



# Green Infrastructure Investment Opportunities

PHILIPPINES  
2020 REPORT



Climate Bonds INITIATIVE

ACGF  
ASEAN CATALYTIC GREEN FINANCE FACILITY

ADB

Securities and  
Exchange  
Commission  
PHILIPPINES

Supported by the ASEAN Catalytic Green Finance Facility, the Asian Development Bank and the Securities and Exchange Commission Philippines

## This report highlights green infrastructure investment opportunities in the Philippines

This report has been prepared to help meet the growing demand for green investment opportunities in the Philippines and to support the country's transition to a low carbon economy.

It aims to facilitate greater engagement on this topic between project owners and developers, and institutional investors. Green infrastructure and corresponding green finance instruments are explored in the report, with sector-by-sector investment options presented.

The report is intended for a wide range of stakeholders, including domestic investors, offshore pension funds and asset managers, potential issuers, infrastructure owners and developers, as well as relevant government ministries.

In developing this report, the Climate Bonds Initiative (CBI) consulted with key Government bodies, industry, the financial sector, peak bodies, NGOs and think

tanks – in partnership with the Securities and Exchange Commission (SEC) of the Philippines and the Asian Development Bank (ADB). We would like to thank these partners along with the other organisations that contributed to the report: The Philippines Department of Finance, the Public-Private Partnership Center of the Philippines; National Economic and Development Authority (NEDA), Development Bank of the Philippines, BDO Unibank, Rizal Commercial Banking Corporation (RCBC), Thomas Lloyd Group, AC Energy, and BioPower Group.

CBI also acknowledges the contributions made from members of the ADB Southeast Asia Innovation Hub and ASEAN Catalytic Green Finance Facility (ACGF) teams, including Joven Balbosa, Advisor, ADB Southeast Asia Department; Anouj Mehta, Unit Head, Green and Innovative Finance and the ACGF; Camille Bautista-Laguda (consultant, ACGF); Lianne De La Paz (consultant, ACGF), and Marina López Andrich (consultant ACGF).

## Green Infrastructure Investment Opportunities (GIIO) Report Series

Green infrastructure presents a huge investment opportunity globally, with an estimated USD100tn worth of climate compatible infrastructure required from now to 2030, in order to meet Paris Agreement emissions reduction targets. However, there remains a lack of identifiable, investment-ready and bankable projects. There is also a lack of understanding of what types of assets and projects qualify for green financing.

In response to this challenge, CBI is developing a series of reports that aim to identify and demonstrate green infrastructure investment opportunities around the world. By so doing, it aims to raise awareness of what is green and where to invest, as well as to promote green bond issuance as a tool to finance green infrastructure.

The report series commenced with the GIIO Indonesia report, launched in May 2018, followed by five other reports –

the latest being the GIIO Vietnam report, launched in April 2020. Future GIIO reports will include further exploration of opportunities in Asia-Pacific as well as in Latin America.<sup>1</sup>



## Climate Bonds Initiative

The Climate Bonds Initiative is an international investor-focused not-for-profit organisation working to mobilise the USD100tn bond market for climate change solutions.

It promotes investment in projects and assets needed for a rapid transition to a low carbon and climate resilient economy. The

mission is to help drive down the cost of capital for large-scale climate and infrastructure projects and to support governments seeking increased access to capital markets to meet climate and greenhouse gas (GHG) emission reduction goals.

CBI carries out market analysis, policy research, market development; advises governments and regulators; and administers a global green

### Table of contents

- 3 SEC Foreword**
- 4 ADB Foreword**
- 5 Green infrastructure: an opportunity for growth**
  - 6 Snapshot: Macroeconomic outlook
  - 7 Snapshot: Infrastructure spending
  - 9 Snapshot: Climate policy
- 10 Green finance trends and opportunities**
  - 10 Global demand for green is growing
  - 11 Green finance is growing in the Philippines
  - 12 Snapshot: The Philippines Green Bond Market
  - 20 Brown to green transition in the Philippines
- 24 Green infrastructure investment opportunities**
  - 25 Renewable energy
  - 28 Low carbon transport
  - 31 Sustainable water management
  - 35 Sustainable waste management
  - 38 Other green opportunities
- 39 Measures for growing green infrastructure**
- 40 Annexes**
  - 40 Annex I: Green debt instruments
  - 43 Annex II: Green equity instruments
  - 44 Annex III: Credit enhancement mechanisms
  - 46 Annex IV: Risk transfer instruments
  - 47 Annex V: Green standards applicable in the Philippines
  - 49 Annex VI: Sample Green Pipeline
- 54 Endnotes**

