publicly listed companies (PLCs). To ensure uptake, the SEC could consider making disclosure mandatory, and should build capacity to supervise and monitor disclosure.

2.2.2 Disaster Risk Finance

In addition to the banking sector, the financial market could offer instruments that are critical to managing climate and disaster risks. This section will provide an estimate of disaster losses for public and private property based on the results of the catastrophe risk model. It will discuss how these losses become government contingent liabilities and how much the government has already spent on disasters in the past. It will discuss the current efforts to improve financial preparedness and the remaining gaps on fiscal and private sector side, providing recommendations for the next steps.

2.2.2.1 Background

Disasters are contingent liabilities for governments, as they tend to shoulder a significant share of the cost for response and recovery. Such costs can include emergency response, provision of temporary accommodation and welfare assistance, reconstruction of public and sometimes private assets. Unexpected public spending can have severe fiscal consequences, as unplanned expenditures can drain public finances, which can lead to budget volatility and even threaten countries’ fiscal position and debt sustainability, particularly in countries with limited financing options.

Between 2015-18, the Government of the Philippines spent on average 4.32 percent of total government spending on rehabilitation and reconstruction after disasters and crises. Out of this spending, 32 percent was provided through pre-arranged sources of finance at the national and public agencies level and the rest was funded through regular budgets, reallocations, savings, special appropriations and general contingency funds. Over the same time period, the national government covered most of the post-disaster costs with the majority spent on: (i) public infrastructure, (ii) social assistance, and (iii) disaster rehabilitation for agriculture and housing. However, the data is fragmented, so the actual spending is likely higher.25

Catastrophe modelling indicates that the losses following disasters in the Philippines will be substantial. AIR Worldwide estimated that typhoons alone cause, on average, USD2.7 (or 0.71 percent of GDP) per year in direct losses to public and private assets in the Philippines.26 Major typhoon (one that has 1 percent chance to happen each year) could cause devastating losses to public and private assets estimated at USD23 billion (or over 6 percent of GDP). Although more than half of the country is exposed to multiple hazards, the losses following disasters are heavily concentrated in the Metro Manila Region due to the concentration of population and assets.27,28 In addition, recent estimates from climate modeling exercises show that climate change could increase emergency response costs from typhoons by over 50 percent for severe events.29,30

Disasters in the Philippines will affect particularly those who have less capacity to recover on their own. The World Bank estimates that almost half a million Filipinos face transient consumption poverty every year. While the poor suffer less asset losses, they face greatest wellbeing losses estimated on average at USD1.2 billion every year—these losses are 50 percent larger than the average individual

24 The frequency and severity of many natural disasters are exacerbated by climate change, i.e., global warming.
26 In the next fifty years, the Philippines is estimated to have a 40 percent chance of experiencing losses from natural disasters that will exceed USD33 billion, and a 20 percent chance of losses that will exceed USD53 billion. Private losses are expected to account for 96 percent of annual total losses.
27 World Bank, GFDRR, UK Aid, Philippines Catastrophe Risk Assessment and Modeling, January 2018.
28 With a 2 percent urbanization rate per year in 2010-19 (World Bank data), and an associated expansion of the asset base, the Philippines needs to prepare for disasters that can have an even greater adverse impact on the economy and wellbeing.
29 The expected cost incurred from events of various ‘return periods,’ such as a 1-in-100-year event, which is expected to occur, on average, once every 100 years, or with a 1 percent probability in any given year.
31 Wellbeing losses include: (1) people’s ability to maintain their consumption for the duration of their recovery, (2) their ability to save or borrow to rebuild their asset stock, and (3) the decreasing returns in consumption—that is, the fact that poorer people are more affected by a $1 reduction in consumption than richer individuals.
loss in the country. Their precarious economic situation also makes it more difficult for poor households to recover from disasters and asset losses.

**Typhoons could increase market risks in the Philippines' financial sector,** where banks hold sizeable investment portfolios, totaling 20 percent of total assets as of end-December 2018. About two-thirds (14 percent of total assets) of those investments are in government securities, with government bonds representing 8 percent of total assets. The insurance sector also faces increasing underwriting risks—a large scale disaster can affect an insurer’s ability to pay out claims. According to the IMF, if compounded with impacts of the pandemic, typhoons could reduce bank capital ratio by 4½ percentage points. Impacts of hydrometeorological disasters on the financial sector is likely to increase with climate change in the next 20-40 years, especially in tail events such as a joint shock with both a severe typhoon and a pandemic (FSAP 2019).

### 2.2.2.2 Government efforts to promote DRF

In 2015, the Government of the Philippines adopted a national Disaster Risk Finance and Insurance (DRFI) strategy, a key milestone in improving financial planning for disasters. The strategy aims to maintain the sound fiscal health of the national government; develop sustainable financing mechanisms for Local Government Units (LGUs); and reduce the impact on the poorest and most vulnerable and prevent them from falling into a cycle of poverty while also shielding the near-poor from slipping back into poverty. It aims to address the impacts of typhoons, earthquakes, volcanic eruptions, floods and other natural disasters; the Philippines is among the most disaster-prone countries in the world.

Guided by this strategy, the government since led the implementation of a transformative program to increase the country’s financial resilience. It has been expanding its portfolio of disaster risk financing instruments (Figure 2). For example, from 2017 to 2019 the government placed the national parametric insurance program pilot with over PHP 3 billion in premium from the budget, protecting national government agencies and LGUs against typhoon and earthquake risk. Every year, the government allocates resources to the National Disaster Risk Reduction and Management (NDRRM) Fund and Quick Response Funds (available to several selected public agencies) to address the higher frequency of disasters. It has also leveraged contingent lending from international partners. In December 2019, the Philippines sponsored a 3-year, USD225 million CAT bond against natural disasters. The CAT bond was issued in two tranches, with up to USD75 million for earthquakes and USD150 million against losses from tropical cyclones. In 2022, the CAT bond, triggered by typhoon Rai, provided a payout of USD52.5 million. The government is now preparing the National Indemnity Insurance Program to cover strategic high-risk national government assets. The government has established the Philippines Catastro phe Insurance Facility, which aims to pool disaster risk and facilitate reinsurance of catastrophe exposures. It also aims to reform agricultural insurance and the Philippine Crop Insurance Corporation.

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2.2.2.3 Gaps

Preparedness to meet the physical impacts of climate change and increasing costs of disasters is a priority. The government achieved remarkable progress in strengthening financial resilience to disasters and climate shocks, yet challenges remain. On fiscal / budgetary side, these challenges include:

- Contingent liabilities from disasters, climate risks, and other shocks are not fully integrated in the management of fiscal risk;
- Incomplete data on disaster impacts and spending make it difficult to assess efficiency and adequacy of public spending;
- For pre-arranged funding mechanism, budget allocations are not evidence-based and often insufficient;
- Complex approval processes often delay the release of funding from pre-arranged mechanisms, causing delays in response; and
- At local government level, there is lack of clarity on cost-sharing arrangements and LGUs face constraints in allocation, management, utilization, and transparency of disaster response funding.

For example, two key sources of pre-arranged financing—National Disaster Risk Reduction and Management Fund (NDRRM Fund) and Quick Response Funds (QRFs)—are based on fixed amounts or previous year’s needs. The approval processes for accessing the NDRRM Fund are long and there are reports of delays of up to one year or more (compared to 15 to 30 days prescribed timeline). It means that once a disaster materializes, the public agencies will have to search for alternative source of financing. Given how climate change affects severity of disasters, inability to mobilize finance in time will likely increase disaster impacts on the economy and people’s well-being.

On the private sector side, there is large protection gap for farmers, households and SMEs. Domestic catastrophe risk insurance penetration remains low. Strong insurance markets are critical to strengthen resilience of homeowners and SMEs. Yet less than 6 percent of total residential exposures and less than 16 percent of total commercial and industrial exposures were insured against typhoon and flood in 2018.
Post-disaster financial support to the agriculture sector in the country does not sufficiently leverage appropriate risk financing and insurance to ensure it efficiently targets the poorest subsistence farmers. The Philippines Crop Insurance Corporation (PCIC) offers agricultural insurance solutions, with significant and growing government support, but these do not adequately address the needs of smallholder subsistence farmers. Only one third of farmers in the Philippines is protected by agricultural insurance despite the provision of large premium subsidies by the government. As one of the most disaster-prone countries in the world with a fast-growing population and high exposure to climate change, it is vital to further improve resilience of the Philippines to disasters.

2.2.2.4 Recommendations

To address these gaps, the government should integrate financial planning for climate shocks and disasters holistically across all levels of society.

At the national level, to efficiently manage continent liabilities, the government should:

- Ensure adequate funding is available for efficient disaster response and rehabilitation, while protecting the government balance sheet. This includes introduction of risk-based budgeting through development of annual risk finance plans that set out how the government will finance disaster related contingent liabilities, linked to a broader fiscal risk statement. This includes also introduction of a dedicated fiscal-risk management function with a clear mandate for risk finance planning.
- Ensure efficient spending post-disaster, including by strengthening existing mechanisms (such as the NDRRM Fund) and improving the process to monitor, report on, and control public disaster spending.
- Control contingent liabilities from loss to public assets including scaling up the financial risk management of public assets through utilizing private insurance markets and scaling up the National Indemnity Insurance Program.

At the subnational level, the government should clarify cost-sharing arrangements between national government and LGUs, strengthening LGU financial management and reporting capacity, and exploring ways for LGUs to establish a joint structure to work together and pool all or part of their Local Disaster Risk Reduction and Management Funds.

For households and SMEs, the government should increase financial protection of homeowners and SMEs through deepening catastrophe insurance markets, and exploring new shock responsive financial solutions for SMEs, for example by leveraging existing mechanisms for SME finance such as PhilGuarantee.

For farmers, the government should focus on: (1) reforming the PCIC, strengthening its operations and risk management and crowding in the private sector; (2) strengthening agricultural insurance market including by an in-depth review of the existing products and introduction of new products to better fit the needs of different segments of farmers; and (3) creating the enabling environment for agricultural insurance reforms in the Philippines.

2.2.3 Insurance Sector

2.2.3.1 Background

Globally, insurance regulators are increasingly looking at the impact of climate change risks on their prudential objectives and are issuing new regulations. They recognize that climate change can lead to significant negative impacts on underwriting and investment activities. Currently, there are no standards or specific principles on climate change risk in place. Recently, however, the International Association of Insurance Supervisors (IAIS) and Sustainable Insurance Forum (SIF) prepared an issues paper on climate change risks for the insurance sector, providing an overview of existing supervisory activities, and preliminary guidance on better management of climate change risks for the insurance sector.
sector. Amongst other things, they highlight the importance of building-up of knowledge through risk assessments, and having proper supervisory information, tools and methods in place to assess and mitigate risks. These insights on how insurance companies could deal with climate change informed some of the identified gaps and recommendations provided below.

2.2.3.2 Gaps

In the Philippines, understanding of, and information on, the impact of climate change on the soundness and stability of the insurance sector is limited. The IC has not yet undertaken any substantive effort to assess the impact of transition and physical risks on the Philippine insurance sector. Moreover, detailed information on investment exposures and insurance policies are not available (e.g., breakdowns to lines of business, geographic location of assets and liabilities). This lack of data limits the IC’s ability to properly assess and mitigate the impact of climate change and climate-related disasters on the Philippine insurance sector.

Moreover, insurance policies that cover natural catastrophes are not adequately regulated and supervised. Currently, the IC does not have the technical capacity, nor regulations and tools in place, to adequately assess catastrophe risks and ceded reinsurance activity, in particular counterparty risk in reinsurance. This touches on a more general point, that the IC currently is a compliance-based supervisor, lacking a forward-looking and risk-based approach needed to assess and supervise climate and catastrophe risks. Without an adequate risk-based insurance supervision framework that can drive adequate pricing of the risk and ensure insurers have enough capital to cover the consequences of extreme events, there is a significant question regarding the ability of insurance companies to pay claims in the aftermath of an extreme catastrophic event. To support IC in developing a risk-based supervision approach, the World Bank has initiated technical assistance to strengthen the regulatory framework and develop supervisory tools to assess and monitor all types of risks including climate risks.

2.2.3.3 Recommendations

To build understanding of the impacts of climate change, the IC should perform an in-depth climate risk assessment. Given the materiality of climate-related risks for the insurance sector, building awareness and understanding about this risk theme and developing further supervisory activities, should be an important strategic focus for the IC. As a first step, it could commission a risk assessment into the impacts of natural catastrophe and climate change. Such a study could include (i) an assessment of claims exposure of insurers to climate change and catastrophe risk, (ii) a stock-take of risk management practices in the sector, (iii) an assessment of the impact of climate change on future premium development, and (iv) a summary of prudential implications. To support IC in assessing climate risks in the insurance sector, the World Bank has initiated technical assistance starting with a survey of insurance companies on climate risks.

The IC should also ensure that proper information is available and disclosed. It is crucial that the IC has information on sector and geographic distributions of insured assets and investments available in its internal information systems. Performing a risk assessment can help to define what information is already available and where it needs to be further enhanced. In addition, the IC could set public disclosure requirements for insurers on climate risks. As of now, there are no specific disclosure requirements for insurance companies related to material climate or environmental risks, apart from requirements for listed firms set by the SEC (see next section). Following international good practices, and given materiality of risks, the IC could set disclosure requirements on climate-related financial risks as part of their annual reporting requirements. These requirements should cover both the insurance business, as well as the asset management activities by insurers, as both are affected by

39 See FSAP (2019). Technical Note – Insurance Sector: Targeted Assessment of ICPS and Development Issues. This note further explains how the IC’s current comply based form of supervision is ill suited to assure adequate risk management and rate setting in the insurance sector.
climate risks. It is advisable to align disclosure requirements with international frameworks such as the FSB TCFD recommendations.

**The IC should also develop risk-based regulation and supervision methodologies and capacities, that address insurers' catastrophe risk accumulation and transfer practices, to enhance risk management and financial viability of the local insurance markets.** The legal framework should aim at strengthening insurance supervision and increasing the confidence of the population in the ability of local insurers to pay claims, even in the case of severe natural disasters. Development of appropriate risk-based regulatory requirements for catastrophe insurance is crucial for increasing the level of coverage for catastrophe hazards among homeowners and SMEs. The key objective of standard risk-based supervision of catastrophe insurance is to assist insurance companies (and regulators) in calculating risk-based solvency margins required for portfolios of catastrophe risk, thereby supporting a quick and efficient implementation of the risk-based supervision of catastrophe insurance. Following global good practices, and as a longer-term ambition, the IC could also develop stress testing capacity to assess the ability of the insurance sector to withstand severe catastrophes.
3 Barriers and Opportunities to Deepen Green Finance and Investments

3.1 Government Initiatives on Green Finance and Investments

The Government of the Philippines (GOP) initiated the design and initial implementation of measures to promote green investments in the country to both meet its climate and economic development objectives. Since a decade ago, through the Philippines National Climate Action Change Plan (NCCAP) 2011-2028 issued by the Climate Change Commission (CCC), the GOP identified the need to foster “climate-smart” business and financial sectors that can generate green jobs in agriculture, industry, and services sectors and contribute to direct capital flows towards activities that can make the country more resilient to climate change and ensure an inclusive transition towards a low-carbon economy. More recently, since the passage of the Green Jobs Act in 2016 and additional measures to kickstart the economic recovery after the COVID-19 pandemic, the GOP has sought to design and implement a broad range of incentives targeted at the financial and business sectors to establish green activities as key components of the country's economy.

Accelerating implementation of existing framework policies and other in early planning phases will be critical to ensure a green resilient economic recovery. The impact of the COVID-19 pandemic made even more urgent the implementation of measures to mobilize investments towards the transition to low-carbon and climate resilient development. Newer framework policies announced as part of the response to the economic impact of the pandemic, such as the Corporate Recovery and Tax Incentives for Enterprises (CREATE) Act and the National Employment Recovery Strategy (NERS), can be leveraged to facilitate the development of green and other sustainable investments and the jobs that these generate but achieving this requires accelerating the development of the regulations that would enable implementation of these frameworks.

The Philippines climate-related risks and green investment agenda are anchored on the country's national development and climate change frameworks. The GOP’s current guiding documents on overall national development and on climate strategy, Ambisyon Natin 2040 and the National Framework Strategy on Climate Risk 2010-2022 and the NCCAP 2011-2028, respectively, establish the importance of setting the country in a low carbon and resilient economic development pathway. The Updated Philippine Development Plan 2017-22 emphasizes the importance of mitigation and adaptation to climate change and its implications with respect to disasters risk management, resilient infrastructure development, development of human capital that can leverage new climate-sensitive technologies, and local government units’ (LGUs) ability to prepare and implement development plans that consider climate change. With respect to the financial sector, the Development Plan emphasizes the importance of green and climate finance and the need for enhancing the measurement and facilitation of green financial flows through measures such as establishing a green finance taxonomy (National Economic and Development Authority 2021).

The GOP has taken a whole-of-government approach to design and implement green finance and incentives policies with respect to both the financial and business sectors. Given the cross-cutting nature of reorienting the economy towards green and sustainable activities, the GOP initiated the design and implementation of these policies (Figure 3) with a broad set of government stakeholders:

- In the financial sector, policies targeting banks, capital markets participants and insurance companies have been led separately by each one of the regulators for each segment of the financial sector, the BSP, the SEC and the IC. Such division of labor reflects the statutory mandate of each agency. These agencies, particularly the BSP and the SEC, are also involved on the development of new initiatives that cut across the financial and business sector such as the ongoing development of the country’s green finance taxonomy.
- The main fiscal measures targeting the business sectors, the Green Jobs Act of 2016 and the CREATE Act of 2021, establish frameworks to use tax incentives to promote certain strategic economic activities: in the case of the Green Jobs Act, these are activities that contribute “to preserving or restoring the quality of the environment, be it in the agriculture, industry or services sector”\textsuperscript{40}; in the case of the CREATE Act, it provides a broad range of corporate income tax and tariffs that cut across several industries. These measures add to ongoing efforts by the GOP to define green activities or services to target tax incentives.

### Figure 3: Philippines: Key Green Finance and Incentives Policies under Implementation

<table>
<thead>
<tr>
<th>Financial Sector</th>
<th>Businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Support Area</td>
<td>Green Jobs Act (2016): Tax exemptions</td>
</tr>
<tr>
<td>Provider &amp; Enabling Environment</td>
<td>Corporate Recovery and Tax Incentives for Enterprises (CREATE (2021): Tax incentives</td>
</tr>
</tbody>
</table>

- Depending on the final arrangements of the PCIF, this initiative may have fiscal implications.