### Exchange Rate September 30, 2020

1 USD = 48.48 PHP

1 PHP = 0.0206 USD

# SEC Foreword

As an archipelago in South East Asia situated on both the “Typhoon Belt” and “Pacific Ring of Fire,” the Philippines has long been exposed to environmental challenges. In fact, the country is considered among the most vulnerable to the effects of climate change – the nation’s 100+ million people which are spread across more than 7,000 islands, regularly face powerful – and increasingly more frequent – typhoons, earthquakes and volcanic eruptions. In more recent years, the country also had to deal with rising sea levels, and periods of droughts and floods caused by the “El Nino” and “La Nina” weather phenomena.

Armed with first-hand experience in dealing with the overwhelming impact of climate change on the economy, Philippine authorities worked toward establishing a supportive enabling environment for the development of a sustainable financial market. Among the measures taken by the Philippine Securities and Exchange Commission (SEC), in conjunction with fellow ASEAN regulators, was the adoption of the ASEAN Green Bond Standards (GBS), ASEAN Social Bond Standards (SBS) and the ASEAN Sustainability Bond Standards (SUS).

These ASEAN Standards were developed by the ASEAN Capital Markets Forum (ACMF) and were intentionally aligned with the International Capital Market Association’s Green, Social and Sustainability Bond Principles, as well as the Climate Bond Initiative’s (CBI) criteria. The ASEAN Standards were intended to provide clear guidance for issuers as well as a measure of assurance to investors that bonds carrying the ASEAN Green and Sustainability labels adhere to international best practice. Notably, the ASEAN GBS goes a step further than the ICMA Green Bond Principles by expressly prohibiting fossil fuel power generation-related projects.

Since the adoption of the ASEAN Standards, we have seen the rapid growth of the Philippine green bond market led mainly by the private sector. To date, total Philippine sustainable bond issuances stands at US\$3.4 billion equivalent – both on and offshore – 90% of which have been issued by Philippine banks, renewable energy, infrastructure and real estate companies. This active and primary role of private sector green bond issuers distinguishes the Philippines from other nascent green markets, where sovereign borrowers have played a more prominent first mover role. Indeed, in 2019, 10.6% of the total loan portfolio of the Philippine banking system went to finance green and social projects that were in line with the Sustainable Development Goals of the United Nations.

The currencies in which our firms raised funds have been diverse, from Philippine Pesos, to US Dollars, and even a Swiss Franc placement – that last transaction, by one of the top three Philippine banks, resulted in a negative yield. This diversity has been crucial for it exposed our issuers to a wide and diverse range of investors and their specific concerns and expectations. This diversity – raising bonds locally, in the region and in Europe, and in multiple currencies – provides a strong foundation for additional issuance and investment.

While green finance is relatively new in the Philippines, the first movers in our market have been instrumental in introducing the concept to our domestic investor base and making other local firms aware of the potential for green finance. Importantly, most Philippine green and sustainability bonds (roughly US\$2.99 billion worth) have carried the ASEAN Green or Sustainability label, with all ASEAN labeled bonds also carrying second party opinions from noted providers, such as Sustainalytics and Vigeo-Eiris. However, it should be noted that one transaction which did not carry the ASEAN label – as it was issued prior to the implementation of the ASEAN GBS – was the very first labeled green bond issuance in the Philippines: a nearly US\$300 million geothermal transaction in 2016 that was CBI certified. On that note, we thank CBI for playing a critical role in jumpstarting our green market.

The continued development of the green and sustainability bond markets is also supported by the Philippines’ “whole of government” approach to sustainable/ green finance. Recently, the Department of Finance established the Interagency Task Force on Green Finance which consists of different government agencies to work toward developing a Philippine Sustainable Finance Roadmap. The SEC also instituted sustainability reporting for all listed corporations, and is a staunch supporter of the principles of the Task Force on Climate-related Financial Disclosures (TCFD). The Bangko Sentral ng Pilipinas (BSP), recently published its sustainability framework for banks; joined the Network of Central Banks and Supervisors for Greening the Financial System (NGFS); and invested in \$350 million of green bonds for its own portfolio.<sup>2</sup> The BSP also recently proposed the inclusion of green projects under an existing regulation that requires banks to lend to targeted sectors.<sup>3</sup> Most recently, President Duterte signed the Energy Efficiency and Conservation Act of 2019 that calls for 46,000 MW of energy savings by 2040.

This report will help the Philippines’ green market grow even faster and build on what has already been accomplished. Hopefully, it will also enable us to reach the next US\$3 billion equivalent in green bond issuances. In addition to investment opportunities in renewable energy and water management, this report identifies new projects in untapped sectors, such as mass transport and solid waste management. This detailed research coupled with the private sector’s demonstrated engagement to date and the authorities’ commitment to building a truly transparent green and sustainable financial market make the Philippines an undeniably attractive destination for green investments.

Mabuhay and welcome, Green Investors!

Sincerely,

**Ephyro Luis B. Amatong**  
Commissioner  
Securities and Exchange Commission

# ADB Foreword

Asia and the Pacific's economic progress in recent decades has been remarkable, but there has been a price to pay: the region has become the world's leading source of greenhouse gas emissions. Asia and the Pacific have a pivotal role to play in ensuring the attainment of the Paris Agreement goals and mitigating global warming.

The Asian Development Bank (ADB) is committed to supporting its developing member countries in tackling climate change. ADB's Strategy 2030 includes targets to build climate and disaster resilience, address gender equality, and mobilize long-term private financing. ADB is making good on its 2014 pledge to double its annual climate commitments from \$3 billion, mobilizing \$7 billion total climate finance in 2019. \$5.5 billion of this support will contribute to mitigating climate change, and the \$1.5 billion will support adaptation.

As Asia and the Pacific begins to bounce back from the global COVID-19 pandemic, it is imperative that the region's recovery strategies do not undermine achievements to date in reducing dependency on fossil fuels and protecting the environment. There is broad consensus that infrastructure plays a vital role in economic growth and social development. To give real meaning to the term "Build Back Better," green and sustainable infrastructure needs to be mainstreamed in national renewal strategies.

In these uncertain times, access to financing to pay for reconstruction is likely to remain challenging, as capital shies away from emerging economies. ADB is working with governments across Asia and the Pacific to address this shortfall by supporting strategies that catalyze green finance from both the public and private sectors. To increase green infrastructure, and help developing Asia achieve UN Sustainable Development Goal targets by 2030, vast amounts of finance are required. The growing global green bond market has been crucial in generating some of the financing required, but it must expand.

ADB has supported the green finance market in the Philippines from its earliest days, facilitating the first project climate bond in the region through the AP Renewables green bond for the Tiwi MakBan geothermal energy facility in 2016. To attract financiers looking for green investment, the Philippines needs a prominent pipeline of infrastructure investment opportunities that align with internationally accepted definitions of green financing. This Green Infrastructure Investment Opportunities report aims to showcase this project pipeline, and highlight examples of the breadth and depth of possible green investment opportunities in the Philippines.

ADB is proud to support this important and timely report, through technical assistance for the ASEAN Catalytic Green Finance Facility (ACGF), as part of a longstanding relationship with the Climate Bonds Initiative in the region. We will continue to work together to grow green finance markets in the Philippines and the wider region as we seek to meet our common goals of a prosperous region and a sustainable planet.



**Ramesh Subramaniam**

*Director General*  
Southeast Asia Regional Department  
Asian Development Bank

## About the Asian Development Bank

ADB is committed to achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty. Established in 1966, it is owned by 68 members—49 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

## About the ASEAN Catalytic Green Finance Facility

The ACGF is an innovative finance facility under the ASEAN Infrastructure Fund dedicated to accelerating green infrastructure investments in Southeast Asia. It supports ASEAN governments to prepare and source public and private financing for infrastructure projects that promote environmental sustainability and contribute to climate change goals. The ACGF is owned by the 10 ASEAN member states and the Asian Development Bank, which also administers the facility.

# Green infrastructure: an opportunity for growth

The Philippines has been one of the fastest growing economies in ASEAN (Association of Southeast Asian Nations) and is considered the new tiger in Asia.<sup>4</sup> The coronavirus disease (COVID-19) pandemic has put some pressure on the country's prospects in 2020; however, economic growth is expected to rebound gradually in 2021-2022, as global conditions improve.<sup>5</sup> The process of recovery from the COVID-19 crisis needs to focus on building back better, by prioritising green infrastructure and nurturing a regulatory environment that facilitates green and innovative investment.