#### 3.1.1 Financial Sector

Financial sector regulators have taken the lead in fostering the development of green practices in the financial sector and new financial instruments. The BSP, a member of the Network of Central Banks and Supervisors for Greening the Financial System, issued in 2020 a Sustainable Finance Framework for all regulated banks mandating the incorporation of sustainable finance principles in their corporate governance and risk management practices, including through the development of an Environmental and Social Risks Management System as part of their core business practices. Building on the BSP circular on Sustainable Finance Framework (SFF), BSP has issued a subsequent Circular No. 1128/2021 on the ESRM Framework in October 2021. The circular articulates how environmental and social risk (E&S) affect the credit risk management system and the operational risk management system (ORMS) and spells out the actions required by banks for the integration of E&S in lending operations and business continuity.

\textsuperscript{40} Act Text in the Philippines Official Gazette, \url{https://www.officialgazette.gov.ph/2016/04/29/republic-act-no-10771/}
The BSP also expanded the existing program on mandatory lending to the rural sector to also cover green activities. The Agri-Agra Reform Act of 2009, whose banking regulation is issued by the BSP, requires that banks allocate a minimum of their loanable funds (up to 25 percent for certain categories) to agriculture and agrarian reform credit. BSP Circular 1111 relaxed compliance requirements, including allowing banks to invest part of their mandated portfolio in a broader range of projects that may include green activities and other forms of resiliency projects and investments in rural communities.

The SEC played a key role in fostering green and sustainability bonds. SEC Circular 12 (2018) formalized the use of the ASEAN green bonds standards in the country and outlined the requirements with respect to project evaluation, use of proceeds, external review and reporting of impact for a bond to be registered and labeled as a green bond in the Philippines. During this period, the amount of yearly green bonds issuance in the country has gone from no new bonds in 2016 to USD919M in 2020 (the 11th largest emerging markets issuer that year, Amundi and IFC 2021). This was followed in 2019 by Circular 8 which adopted a similar approach with respect to the ASEAN sustainability bonds standards. In 2019, close to USD950M of ASEAN sustainability bonds were issued, including $356M from the state-owned Development Bank of the Philippines (DBP). In the ASEAN region, the Philippines is second, after Singapore, in the amount of green bonds issues (close to USD6Bn). A Philippines entity, AC Energy, issued one of the two green bonds in the region with perpetual tenor, thus showing the potential of green bonds to address the needs to longer term finance (Climate Bonds Initiative and HSBC 2020).

The IC is taking initial steps to facilitate the development and supply of catastrophe insurance products by local insurers. The penetration of catastrophe insurance in the Philippines is as low as 0.5 percent which represents a serious obstacle for businesses and households to manage risks in one of the countries more severely exposed to climate-related disaster risks. The GOP, through the IC, is working with World Bank support to address constraints both in the supply and demand side that prevent the expansion of catastrophe insurance coverage. As a first step in this process, the IC issued a regulation, Circular 2021-27, in April 2021 to establish the Philippines Catastrophe Insurance Facility (PCIF) following which PCIF has been established in August 2022 in partnership with the industry. The PCIF, a public-private partnership, will facilitate the pooling of risks among catastrophe insurance providers and facilitate the transfer of such risks to international reinsurers. The PCIF will also identify mechanism to establish minimum premium rates that are technically appropriate and sustainable.

In 2015, the government of the Philippines adopted a national Disaster Risk Finance and Insurance (DRFI) strategy, a key milestone in improving financial planning for disasters. The strategy aims to maintain the sound fiscal health of the national government; develop sustainable financing mechanisms for LGUs; and reduce the impact on the poorest and most vulnerable and prevent them from falling into a cycle of poverty while also shielding the near-poor from slipping back into poverty. The DRFI strategy addresses the impacts of typhoons, earthquakes, volcanic eruptions, floods and other natural disasters; the Philippines is among the most disaster-prone countries in the world.

The SEC’s reporting guidelines on sustainability start the process of increased disclosure on this area among listed companies. These detailed guidelines, issued by the SEC (Circular 4, 2019), present the content to be covered by the sustainability reporting. This reporting will be included in the annual regulatory report filed by publicly listed companies with the SEC. The guidelines are intended to assist companies assess and manage non-financial performance across Economic, Environmental and

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41 ASEAN Sustainability Bonds are bonds where the proceeds support a combination of both Green and Social Projects that respectively offer environmental and social benefits


Social aspects of their organization and enable them to measure and monitor their contributions towards achieving universal targets of sustainability.

3.1.2 Private Sector

In addition to these financial sector-oriented measures, the GOP acknowledges the importance of private sector action in the transition to the green economy. Department of Trade and Industry (DTI) outlined strategies to promote green activities in six industries—automotive manufacturing, auto parts, pulp and paper, plastics, housing, and furniture—through the adoption of clean technologies and greater resource efficiency in the Greening the Philippine Manufacturing Industry Roadmap in 2015. Department of Energy (DOE) sized the private sector investment opportunities to meet the targets for renewable energy, alternative fuels, and energy efficient technologies for the Philippine Energy Plan (2020-2040). The Energy Efficiency and Conservation (EEC) Act (R.A. 11285) considers energy service companies (ESCOs) as key partners to implementing the Act, offering services and goods towards developing and designing energy efficiency projects, delivering energy savings, and ensuring cost-effective performance.

The Government of the Philippines implemented and designed new technology-push and demand-pull policies to accelerate adoption of green technologies by the private sector. Technology-push policies include regulatory controls (e.g. energy efficiency standards), minimum clean energy shares (e.g. Renewable Portfolio Standards), technology restrictions (e.g. Moratorium for Greenfield Coal-fired Power Projects), and carbon pricing (e.g. emissions trading scheme). Demand-pull policies, on the other hand, include subsidies for green sectors (e.g. tax incentives for green sectors, net metering), voluntary purchase of clean energy (e.g. Green Energy Tariff Program), and support for research, development and deployment (RD&D).

The government’s technology-push policies are expected to drive a significant investment in solar and battery storage technologies without imposing huge burdens on the energy sectors or industrial competitiveness. The impact of technology-push policies on the private sector was modelled by adding the Philippines Emissions Trading Scheme (PETS) to the DOE’s Clean Energy Scenario (CES) which assumes full implementation of the coal moratorium, Renewable Portfolio Standards (RPS), energy efficiency standards that are already in place. Firms in the energy sector would be able to offset the initial high investment costs by lower fuel costs. Philippines exports and imports are concentrated in electrical equipment and machinery where energy costs account for 2 to 2.5 percent of total production costs, thus a 5 percent change in electricity prices would lead to less than 0.1 percent change in costs. However, if the PETS is extended to energy-intensive sectors such as cement, some support may be needed to help domestic cement producers, who face increasing competition against exporters from China and Vietnam, cushion the impact of higher production costs and associated reduction in margins.

The government has introduced tax incentives to stimulate the demand for green innovation by firms. The Green Jobs Act of 2016 and the CREATE Act of 2021 established frameworks to use tax incentives to promote certain strategic economic activities, including green activities. The Green Jobs Act aims to provide tax deductions for firms undertaking skills training and research and development (R&D) for green activities that create green jobs that contributes to preserving or restoring the quality of the environment, be in agriculture, industry, or services sector. In addition, the government provides tax- and duty-free importation of capital equipment, provided that the capital equipment is directly and exclusively used to generate green jobs. The CREATE Act will allow income tax holiday and enhanced tax reductions for export-oriented firms and domestic firms in strategic sectors, including green agriculture, manufacturing and services sectors, listed in the Strategic Investment Priority Plan (SIPP). Income tax holiday is extended from 4 to 7 years, to be followed by 5 percent special corporate income tax on gross income for 10 years. Deductions are allowed on depreciation of qualified capital.

expenditure, labor and training expense, R&D, among others.\textsuperscript{45} It is too early to assess the impact of these reforms although they are in the right direction. A full and timely implementation of these two laws is essential to incentivize more adoption of green technologies.

**Full implementation of these tax incentives will require the establishment of a definition of green activities to specify the activities eligible for tax deductions.** The CCC, in coordination with DOF, DTI, and Department of Labor and Employment (DOLE), is currently developing standards to assess and certify green goods and services, and green technologies and practices under the Green Jobs Act. These would include businesses that by nature of their core business directly and substantially supports the green economy (e.g. renewable energy generation) and businesses with products certified as green by existing domestic and international green products certification systems (e.g. Green Choice Philippines, USDA Organic Certified). Industry-specific green thresholds are also being developed to certify firms that “green” their operations. Once fully developed and operational, these definitions of green products or activities are expected to help banks to identify green assets.

**The recently enacted CREATE Act is expected to foster green activities through tax incentives.** The CREATE Act provides a legal framework to allow income tax holiday for 4 to 7 years followed by enhanced tax reductions based on certain expenses for export-oriented enterprises and domestic enterprises in strategic activities as defined under the GOP’s Strategic Investment Priority Plan (SIPP). The list of products or activities included in the SIPP cover a wide range of green investment opportunities (see Table 2).