The Philippines is one of the most vulnerable countries to climate change, due to its high exposure to natural hazards, dependence on climate-sensitive natural resources, and vast coastlines. According to the World Risk Report in 2019, the Philippines ranks as the ninth most vulnerable country to disaster and climate change-related risk among the 180 countries examined.<sup>6</sup> On average, 20 tropical cyclones enter the Philippines region every year, and about 8 or 9 of them directly cross the Philippines.<sup>7</sup> These numbers are the highest in the world, and are expected to increase in frequency and severity due to climate change.<sup>8,9</sup> In 2013, one such destructive cyclone, Typhoon Haiyan, cost 4.7% of the country's GDP.<sup>10</sup>

The significant scaling-up of investment in green infrastructure is critical for the Philippines to meet its climate commitments—including meeting global emission reduction pathways under the Paris Climate Change Agreement—and build resilience to the impacts of climate change as well as to achieve rapid economic development. As a top priority for the current Philippine administration, infrastructure development is being heavily supported and promoted in the Philippines.

Currently, much of the Philippines' investment in infrastructure is being carried out through public funding and public-private partnership (PPP) ventures. However, public funding is not sufficient to meet the growing demand for green infrastructure; new channels will be necessary to mobilise private capital. Further, existing funding commitments made by the government may be challenged by the current COVID-19 pandemic and ensuing economic crisis, so looking to the market for additional investment will be key to growing green pipelines.

Globally, there is significant demand for green investments. Green debt instruments, including green bonds and green loans—with proceeds used for climate-compatible and environmentally sustainable projects—provide useful tools for private investors looking to invest in green assets and projects. The first ever green bond from an ASEAN entity was issued in 2016 by Philippine corporate, AP Renewables. The Philippines' bond market now stands at USD 2.6bn and it is growing.

Due to the low interest rate environment in developed markets, many international investors have a strong appetite for

better yield while at the same time being constrained by either currency or credit rating restrictions<sup>11</sup> (below BBB). Even under the pandemic, the Philippines has been able to maintain its sovereign ratings as well above investment grade (BBB+/BBB/Baa2) and stable outlooks from the three major ratings agencies. Recently, the country received an upgrade from the Japan Credit Rating Agency to A- in June 2020.<sup>12</sup> This offers an attractive opportunity for investors to meet their demand for additional yield while still being within credit rating constraints.

## Country facts

Population: **109 million**  
(July-2020)<sup>14</sup>

Population growth rate: **1.52%**  
(2020)<sup>15</sup>

Urban population: **47.7%** of the population is urban (2020)<sup>16</sup>

GDP: **USD376.80bn**  
(Annual, 2019)<sup>17</sup>

GDP growth rate: **0.6%** (Q1 2020)<sup>18</sup>  
vs. **5.9%** (Annual, 2019)<sup>19</sup>

Interest rate (cash rate): **2.75%**  
(as of August, 2020)<sup>20</sup> vs. **4.0%**  
(as at Dec, 2019)<sup>21</sup>

Inflation: **2.5%**  
(January to June 2020)<sup>22</sup>  
vs. **2.6%** (as at Feb, 2020)<sup>23</sup>

Net inflow FDI: **USD507m**  
(as of March, 2020)<sup>24</sup>

Government 10Y Yield: **2.64%**  
(Daily, August 20, 2020)<sup>25</sup> vs. **3.6%**  
(Daily, June 23, 2020)<sup>26</sup>

Balance of trade: **USD1.3bn**  
(as of June, 2020)<sup>27</sup>

Government debt to GDP: **39.6%**  
(Annual, 2019)<sup>28</sup>

**Rating:**

**BBB+, stable** (S&P)

**Baa2, stable** (Moody's)

**BBB** (Fitch)

**A-, stable**  
(Japan Credit Rating Agency)

## The post COVID-19 recovery should focus on sustainability

The world is in the midst of a major crisis. In ASEAN, the global COVID-19 pandemic has triggered economic recession that is impacting the lives of millions across the region - with protective measures taken to prevent the virus's transmission shutting down large parts of the region's economy.

Once this health crisis comes under control, governments will need to find ways to stimulate growth to get economies moving again. All future economic stimulus packages should aim to contribute to building a healthier, more resilient, and more sustainable economy.

An opportunity exists to use green finance to fund COVID-19 recovery efforts. Bonds could be issued as green, resilience or

blue bonds, depending on the type of investment that supports the recovery. Project inclusion for COVID-19 recovery bond programmes could draw on green taxonomies such as those developed in the EU, ASEAN, and by the Climate Bonds Initiative, augmented to include assets that explicitly enhance resilience.

As part of improving economic resilience, bond programmes should exclude activities which are at risk from future shocks, for instance assets that could become stranded as a result of climate policy changes, or which are not resilient to climate physical risks. Investor confidence can be built by using available taxonomies with a high degree of international recognition.

In order to attract investors looking for green, the Philippines needs to be sure that there is a visible pipeline of infrastructure investment opportunities that align with internationally accepted definitions of green.

There is often limited awareness and appreciation among some market participants of 'what are green investments' beyond solar and wind energy. The lack of understanding of what are green investments makes it difficult for governments to develop pipelines of commercially viable, green infrastructure investment opportunities that are able to support the nation's transition to a low carbon economy.

Green infrastructure has positive environmental and economic benefits. It can create prosperity by increasing

competitiveness, productivity, and employment opportunities; extending the reach, reliability, and efficiency of the national electricity grid without creating air pollution; broadening the economic base; creating new markets; and providing inclusion and connectivity across the Philippines.<sup>13</sup>

The identification of green infrastructure investment opportunities in the Philippines can help investors understand that there is a sufficiently large pool of financially attractive investments that are also green.

Knowledge of a large pool of green investments available means that investors can realise there are viable alternatives to non-green assets and projects, and they can make their preferences for green heard, which will in turn spur the creation of a larger pool of green investments.

Improving the general investment environment as well as promoting more green finance will help to fund the infrastructure necessary to meet climate targets. This means continuing to open up to investors looking for green and ensuring there is a pipeline of bankable, investment-ready opportunities. These measures will ensure the Philippines is on the path to transitioning to a low carbon economy and becoming more resilient to the impact of climate change and other global shocks. Delayed action in transitioning to a low carbon economy increases the cost of change as well as the volatility and structural risks to the finance sector and underlying asset values.

## Snapshot: Macroeconomic outlook

### Green finance presents an opportunity in promising macroeconomic conditions.

The Philippine economy is expected to contract by 1.9% in 2020 due to the economic fallout triggered by recent natural disasters and the COVID-19 pandemic, according to the World Bank.<sup>29</sup> The economy already contracted by 0.2% year-on-year in the first quarter of 2020, the first contraction in over two decades.<sup>30</sup> However, the economic outlook for the Philippines is optimistic, with the World Bank suggesting the country could bounce back in the next two years.<sup>31</sup>

Prior to the pandemic, the economy of the Philippines was doing well. The Philippines has been one of the fastest and largest growing economies in ASEAN, with an average GDP growth of 6.6% from 2016 to 2019.<sup>32</sup> Despite challenging global circumstances, such as the U.S.-China trade uncertainties, the Philippines grew at a moderate and steady pace in 2019: the country's annual GDP growth in 2019 was 6%.<sup>33</sup>

The growth in 2019 was largely driven by private consumption, which regained momentum with lower inflation.<sup>34</sup> The Central Bank of the Philippines successfully adopted an accommodative policy stance that stabilized the prices for food and energy, which led to the Philippines' lowest rate of inflation in almost three years: 1.7%, as at August 2019.<sup>35</sup> The government also prioritized reform that opened new sectors to foreign investment and improved competition.<sup>36</sup> In 2019, the government implemented

the Ease of Doing Business Act, aimed at reducing red tape and streamlining business approval processes.<sup>37</sup> Further, President Rodrigo Duterte's 2019 Build Build Build campaign significantly increased infrastructure funding.

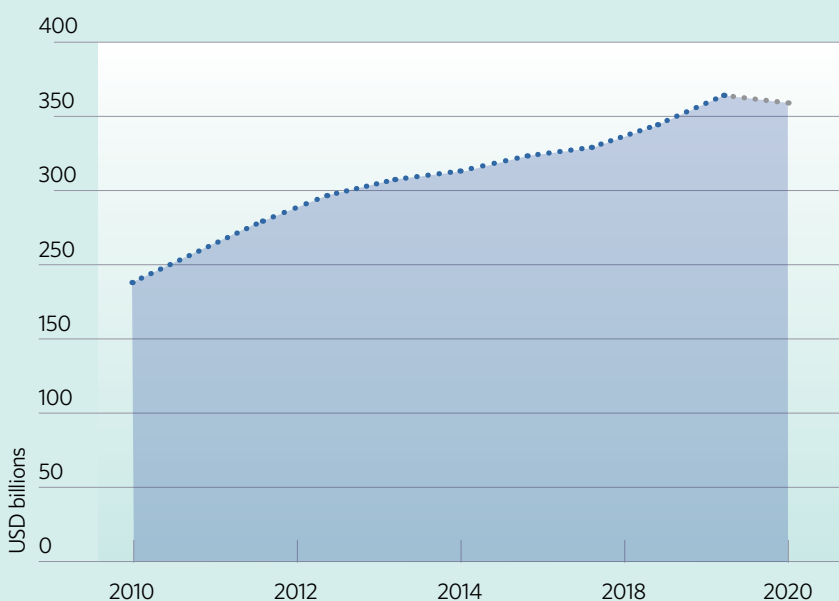
In late 2019, predictions were made that there would be an annual GDP growth of about 6.5% in 2020,<sup>38</sup> and that the headline inflation was to remain stable between 2.5%-3.3%.<sup>39</sup> Public investment in infrastructure was anticipated to be the driving force of economic growth in 2020, as nearly a quarter of the 2020 budget was allocated to infrastructure.<sup>40</sup> By 2022

infrastructure was expected to reach 7% of GDP compared to 2% of GDP before President Duterte took office in 2017.<sup>41</sup>