<table>
<thead>
<tr>
<th>Agriculture and Industry</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Agriculture Act: good agricultural practice, organic agriculture, farm diversification</td>
<td>Sustainable and renewable energy; clean technologies: biofuels, solar, wind energy, clean energy from ocean waves</td>
</tr>
<tr>
<td>Conservation agriculture</td>
<td>Waste to power generation; conversion of municipal solid wastes into solid, liquid, &amp; gaseous fuels</td>
</tr>
<tr>
<td>Animal waste management</td>
<td>Climate change action and disaster risk reduction management for terrestrial &amp; coastal &amp; marine ecosystems</td>
</tr>
<tr>
<td>Zoonotic diseases management</td>
<td>Green architecture, smart cities, smart factories</td>
</tr>
<tr>
<td>Electric vehicle manufacturing</td>
<td>Waste management, disposal, &amp; recycling</td>
</tr>
<tr>
<td>E-mobility solutions</td>
<td>Clean water technologies: rainwater harvesting, membrane technology, smart water monitoring, algae-based wastewater treatment</td>
</tr>
<tr>
<td>Biosensors for environment</td>
<td>Environment friendly activities (save energy, use of alternative energy), recycling, Renewable Energy, Energy Efficiency and Conservation Act</td>
</tr>
<tr>
<td>Risk-mitigation device</td>
<td></td>
</tr>
<tr>
<td>Energy storage technologies: batteries, thermal, mechanical storage, hydrogen, &amp; pumped hydropower</td>
<td></td>
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<tr>
<td>Smart energy systems: smart devices</td>
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**Other forms of governmental support, mainly grants and capacity building programs, for greening the private sector have yet to reach full potential.** DTI, with the support from development partners, piloted several programs, including business advisory services to MSMEs for green technology adoption and designing a green public procurement framework.\textsuperscript{46} However, these pilot programs have been

\textsuperscript{45} For more detail, please see DOF’s website on the CREATE Act: https://taxreform.dof.gov.ph/tax-reform-packages/p2-corporate-recovery-and-tax-incentives-for-enterprises-act

concluded and there are no ongoing programs specifically targeting firms on climate mitigation or adaptation through technical assistance. Department of Science and Technology (DOST) has identified disaster risk reduction and climate change adaptation as one of the priority areas for its R&D grant programs. However, these DOST grants are channeled to higher education institutes, government R&D institutes, and non-profit S&T networks and organizations and do not target technology commercialization and adaption by the private sector. DOST’s flagship technology adoption support program, Small Enterprise Technology Upgrading Program (SETUP), has recently added resource and energy efficiency and green production technologies to its technical advisory and consultancy services available for beneficiaries.

Some large corporations voluntarily invested in green activities, driven by the high energy costs and increasing public attention on climate change and corporate sustainability. Cement manufacturers reduced the use of fossil fuels and increased energy efficiency in recent years in order to lower their energy costs that make up half of the production costs. Nestle, the largest food manufacturing firm in the country, has a corporate target of making 100 percent of its packaging recyclable or reusable by 2025 and started to pilot the use of recycled materials in packaging. Globe Telecom, the largest mobile network operator in the country, sourced 102 GWh of its electricity consumption (14 percent of total) from renewable energy and deployed energy efficient technologies in 2021, in effort to meet its commitment to achieve net zero GHG emissions by 2050. The Energy Development Corporation (EDC), the Philippines’ largest geothermal energy company, has embedded intensifying climate-related natural events in its modeling and risk analysis. Based on this analysis, it invested PHP 314 million (over USD 6 million) in additional resilience measures and critical points of infrastructure to minimize risk exposure, ensure a continuous energy supply to consumers and the local community, while also protecting future revenues, minimizing costs, and reducing losses.

3.2 Barriers to Green Finance and Investments

Financing climate adaptation and mitigation, as well as other environmental objectives, in the Philippines will require significant mobilization of public and private capital. A large share of public spending is already directed to climate-related objectives, with over 7 percent, of the Philippine government budget tagged for climate adaptation efforts. The exact scale of future funding needed for climate-adaptation in the Philippines is unknown at this point, but the amount will undoubtedly be sizable given the impacts of climate change on the archipelago. Sustainable debt remains a small fraction of brown debt markets for EMDEs globally and for the ASEAN-5 countries, and much below conservative estimates of financing needs, suggesting a significant financing gap. At the same time, the ambitious Build, Build, Build infrastructure agenda of the Philippines, with a country-wide pipeline worth of USD 41 billion of investments in the medium term, offers significant opportunity to build low carbon and climate resilient infrastructure in transportation, energy and buildings.

There are significant green investment opportunities in the Philippines. There is an estimated USD 168 billion in investment opportunities that can generate 3 million cumulative new direct jobs in the Philippines between 2020 and 2030. Key sectoral investments include USD 39 billion for greening the existing and future energy infrastructure, USD 104 billion for building climate-smart cities, and USD 25 billion for speeding the green transition in select manufacturing, agriculture, and

49 The adaptation project implemented by EDC was part of a larger capital expenditure program to optimize the output of its geothermal generation. The program was supported by the proceeds of IFC’s 15-year USD 90 million equivalent green bond issued in 2018, the first internationally rated triple-A Philippine peso-denominated green bond issued by a multilateral development institution.
50 Globally, adaptation finance for developing countries is estimated to be in the range of USD 140–300 billion per year by 2030 and USD 280-500 billion annually by 2050. UNEP (2016). The Adaptation Gap – Finance Report.
51 The Philippine Development Plan (2017-2022) puts forward the inclusion of climate change adaptation and disaster resilience measures in infrastructure development. The importance of low carbon infrastructure was recently acknowledged by President Duterte in a speech in Beijing, April 26, 2019. Manila Bulletin (April 28, 2019).
transportation sectors. With limited tax revenue, there is a great need and a significant opportunity for the private sector to contribute to green inclusive growth in the Philippines.

**The financial sector has a key role to play in mobilizing green finance, but its contributions are still limited.** The Philippine financial sector, particularly its larger banks, are slowly stepping up efforts, as was shown with the issuance by six banks of green bonds, mainly used finance energy efficiency and renewable energy projects. At 1.14 percent of GDP, the Philippines sustainable debt market is larger in size than most ASEAN peers and comparable to China, but still much smaller than most OECD countries. Banks purport green investments represent between 2-6 percent of domestic loan portfolios (green meaning supportive of activities that have a positive impact on the environment, including impacts on climate mitigation and adaptation). However, that proportion is far from the IFC estimate of what will be required in order to fulfill NDC requirements. IFC estimates that about 30 percent of bank balance sheets in emerging markets should be green by 2030 to meet global climate goals.\(^{53}\)

**At the same time, there is an accelerating global trend of investors seeking green investment opportunities.** This demand for green assets is yet to be tapped by the Philippines financial sector. Investors demanding green and sustainable assets represent over a third — more than USD 30 trillion — of total assets under professional management.\(^{54}\) According to a survey done by Morgan Stanley Investment Management and the Morgan Stanley Institute for Sustainable Investing, climate change is a leading investment theme for these investors. This opens up a potential opportunity for climate smart investments in emerging markets, but the Philippines has so far not been able to attract these types of investments at scale.

**Despite a significant investment opportunity and increasing interest from investors, the current level of investment is scant.** The Philippines attracted an estimated USD 0.6 billion in green investment from foreign companies over the last five years (2017-2021), mostly in renewable energy, such as biomass, wind, and solar.\(^{55}\) This was a considerable slowdown compared to an estimated USD2.5 billion from the preceding five years (2012-1016), which may have been partly affected by the COVID-19 pandemic. Furthermore, climate investments between 2017 and 2021 represented just 1 percent of total cross-border investment recorded in the Philippines, which is substantially below compared to regional peers, such as Indonesia (23 percent), Malaysia (21 percent), and Vietnam (9 percent). Green investment activities from domestic sources of financing by large corporations certainly exist but the current size and historical trends are not well known, without a similar database that tracks domestic green investment activities.

**To scale up green finance, institutional barriers in- and outside the financial sector need to be addressed.** Yet, no comprehensive assessment exists of barriers to green finance in the Philippines. Based on interviews, questionnaires, and a literature review, the following key constraints have been identified:

- **Limited capacity at financial institutions to originate climate and green assets and manage climate-related risks.** There is limited capacity at banks to issue or invest in products to support the transition to low-carbon development.\(^{56}\) As identified in the previous chapter, incentives and capacity to properly identify, analyze and monitor environmental and climate-related financial risks are also limited. Not only is proper risk management key to avoid soundness and stability issues, but it also helps institutions to better balance portfolios with greener assets, or move some of the companies and projects they finance towards greener practices.

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\(^{55}\) IFC estimates based on 2012-2021 data from fDi Markets (a service of the Financial Times Ltd.), which tracks announcements of greenfield investment projects globally. The data captures full amounts of investment volumes at the time of project announcement or opening and is different from the official data on FDI flows.  
\(^{56}\) Also noted by IFC (2019). Scoping Study of Opportunities for Solar PV Distributed Generation for Commercial and Industrial Users in the Philippines.
Lack of long-term and blended finance instruments to ensure alignment of private sector investments with green objectives. Green infrastructure projects often have tenors and risk profiles that do not match well with solely bank lending. In that sense capital markets can provide long-term finance solutions that are able to support longer terms and better match risk-return profiles. This includes venture capital and private equity instruments needed to initiate and scale up new green initiatives. Moreover, specific green instruments can help to attract a growing investor base interested in labeled green products. Beyond a few corporate green bond issuances, such capital market instruments are lacking in the Philippines. This lack of instruments to align private sector investments with environmental objectives is also recognized by the Philippine Development Plan (2017-2022).