As the economy is put under pressure during this crisis and public spending is redirected to priority areas for recovery, there is the risk that this predicted infrastructure growth will stall. However, infrastructure is necessary for a return to economic growth.

### Ensuring this infrastructure in green would aid in increasing the nation's resilience to future shocks and help to build a more sustainable society.

## Infrastructure investment forecast 2016-2040, sector breakdown in terms of GDP



Source: tradingeconomics.com World Bank

## Snapshot: Infrastructure spending

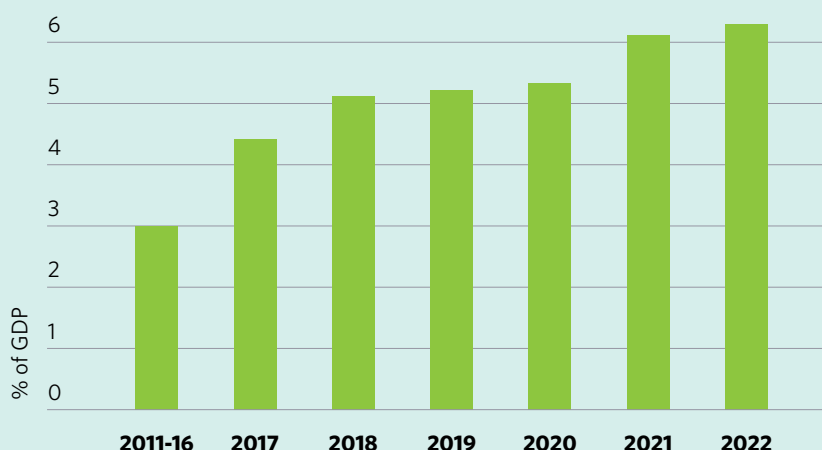
**Infrastructure pipelines have been growing, with more opportunities emerging for outside investment.**

Infrastructure planning and spending in the Philippines has been among the most ambitious in the Southeast Asian region. The Government of the Philippines dubbed 2019 as the 'The Golden Year of Infrastructure.' In President Duterte's 2017 State of the Nation Address, he highlighted that the Philippines' poor quality of infrastructure and heavy traffic congestion are major challenges to be overcome, which he intended to do through massive and ambitious infrastructure development.

Issues such as poor transport facilities and limited access to reliable water supply and sanitation have hindered economic and social development over the last decade. On average, drivers in the Manila Metro area spend up to 71% extra travel time due to the traffic.<sup>42</sup> The problem of traffic congestion in the Philippines has become increasingly urgent for the government to resolve, as it has caused economic losses and otherwise negatively affected those living in the Greater Metro Area.

According to the Japan International Cooperation Agency (JICA), in 2018,

The Philippines ramped up public infrastructure spending in recent years, with another spending surge planned during 2021-22



Source: Department of Budget and Management; IMF staff estimates<sup>41</sup>

it is estimated that the Philippines loses USD70m (PHP3.5bn) per day due to heavy traffic congestion. If this remains unresolved, the country is estimated to lose USD107m (PHP5.4bn) per day in 2035.<sup>43</sup> Further, the lack of sufficient infrastructure is significantly undermining its competitiveness globally, as warned by the World Economic Forum.

In response, the government has been investing more in infrastructure. In 2017, the government hit a record with an infrastructure-spending-to-GDP ratio of 5%, the first time it hit such a record in the past 30 years.<sup>44</sup> The ambitious Build,

Build programme, put forward by President Duterte, aimed to have raised infrastructure spending to 7% of GDP by the end of 2019.

PHP9tn (USD185.4bn) is required to achieve the infrastructure development targets between 2017 and 2022, covering transport (as a priority), water resources, and energy, as detailed in the Philippine Development Plan.<sup>45</sup> If the government can meet its targets, specifically for transport, there could be an estimated saving of up to USD47.4m (PHP2.29bn) per day from reduced traffic congestion.<sup>46</sup>

At the end of 2019, the Philippines Investment Coordination Committee (ICC) and the Committee on Infrastructure (INFRACOM) jointly identified 100 big-ticket infrastructure projects to be added to the national project pipeline.<sup>47</sup> However, since the pandemic, the list of flagship projects has been revised to reflect COVID-19 response better. The Build, Build, Build (BBB) program now consists of 104 big-ticket infrastructure projects worth PHP4.1tn (USD84.46bn), instead of the initial 100 projects prior to the pandemic.<sup>48</sup> In the revised list of projects, 8 projects were replaced by 13 priority projects that are responsive to the pandemic.<sup>49</sup> These additional 13 projects are aimed at the ICT, water, transportation, digital economy and the health care sector.<sup>50</sup>

Despite the setback from the reallocation public infrastructure budget for COVID-19 emergency response in Q1, the total spending for infrastructure is expected to bounce back in 2021 as the National Expenditure Program (NEP) has recently approved an infrastructure budget of PHP1.107tn (USD22.8bn) for FY2021. This total approved budget amounts to 5.4% of the GDP, a significant increase from the public infrastructure budget of 4.6% of the GDP in 2020.<sup>51</sup>

The administration has set the BBB program as the central driver for economic recovery of the country.<sup>52</sup> This approach was echoed by the IMF, who said that the Philippines' government realignment of its flagship infrastructure projects will help the country's economy to recover faster.<sup>53</sup> Secretary Mark Villar from the Department of Public Works and Highways (DPWH) noted that even under the pandemic the BBB program will generate estimated 1.5 million jobs by the end of 2020.<sup>54</sup>

To boost the state budget and allow for such ambitious infrastructure spending, the government had committed to an expansionary fiscal strategy which includes enforcing tax reform and increasing its total debt to meet the funding needs.<sup>55</sup> This included a policy from the BBB funding strategy, to increase in the fiscal deficit from 2% to 3% of GDP until 2022, and increase in the tax revenue through the Comprehensive Tax Reform Program (CTRP).<sup>56</sup> This economic reform is expected to generate an estimate of USD2.6bn (PHP126bn) in tax revenue.<sup>57</sup> In light of the COVID-19 pandemic, Package 2 of the CTRP was recalibrated to make it more relevant and responsive to the needs of businesses,

especially those facing financial difficulties, and to increase the ability of the Philippines to attract investments that will benefit the public interest.

During the Development Budget Coordination Committee (DBCC) FY 2021 Proposed Budget Briefing, NEDA's Acting Secretary Karl Kendrick Chua indicated that it will continue to pursue the liberalization of the economy to attract more investment and jobs through the amendments of Public Service Act, Foreign Investment Act, and the Retail Trade Liberalization Act.<sup>58</sup>

In addition, to help attract private investors, the government is accepting more unsolicited public-private partnership (PPP) proposals from the private sector, according to a statement by the Presidential Adviser for Flagship Programs and Projects, Vivencio Dizon.<sup>59</sup> Based on NEDA estimates, about USD25.3bn (PHP1.23tn) could be available via PPPs.

**Ideally, the government's infrastructure investment prioritization and its economic reforms will attract greater private investment into the country, despite the COVID crisis.<sup>60</sup>**

*“The government plays a central role in catalyzing strategic climate-resilient actions, particularly in harnessing private sector engagement. While the public sector takes most of the responsibility to drive climate change solutions, it has become increasingly clear that the private sector is an essential partner in preparing for and responding to the impacts of this phenomenon. In other words, public private partnerships (PPPs) are key in building a green and resilient economy. The private sector can contribute not only in bridging the infrastructure gap but also in implementing and innovating climate change solutions that encompass technical and sector-specific expertise, greater levels of financing, and efficiency, making it an indispensable ally.*

*Efforts toward climate change adaptation and mitigation are crucial, as the Philippines is classified as one of the most vulnerable*

*to the changing climate. Recognizing that the country is also trying to close the infrastructure gap, our efforts and call to action toward this goal to accelerate infrastructure spending must also take into account the need to develop and make these infrastructures climate resilient. This is necessary in order to avoid costly damage to properties and to minimize the potential negative impacts of climate change by making our infrastructure responsive and climate adaptive. To help address this concern, PPPs will be critical. Under a well-designed regulatory environment, PPPs can be one of the most viable options to maximize the innovation and resources of the private sector, while the government orchestrates collective action through programs, projects, and policies.”*