A lack of clear and consistently applied labeling of green assets across rules and regulations that promote green finance, industry, and jobs. It has been difficult for financial institutions to identify green assets and projects due to a lack of clear standards and labels. It would be important to ensure compatibility between green finance taxonomy adopted by BSP and SEC and definitions of green products or activities that will be used to implement the CREATE Act and the Green Jobs Act, particularly documentary requirements for firms to prove eligibility. This could avoid potential delays in implementation of the two tax incentive schemes and help banks to easily identify sustainable and green assets.

Lack of green finance at the local level. As pointed out by the country’s National Development Plan (2017-2022), a lack of sustainable finance at the local level forms a barrier for projects related to climate change adaptation, disaster risk and environmental risk management. One problem noted, is a limited capacity to prepare bankable projects to obtain public funds. Investors also voice concern, over credit worthiness of LGUs, whereby they point out to issues with some LGUs to honor commitments made by previous local administrations.

Low penetration of insurance. The lack of catastrophe insurance reduces resilience of households and puts pressure on the government budget to cover catastrophe impacts. As mentioned in the previous chapter, the lack of protection also affects the ability of borrowers to repay debt and would exacerbate financial losses in case of disaster. It could also reduce lending to risk prone areas where no insurer is willing to cover risks. Climate change could further undermine growth in the catastrophe insurance market, as it will make it more difficult and more expensive to obtain reinsurance, while rising premiums directly affect customer demand.

A lack of pricing of externalities undermines the business case for green investments. The external effects of pollution and CO2-emissions are not priced in to spur the private sector to transition away from conventional fuels and increase resource efficiencies. If companies do not have to pay for pollution, they miss the financial incentive to move towards cleaner and greener projects. Globally, taxation of polluting and CO2-emiting activities, is seen as a best practice solution and the most effective way of pricing in externalities.

Uncertainty regarding long-term government policy undermines the business case for green finance. As of yet, the Philippines has not issued long-term targets, nor concrete investment plans, aligned with its NDC, which is currently undergoing revision for resubmission later this year. The lack of long-term commitments and 2 degrees pathway plans increase the costs of green investments, which are often long-term and benefit from clear government direction.

Limited knowledge and awareness about the economic benefits of clean and efficient technologies hamper demand for green finance. Across the board, financial institutions note a lack of

57 In general, green finance projects, particularly those related to infrastructure can have maturities beyond those which banks are willing to take. While many banks in the Philippines are currently willing to take on longer term loans, this comes with the risk of maturity mismatches and inefficiencies. For example, to provide longer term loans, BSP indicates that banks tend to offer flexible rates that can be repriced every year.

58 In many cases LGUs act as implementing partner of large infrastructure development, including projects in areas like energy and transportation, that could contribute to the green agenda.
awareness among firms on the green and clean technologies that, over time, can improve bottom line profits through reduced costs of electricity, fuels or materials.

3.3 Stimulating Green Finance and Investments

Below recommendations are given to address some of the barriers for supplying financing for green investments. They are based on observed emerging global good practices to stimulate green finance, recent initiatives taken by Philippines government, and consultations with the private sector. Recommendations for stimulating the demand for green activities and strengthening the pipeline of investible projects are discussed in greater detail in the next chapter.

Accelerate the development and utilization of harmonized taxonomy of green finance and investments

Introducing a green finance taxonomy can help to better define green and sustainable financial products. A taxonomy is a classification of sustainable (and unsustainable) economic activities. It could form the backbone of labeling sustainable finance products, set prudential regulations or build benchmarks. Recently, the European Union and China introduced such taxonomies and useful insights can also be drawn from green bond taxonomies and FSB TCFD recommendations. For the Philippines, it is advisable to build on, and align efforts as much as possible with, these global best practices, in coordination with ASEAN partners. The BSP and DOF have issued the Sustainable Finance Roadmap, which provides a comprehensive framework on mobilizing green finance with high level commitment at both institutions. Further, to address the issues of lack of clear standards and definitions on green assets, the Financial Sector Forum (FSF), an interagency initiative led by the BSP, is developing a green finance taxonomy regulation (informed by the ASEAN taxonomy issued on March 2021) that can help to better define green and sustainable financial products. Coordination will help to provide investors with consistency, which will better stimulate investment.

The authorities could accelerate the development of clear labeling of green assets and apply them consistently across rules and regulations that promote green finance, industry, and jobs. Labels for, or government certification of, green assets, for example for buildings, can help banks and other investors better identify green investments and develop financial products related to them. They may also provide an additional indicator of the quality of collateral (e.g., the vulnerability of assets to tightened energy efficiency standards and potentially increasing prices of utilities). Already, banks in the Philippines take international certifications for sustainability of buildings into account when financing commercial real estate projects. There are ongoing efforts involving multiple government agencies to develop or utilize a list of green economic activities (i.e. firms, products, or services) to implement rules and regulations that promote green finance, industry, and jobs, such as the Green Jobs Act (2016), CREATE Act (2021), Energy Efficiency and Conservation Act (2019), BSP’s 2020 Sustainable Finance Framework, and SEC Circular 12 of 2008 on using the ASEAN Green Bonds Standards. Ensuring compatibility of the list of eligible green activities, as well as the certification and verification processes, could avoid delays in implementation of these policies and thus provide a solid foundation for catalyzing capital flow to green assets in the country.

Build capacity in the financial sector

A national platform on green finance can help to increase knowledge among banks and other financial institutions to originate, manage and monitor green loans and investments. Following international

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60 In other markets labeling systems have supported financial product development. In Europe for example, all commercial and residential buildings are labeled on a scale from A-G, A for the most efficient buildings, G for the least. In the Netherlands, this system of labeling is now generally tracked by banks and considered when issuing for example (green) mortgages and commercial real estate loans. Subsequently, a combination of government regulations and consumer preferences has led to notable impacts on pricing of energy efficient housing and commercial real estate. This again has further spurred banks in offering discounts for green buildings, as they perceive these assets of better quality. See DNB (2017) for an early exploration of this topic.

61 This law provides a framework for energy efficiency, including references to standards and labeling for industry and transport, as well as references to energy efficiency in building permits.
good practices—BSP could facilitate capacity building by banks, insurers and institutional investors via a national platform on green finance. The platform should ensure broad level commitment from financial institutions and focus on climate risk management and sustainability education. For such a platform to be a success, BSP could run the platform’s secretariat, bringing stakeholders to the table, but it should be the financial institutions driving the output of the platform.

The role of the national development banks and the national guarantee fund could be expanded to support green activities more explicitly. The role for national development banks as catalyzers for green finance is being explored in several countries. A national development bank sits at the nexus of policy and private sector lending, and it should operate where the market is unwilling or unable to provide finance. In Philippines three roles could be played by these institutions:

- **Facilitating the structuring of financial transactions, including green bonds, and subsidizing initial transactions costs.** The DBP’s experience in the issuance of its own green bond could be leveraged and it could act as investment bank advisor to facilitate the structuring of new green bonds transactions and if necessary provide liquidity and act as market maker, particularly for smaller companies that may have limited experience with capital markets.

- **Extending dedicated wholesale credit lines targeting specific green activities such as those identified by the DBP as part of its analysis for use of proceeds in its green bond issuance.** To minimize the sustainability risk of this type of interventions, DBP ought to consider opening a revolving facility to provide financing through commercial banks to generate the necessary know how among the private financial institutions to target clients financing green projects and thus contribute to trigger the expansion of private financial markets for green lending. The DBP has played this role in the past in initiatives such as the Water Revolving Fund which combined a DBP line of credit to commercial banks with guarantees and technical assistance from the US Agency for International Development and the Japan Bank for International Cooperation.

- **Deploy the resources of the Philippine Guarantee Corporation (Phil Guarantee) to target companies engaged in green projects.** In particular, Phil Guarantee’s could leverage its expertise with this segment, to focus on small and medium enterprises while at the same time contributing to increase the engagement of the private commercial banks with these type of clients through the use of its guarantee product.

**Deploy innovative financing instruments and investment vehicles that reflect the needs of green investments**

Positive results in developing local green bonds markets could be leveraged to expand green financing to a broader set of businesses. In 2020, total domestic corporate issuance in the Philippines was $7.2B equivalent, about 13 percent of issuance was green, comparable to global and regional EMDE peers. While this is an important fraction when compared to other countries, this remains a relatively small fraction of total issuance and it was concentrated on a few transactions—three issuances in 2020 and two in 2021 through the end of September. Furthermore, the overall size of the country’s domestic outstanding bonds, at about 50 percent of GDP, remains quite small compared to other countries of similar level of development (World Bank 2021b). Therefore, there is still room for growth in green bonds issuance and the existing basic framework has been shown to be conducive to these markets’ development. Some of the policies the GOP may consider expanding the impact of green bonds includes:

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62 See for example, the Sustainable Finance Platform, set up by the Dutch central bank.
64 Data on Green Bonds as reported in the AsianBondsOnline database supported by the Asian Development Bank, https://asianbondsonline.adb.org/data-portal/
Consider developing a sovereign green bonds issuance program within the context of country's debt management strategy. Establishing a regular program of issuance by the government could help develop a local green bonds market that benefits from a broader set of regular issuers and investors. Having a sovereign green bond yield curve serves as a benchmark on pricing and liquidity and this ultimately facilitates green bonds issuance by private companies. Such issuance needs to be reviewed in the overall context of the country’s debt management strategy to take into consideration issues relating to any fragmentation in long-term financial instruments and depth of the financial market. The initial issue by the DBP was successful though until now it has been the only government backed issue and it was with a two-year tenor, on the shorter end of the local sovereign yield curve.

Building upon the experience with the DBP issuance, expand the role of the two development banks in the country (DBP and the Land Bank of the Philippines) in intermediating resources raised through green bonds to create credit lines facilities aimed at underserved green businesses. The second-party opinion issued for the DBP green bond, a requirement of the ASEAN Green Bonds Standards, lists a broad range of green projects to be funded by the instrument.65

Recent efforts to increase access to green finance for small and medium enterprises (SMEs), to the development of structured green corporate bonds. These instruments can be used to combine a pool of green SME loans and allow capital markets participants to fund them through their purchase of a green asset backed security.

Promote the issuance of green bonds by LGUs. This could be done directly by offering credit enhancements, covering transactions costs or alternatively, using structured finance to pool loans from the DBP such as those under the Assistance for Economic and Social Development (ASENSO) financing program, a program run by the DBP to finance LGUs.

To raise capital for green growth, that is, economic growth and development that ensures that natural assets continue to provide the resources and environmental services, the Philippines could also explore how to stimulate and utilize other green instruments, including blended finance options. To scale up green equity and debt financing in the Philippines, the government could explore the use of blended vehicles in which concessional finance from public and/or development agencies is used to share some of the risks with private sector investors, otherwise unwilling or unable to invest. Following international examples, the Philippines could consider the introduction of a green investment fund, which would blend concessional finance with private capital to invest in strategic green priorities set by the government.66 Structured as a venture capital or private equity fund, it could tap into growing interest from foreign investors in green development and provide investments for the country’s infrastructure and climate agenda, particularly where investments are more constrained, such as at the regional level. A fund should be set up in such a way that it can help to build a pipeline of investable projects, offering technical assistance on the ground to originate and label green projects. Moreover, global best practices show that a fund should be independently managed, to benefit from market efficiencies and avoid conflicts of interest. The fund could build on some of the experiences that the country has had with the Philippine Investment Alliance for Infrastructure (PINAI), which is a 10-year, closed-end fund, dedicated to equity investment in Philippine infrastructure.67 Obviously, there are other options to be explored that can help to share some of the risks of private sector investors, including efficient use of guarantee schemes to promote green investments.

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65 This second party opinion was issued by Sustainalytics as can be found in the DBP description of the green bond transaction at [https://www.dbp.ph/dbp-sustainability-framework/](https://www.dbp.ph/dbp-sustainability-framework/). It lists some of the sector on which DBP will invest the proceeds, including clean transport, renewable energy, and sustainable water and wastewater management.


67 While not per se a green fund, although it notes to invest in renewable energy as well, the PINAI fund could be considered a strategic investment fund. It was launched in 2012 as a USD 625 million private equity fund that was capitalized by the country’s largest pension fund, Government Service Insurance System; the ADB; a Dutch pension fund and is independently managed by a third-party asset manager.
4 Barriers and Opportunities to Promote Uptake of Green Investments by Private Sector

4.1 The Role of the Private Sector in Climate Mitigation Actions

Climate change poses a substantial threat to the private sector in the Philippines and the economy at large, yet there is little analysis on Philippine firms’ exposure to climate risks across different localities and sectors and what adaptation measures firms can undertake. Existing modeling of risks from climate change in the Philippines, in the form of extreme weather events (typhoons and storms) and slow-onset trends (temperature increases, changing rainfall patterns, and sea level rise), are largely based on geography with a target audience of national and local government units. The nature of such analyses makes it difficult for firms or business associations to understand their vulnerability to climate risks. Adaptation measures are also linked to adjustments needed in infrastructure (buildings, bridges, water supply, community infrastructure, coastal defense) and transportation and urban planning, which would be driven by the government rather than firms. This information gap on firms’ exposure to climate risks makes it difficult for firms to examine what adaptation actions they can and would need to undertake. There is certainly a role that firms can play in providing goods and services that increase resilience, but its significance in the macro-level is fairly limited.

The government of the Philippines’ priority is to use public financing to prioritize adaptation, with mitigation actions to be pursued largely by the private sector. The National Framework Strategy on Climate Change set the framework for the government to create an enabling environment and encouraging the private sector to optimize mitigation opportunities for sustainable development. This is reflected in the government’s proportion of meeting the Nationally Determined Contribution (NDC) of 75 percent reduction in projected cumulative GHG emissions relative to business as usual (BAU) scenario by 2030.68 The government has committed to undertake 2.7 percent of the emissions reductions without external support, leaving the remaining 72.3 percent of the emissions reductions to be achieved with external support, including developed countries and the private sector. The NDC recognizes the private sector as the country’s main engine of economic growth and transformation and promotes its full engagement in both climate change adaptation and mitigation. Unlike many other countries in the region, state-owned enterprises (SOEs) play only a minor role, therefore many climate actions are likely to be in the direct interest of private sector firms.

Reflecting the government’s policy priorities, this chapter focuses on the role of firms in undertaking mitigation actions. It examines enabling factors and constraints for firms to adopt green technologies. However, this analysis is unfortunately not based on recent, cross-sectoral and regional firm-level data on operations, financing, managerial capacity, and use of technologies, because there is no available information on these (the latest dataset is 2017 Annual Survey of Philippine Business and Industry by Philippine Statistics Authority, and this does not include uses of technologies). Instead, the discussion draws from the literature on technology and innovation policy in conjunction of environmental regulation, highlighting the Philippine context, wherever possible. Policy recommendations are drawn from the Philippine-specific gaps and constraints identified through research and validated by public and private stakeholders. These recommendations are linked to the existing government initiatives on green investment by the private sector, which were explored earlier in Chapter 3, Section 1.2.

68 Philippines – Nationally Determined Contributions Communicated to the UNFCCC on April 15, 2021. 
https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Philippines%20First/Philippines%20-%20NDC.pdf.
4.2 Barriers to Promote Uptake of Green Investments by Private Sector

There are market failures associated with climate change and other sustainability considerations. These include:

- Lack of pricing of negative or positive externalities is the most common market failure. For example, firms may find non-green investments more attractive unless negative climate impacts are incorporated as costs to firms. On the other hand, a climate-smart agricultural project may have a positive impact in the water supply quality downstream from the project, but the return on investment may not reflect it.

- First mover disadvantage can prevent firms from taking actions that, while positive from an environmental perspective, may initially put them at a competitive disadvantage. That would be the case of financial firms explicitly incorporating climate risks into their risk management framework before their competitors do which could be reflected on higher lending rates and higher reserves and capital requirements.

- Information asymmetry problems are pervasive in the development of new green activities. For example, firms may not be aware of existing technologies or business models that would increase their resilience to climate change or lower their fuel or electricity consumptions. Similarly, financial institutions may not be able to assess the risk of new types of investments in emerging renewables technologies and thus shy away from lending to that sector.

- Managers of business and financial institutions are judged on short term results while the development of new green businesses may require a longer time horizon. Furthermore, firms effectively using a high discount rate for the future may make investment decisions today that do not consider longer term climate risks, even if such investments may eventually lead to stranded assets (i.e., assets that need to be written-off prematurely) because of climate change.

- Coordination costs that make it difficult for market participants to agree on a definition of green investments and this has led to public efforts to develop taxonomies of green investments.

In the Philippines, a lack of pricing of negative externalities of climate change, in the form of a carbon tax or emissions trading scheme, has undermined the business case for green investments. The external effects of pollution and GHG emissions are not priced into spur firms to transition away from conventional fuels and increase resource efficiencies. If firms do not have to pay for pollution, they are not incentivized to move towards cleaner and greener projects. The government is currently weighing policy design options for emissions trading scheme (ETS) to cover power sector, with a possible expansion to include energy-intensive heavy industries. The government has, however, began removing fossil fuel subsidies in the 1990s, and current subsides are very limited in scope and are relatively low compared with other countries. The government also collects taxes on energy, through excise taxes on fuels and electricity consumption. High energy costs have incentivized some firms (i.e., cement manufacturers) to reduce the use of fossil fuels and increased energy efficiency. It is expected that introduction of the Philippines ETS or a carbon tax will provide strong incentives for firms to adopt green technologies. Globally, taxation of polluting and CO2-emitting activities is seen as a best practice solution and the most effective way of pricing in externalities.

Limited knowledge and awareness about the economic benefits of green technologies has hampered demand for green investment. Across the board, financial institutions note a lack of awareness among firms on the green and clean technologies that, over time, can improve bottom line profits through reduced costs of electricity, fuels or materials. Micro, small, and medium-sized enterprises (MSMEs), which account for 99.6 percent of all registered businesses, have become more aware that climate change poses a risk to the profitability and continuity of their business. Yet, they are not always aware

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https://openknowledge.worldbank.org/handle/10986/6058
of what action they can take with their capacities. Even when MSMEs are willing to take initiatives to develop or change prevailing business models, many of them tend to lack financial, technology and human resources.

Box 1. Why is it difficult for firms to adopt green technologies? Which firms are at comparative disadvantage in making a green transition?

The availability and cost of alternative technologies, the greatest determining factors in firms’ capacity for green transition, will be a challenge for some industries and firms. In some sectors, the reality is that there are no apparent alternatives to technologies that either use a lot of energy or use fossils fuels as an input to production. On the other hand, there are other industries in which there are alternative, green technologies, but they operate at greater economies of scale than existing technologies. The food manufacturing sector is composed of firms of all sizes that utilize a diverse array of technologies specific to the inputs and products, thus energy efficient technologies applicable to firms in this sector would be also diverse. Some energy efficient technologies may require larger economies of scale to operate competitively than existing technologies, placing smaller food processing manufacturers at a competitive disadvantage compared to larger firms. Finally, there may be readily available technologies, but as firms pass some of the increased production costs to customers, demand could fall commensurately. This type of greener technology will also cause a change in the industrial organization of sectors and have distributional effects on firms and the workers employed in them.

With respect to the size of firms, small and medium enterprises (SMEs) face a number of considerable constraints in adopting greener technologies. First, when there are no clear, greener alternatives to the technologies they currently employ, innovative pursuits pose a relatively higher opportunity cost, given the SME’s lower margins. Many small firms operate in very competitive and low-margin industries. As a result, they are unlikely to be able to invest in relatively unproven technologies or processes when the payback period is often uncertain. Indeed, there can be large costs associated with new machinery and new materials or changes implemented in new product development and design. Second, SMEs face relatively higher barriers to finance. Underwriting standards are stricter because SMEs may not have steady income or a favorable record of business performance. As a result, SMEs in the Philippines tend to depend more on internal finance or start-ups and business expansion, adding further to firms’ risk aversion.

Geographic locations in which a firm operates and the market they serve can also affect an enterprise’s ability to adopt greener technologies. Some locations may be less amenable to support new technologies. For example, rural areas where energy-intensive agro-processing may take place. Rural areas are less likely to be served with the type of infrastructure that would make the adoption of greener, digital technologies viable. In some rural areas, the lack of supporting business services or the labor skills make the adoption of greener technologies more difficult. With respect to markets served, a study of the electrical manufacturing industry in Thailand noted that a lack of consumer demand for green products explained the low adoption rate of greener methods among many companies. In other words, if enterprises are serving markets where consumers have other options or do without when prices rise, this will present a substantial hurdle for firms considering greener production techniques.

For capital intensive firms the window of opportunity to adopt green technologies is narrow and rife with uncertainty and risk. In many industries, especially capital-intensive ones, assets can have very long lives. That makes investments in some technologies lumpy and based on long-time planning. Lumpiness means that large investments are made rarely, rather than annually, to replace machines, buildings or other capital stock. The time of replacement presents a window of opportunity to make major technical changes and invest in new low-carbon process technologies may present themselves infrequently. Governments can accelerate the replacement of less green, lumpy assets by changing the rules and regulations that make these more expensive, and therefore less profitable, to use. However, such change in government rules could result in large losses in firms’ wealth. Alternatively, to more gently open additional windows of opportunity for replacement of large assets with long lives, government can allow tax write-offs based on accelerated capital depreciation schedules for these assets and to phase in policies by announcing new policies substantially ahead of implementation. This will reduce uncertainty and investment risk and allow firms more time to plan investments.

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70 OECD (2021). Lessons On Engaging with the Private Sector to Strengthen Climate Resilience in Guatemala, the Philippines and Senegal; Juan Casado-Asensio, Takayoshi Kato and Heiwon Shin (May 2021).
Existing policy instruments designed to support R&D and innovation may not be sufficiently targeted to generate green technologies applicable for Philippine firms. While incentive schemes for R&D and innovation have the benefit of decentralized management, letting a thousand flowers bloom, they may not produce solutions to specific technological challenge faced by firms. The mismatch could be in terms of pricing, specificity, and requiring specific skills to utilize the new technologies that firms may not have. A directed approach does not imply anything other than exploiting government’s comparative advantage in being a convener to incentivize coordination and collaboration between the private sector and the science, technology and innovation community to solve specific green technology issues faced by firms in the Philippines. This could be done by encouraging public and academic beneficiaries of DOST’s climate change related R&D grant programs to partner with firms, so R&D activities are targeted to commercialization and adaption by the private sector.

Recent regulatory reforms have liberalized the foreign direct investment regime. The government passed amendments to the Retail Trade Liberalization Act, the Foreign Investment Act, the Public Service Act, and the Renewable Energy Act in 2022. These amendments substantially liberalized the FDI regulatory regime and opened the chance for the economy to receive the best green technology that exists in world markets across sectors previously restricted, such as renewable energy and transportation sector other than seaports and public utility vehicles. In addition to technology, foreign investment brings with it the best management techniques required to adapt these new technologies to the Philippine market.

While the Philippines has among the lowest tariffs on environmental goods in the region, existing non-tariff measures make imported green technologies extra costly for Philippine firms. The Philippines applied tariffs on environmental goods (e.g., renewable energy and resource efficient technologies) at about 3.8 percentage on average in 2019, which is lower than the Asia-Pacific regional average of 5.8 percent (8.0 percent for Thailand and 6.2 percent for Vietnam and Malaysia). The government has also passed an Executive Order in 2023 to temporarily reduce tariff on imported electric vehicles from 30 percent to 0 percent for five years. In terms of non-tariff measures (NTMs), such as additional permit requirements (opposed to automatic licensing), quotas, prohibitions, price control measures, and non-tariff taxes and charges, the Philippines is by far the most heavy-handed with more than 4 NTMs on imported environmental goods, compared to the regional average of 1.2. This implies that the imported green technologies are extra costly and face more red tape, to the detriment of Philippine firms.

Enhancing protection of intellectual property rights will incentivize foreign firms to bring and license the very latest technology without concerns about that technology being pirated. The Philippines has laws and policies that generally support a conducive intellectual property environment. But some challenges remain on how to make intellectual property protections better. For example, enforcement of intellectual property rights has improved but is still somewhat irregular and inconsistent in the Philippines. In addition, existing policies make it more difficult than in other markets to access Philippine domestic markets and commercialize intellectual property assets.

Existing incentive schemes aimed to facilitate firm entry into green sectors and uptake of green investments have been slow to be implemented and not targeted enough to promote uptake of green investments by firms. The Green Jobs Act of 2016 provides a legal framework for tax deductions for firms undertaking skills training and (R&D) for green activities that create green jobs, but it has not been implemented due to a slow development of guidelines on eligibility and certification process.

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74 US Chambers of Commerce (2022) International IP Index
Under the Omnibus Investments Code (OIC) laws, executed by the Board of Investments, enterprises that are involved in R&D activities, innovation centers, commercializing new and emerging technologies, and products of government funded R&D are eligible for investment incentives. Without clear guidelines on whether green firms or green investments are eligible for such incentives, these incentives may not yield the policy objective of generating more innovation in greener technologies. Furthermore, there is a question on how existing firms, not new entrants, may be able to take advantage of these incentives. While the OIC does not discriminate between entrants and existing firms, there may be a bias for “new and emerging” technologies rather than the kind of tweaks existing firms may make to old, existing technologies that may still achieve the same aims. While there is no intention to distinguish between old and new, incumbent or entrant, some of the evidence required for a firm to avail themselves of BOI incentives may favor new entrants.

Broadly speaking, cross-cutting constraints to private sector growth in the Philippines compound the existing barriers for firms to undertake green investment. A notable proportion of markets in many sectors, including transport and agriculture, are highly concentrated and market leaders have little incentive to invest in new technologies without competitive pressures to reduce their costs. Laggard firms instead use old production technologies and focus on local market niches. High trade costs, among the highest in the ASEAN region, further restriction competition and reduce domestic firms’ opportunities to access larger markets. Cumbersome permitting processes and other restrictive business regulations across sectors also hamper the country’s ability to attract foreign direct investment (FDI) and access to finance is limited, especially for SMEs.

4.3 Selected Case Studies on Firms Making Green Investments

The two case studies—circular economy and electric vehicles—have been chosen to illustrate how firms have adopted green technologies and expanded green investments.

4.3.1 Circular economy

The Philippine economy has shown potential in reducing waste and becoming more resource efficient and opportunities for smaller firms in the circular economy. The resource efficiency of the Philippines was simulated by the UN Economic and Social Commission for Asia and the Pacific and compared to other countries in the region. In terms of domestic material consumption, energy intensity, and water efficiency the simulation found that the Philippines had a 41.8 percent lower domestic material consumption intensity in 2016 when compared to year 2000. The simulation revealed high resource efficiency compared to the regional average. Moreover, given the nascent stage of the Philippines to establish a more circular economy, it is likely to get better with more focused efforts from the national government and increased participation from the private sector. Most optimistically, there seem to be opportunities that small firms can take advantage of in some niches of the circular economy.

There are apparent circular economy gains to be had in the better management of e-waste. The term e-waste is used for discarded electronic machines and household appliances. E-waste contents and substances pose health and environment problems that require special attention. The contribution of e-waste, based on analysis from the Waste Analysis and Characterization Study, was less than 2 percent in the overall municipal solid waste composition. However, the Business Process Outsourcing (BPO) industry is a big generator of e-waste in the country. As this sector continues to grow, the e-waste problem will become bigger and more complex to manage. Fortunately, the private sector is active and growing in e-waste management.

76 The Philippines ranked third most restrictive out of 83 countries on the OECD’s FDI Regulatory Restrictiveness Index in 2020. https://www.oecd.org/investment/fdiindex.htm
77 National Solid Waste Management Commission, 2008–2013
Small, unregistered enterprises are already participating in e-waste management. Formal and informal recyclers are the key players dealing with e-waste. The number of private companies involved in formal e-waste recycling grew from 13 in 2016 to 43 in 2018. These private companies are required to undergo Environmental Management Bureau accreditation. However, informal recyclers are only required to register their business in local government units, without the need for accreditation.

The national government is also becoming more aware and active in addressing the e-waste management problem. A national initiative utilizing the principle of public and private partnership is presently developing safe e-waste transport, storage, and disposal system for the benefit of the informal waste sectors in the country. The national initiative creates a market for informal waste enterprises and begins to address the challenge of handling of e-waste by informal workers since this type of waste can contain hazardous materials.

Once the health and safety standards are addressed, e-waste management is in some way tailor-fit for small enterprise and may point to other economic opportunities for smaller enterprises. The sources of e-waste are many. To incentivize firms and households do not recycle e-waste, it would be best if collection and transport of the waste could be contracted out. Collection and transport at disparate geographic points may suit small businesses best. For households, especially, the volume of e-waste is rather irregular, while it may be more predicable for businesses as they replace equipment but not something that has a constant flow. This volume and flow of e-waste may also be amenable to small business as they may be more able to economically collect and transport small amounts of e-waste at a time.

To incentivize continued recycling, the value of recycled material must be maintained to offset the benefits of simply disposing of the material. Prices are the anchor to incentives to recycling. If the price of recycled materials falls, the incentives households and businesses have to separate and hold e-waste are attenuated. In addition, the profits that waste management companies make will fall. Unfortunately, in a study on e-waste in the Philippines, Figueroa, A.M.I. et al. (2021) find that the price for recycled e-waste is falling. Addressing the reasons why this may be the case, will help sustain the circular economy of e-waste management in the country.

4.3.2 Electric vehicle industry

A bill to support the development of electric vehicle (EV) industry and create a comprehensive roadmap for it, was just passed. The Electric Vehicle Industry Development Act serves to support the development of a national policy and regulatory framework to increase the uptake of EVs in the country. This will cover not just the local production and use of EVs, but also employment generation and reducing the reliance on imported fuel. An important factor of the bill is the Comprehensive Roadmap for the Electric Vehicle Industry (CREVI), which will result in a development plan to serve as a guideline. The CREVI will include standards and specifications of EVs as well as charging stations, fiscal and non-fiscal incentives for setting up of the local EV manufacturing industry and supply chain infrastructure, strengthen R&D for EV-related technologies, and training the workforce to deal with EVs.

DTI has issued incentives to encourage EV investment. These incentives include the removal of tariffs, excise duty exemptions, and VAT exemption for raw materials/parts/capital equipment to be used in EV manufacturing. However, the Philippines current energy policy is deemed “technology neutral”—meaning that it will not favor one technology with incentives or disincentives over others—and while there has been talk of “green” or “clean energy,” policies may need to be strengthened to encourage true investment in and adoption of cleaner technologies.

79 Ibid
4.4 Recommendations

Policy recommendations are drawn based on the barriers and opportunities for Philippine firms to uptake green investments, with an objective to increase innovation and diffusion of green technologies for the private sector. Without recent, cross-sectoral and regional firm-level data, it was not possible to estimate the size of the challenge on how many firms will have to transition to green technologies. It was also difficult to examine the nature of the challenge, including what alternative, greener technologies exist, what are the acquisition and implementation costs of these technologies, what is the optimal, least disruptive, path to technological adoption, and the size and types of financing needed by firms to undertake these transitions. Nevertheless, these policy recommendations are based on addressing known constraints for Philippine firms in identifying and adopting green technologies. They are also based on improving conditions for policymakers to design and implement evidence-based policies and programs to help firms transition to green technologies. The recommendations are labeled as short-term (to be implemented in the next 5 years) or medium-term (to be implemented later). While these recommendations focus on mitigation actions, they may address adaptation actions and are intended to help the Philippines meet its development objectives and its climate commitments.

4.4.1 Use price signals

Correct pricing signals are integral for inducing the private sector’s transitions to greener technologies.

Use environmental taxes to discourage harmful activities (short-term). Department of Finance (DOF) and Department of Energy (DOE) should establish a carbon tax or emissions trading scheme to put a price on GHG emissions to spur firms to transition away from conventional fuels and increase resource efficiencies. High energy costs have incentivized cement manufacturers to lower their use of fossil fuels and increase energy efficiency in recent years. While not a tax, fines and penalties imposed on firms that fail to comply with energy labeling or sell, lease, or import products that do not meet the minimum energy performance set by the Energy Efficiency and Conservation Act encourages compliance with the regulation and therefore greater adoption of green technologies.

Remove perverse incentives (short-term). The Philippines lacks the substantial perverse price incentives, such as subsidies for energy use, that are found in many of its regional peers. Nevertheless, these exist in some sectors, including agriculture and transport, and removing these would create incentives for better resource management for firms.

Provide direct support to climate-smart actions. These are incentives to bring the private sector to take climate actions that generate positive externalities for the environment and society that are not priced. Specific recommendations include:

- Accelerate implementation of existing legislations aimed to support the private sector to engage in green investments, namely CREATE and Green Jobs Act that provide tax incentives (short-term). Specifically, DOF, BSP, DTI, and Department of Labor and Employment (DOLE) could accelerate the development of clear labeling of green assets and apply them consistently across rules and regulations that promote green finance, industry, and jobs. Ensuring compatibility of the list of eligible green activities, as well as the certification and verification processes, could avoid delays in implementation of these policies and thus provide a solid foundation for catalyzing capital flow to green assets in the country. DOF could consider time-bound preferential treatment for smaller and older firms that may find application for tax incentives more difficult to prepare and process than larger and younger firms.

- Lower non-tariff measures (NTMs) on importation of green technologies (short-term). DOF and DTI, with the support from academe, should review existing NTMs on environmental goods and services to identify which green technologies important for mitigation and adaptation actions currently are burdened by a high level of NTMs. While tariffs on environmental goods are generally low, a
comprehensive tariff review by NEDA could identify which tariffs remain high and thus pose barriers to importation of green technologies. Based on these reviews, DOF, NEDA, and DTI should remove or lower tariffs and NTMs on these technologies.

4.4.2 Remove or lower regulatory obstacles

Removing or lowering a variety of obstacles that prevent the private sectors from undertaking climate actions that are in their interest is also essential.

Enhance implementation of measures designed to protect intellectual property rights (short-term). Consistent enforcement will lower foreign firms’ concerns regarding piracy. In addition, make it easier to access Philippine domestic markets and commercialize intellectual property assets.

Design streamlined certification and verification processes for green technologies, goods, and services, and jobs (short-term). The government should balance implementation efficiency and environmental integrity when reviewing application and monitoring reports to apply for tax incentives available through CREATE and Green Jobs Act.

Lower barriers that impede competition, ease of doing business, and trade facilitation (short- and medium-term). Anti-Red-Tape Authority (ARTA) should continue implementation of Ease of Doing Business and Efficiency Government Service Delivery Act of 2018 to reduce processing time and eliminating red tape, especially for domestic and imported green technologies. Digitizing the Bureau of Customs’ operational processes would result in reduced trade costs.

4.4.3 Fill knowledge gaps

Without evidence, policymakers miss an opportunity to design and evaluate implementation of policies that would correctly incentivize the private sector to undertake climate action based on evidence.

Collect and analyze firm-level data on operations, financing, use of technologies, and managerial capacity to investigate constraints that hinder firms from adopting green technologies (short-term). This information would be highly useful for government in several areas, including:

- Determine whether existing DTI and DOST programs targeting technology adoption and diffusion could integrate green technologies and adjust support mechanisms to address the most acute constraints faced by firms.
- Develop a green taxonomy for goods, services, and activities based on a range of technologies being used by firm size, sector and region. Firm-level data and analysis could nicely complement the private sector stakeholder engagement that has already been undertaken for the development of green taxonomy under the Green Jobs Act.
- Evaluate the feasibility of using policy instruments available under the Philippines Innovation Act to help firms acquire green technologies and adapt them to local conditions.

This firm-level data could be collected periodically by DTI, DOST, DOF, DOLE, with support from the academe and development partners, to be utilized for designing evidence-based policies and programs.

Monitor implementation progress of existing policies and programs targeted for firms to undertake climate actions (short- and medium-term). These would include CREATE (DOF and DTI), Green Jobs (CCC and DOLE), firm capability and technology adoption support programs (DTI and DOST), R&D grant programs (DOST), among others. These implementing agencies should evaluate uptake of incentives by type (e.g., tax deductions claimed based on R&D expenses), efficiency, and efficacy of the policy and adjust design and implementation arrangements. Evidence-based allocation of the government’s budget on subsidy and grant programs could be especially important considering the tight fiscal space.

Monitor the volume of domestic and foreign investment in strategically important green technologies and firms (short- and medium-term). Foreign investment data collected by Board of Investment under
DTI and Investment Promotion Agencies (IPAs) is collated and published by Philippine Statistics Authority (PSA) on a quarterly basis. However, the data is at the aggregate level and does not provide insights on green sectors. Data collection effort could be enhanced through a partnership amongst PSA, BOI / DTI, IPAs, private sector, and academe to build and maintain a database of domestic and foreign investment in key green technologies and firms. Assessment of business regulation and investment climate in key sectors, including energy, transportation, manufacturing, and agriculture, could highlight regulatory, legal, institutional reforms that the government can pursue to accelerate adoption and diffusion of green technologies.