**Maria Lerma L. Advincula**, Director of Project Development Service, Public Private Partnership Center<sup>63</sup>

*“Green investment is increasingly being embraced as key to maintaining the integrity of our natural capital and establish measures that will reduce environmental and climate risks. When our nature collapses, revenue losses are inevitable, which could result in major socioeconomic setback in the long run. Given this, the National Economic and Development Authority ensures that environmental and climate parameters are integrated in our national and sub-national development plans, and in the design of public investments and portfolios, to ensure our achieving a more resilient and sustainable economy. The Philippine Development Plan 2017-2022, in this regard, already gives priority to the institutionalization of green finance policies to help both the public and private sectors improve their access to available green finance facilities, scale up investments and facilitate more partnerships and collaboration. We need to strengthen that shared commitments and actions between the government and the private sector to redefine and leverage investments that will propel green and sustainable economic growth. We need that same shared commitment to accelerate efforts to effect a positive behavioral change towards a more sustainable and climate -smart lifestyle towards a healthy and resilient Philippines.”*

**Nieva T. Natural**, Director of Agriculture, Natural Resources and Environment Staff, National Economic and Development Authority<sup>62</sup>

## Accelerating the development of the green PPP project pipeline

In strengthening the Philippines' commitment to a sustainable and resilient economy, the Public-Private Partnership (PPP) Center of the Philippines further intensified its technical assistance in the development and implementation of climate change-resilient PPP projects, particularly at the local and regional levels outside Metro Manila. Supported by ADB's Urban Climate Change Resilience Trust Fund (UCCRTF), the PPP Center helps assist the capacities of local implementing agencies (IAs) to prepare and identify projects that can be considered as green.

Generally, these are projects that contribute to climate change mitigation and adaptation solutions. To provide a pool of experts for these projects, the PPP Center established a new Project Development and Monitoring Facility (PDMF) Panel of Consultants for Resilient PPP Projects of Local Implementing Agencies. Through this panel of consulting firms, local IAs may access a pool of PPP experts with proficiency in climate change resiliency which will provide assistance in developing and implementing their PPP projects.

The PPP Center, with the support of ADB, held major fora for local and national IAs, local government units (LGUs), and the private sector to enhance the capacities of IAs and LGUs to respond to climate change adaptation in their PPP projects, one of which is the Renewable Energy and Waste-to-Energy Forum, held in August 2019, with over

200 participants. This forum enabled the IAs and LGUs to learn new climate change technologies and systems, best practices in adaptation and mitigation, and provided interaction with private sector developers and sponsors. Aside from providing technical assistance on traditional infrastructure projects, the PPP Center also provides assistance in emerging and non-traditional sectors such as health, tourism, vertical infrastructure or green buildings, waste-to-energy, water and sanitation, solid waste management, and projects with climate change adaptation features.

To enhance the policy framework within which PPPs operate, the PPP Governing Board (PPGGB) passed a resolution in 2018 that aims to integrate environmental and other safeguards into the entire PPP project cycle.<sup>64</sup> Such integration can serve as a robust benchmark for the Philippines' effort in accelerating the development of green infrastructure projects. In the future, the Philippines could potentially use a sectoral approach to identify how different infrastructure sectors contribute to reducing GHG emission and to further align the growth of green projects with its national climate targets.

## Philippines Public Investment Program

The 2017-2022 Public Investment Program (PIP) is a rolling list of priority programs and projects (PAPs) to be implemented by the national government, government-owned and controlled corporations (GOCCs), government financial institutions, and other national government offices and instrumentalities. The PIP, which is an

accompanying document of the Philippine Development Plan (PDP), is aimed at contributing to the achievement of the societal goal and targets of the PDP and responsive to the outcomes and outputs of its Results Matrices (RM). The PAPs are chosen and prioritized based on their ability to contribute to these targets, outcomes and goal of the Plan. These may be financed using national government funds, including internal revenue generated by GOCCs, in partnership with the private sector or through Official Development Assistance (ODA).<sup>65</sup>

NEDA will facilitate the issuance of the Joint Call for the updating and revalidation of the 2017-2022 PIP and the formulation of the Three-Year Rolling Infrastructure Program (TRIP) for FY 2022-2024 as input to the FY 2022 budget preparation. The TRIP contains the priority infrastructure PAPs requiring national government funding and aims to synchronize the infrastructure planning, programming, budgeting and execution processes of the government.<sup>66</sup>



## Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP)

The National Economic and Development Authority (NEDA) developed the Philippine Action Plan for Sustainable Consumption and Production (PAP4SCP) with support from the Asian Development Bank (ADB). The PAP4SCP will serve as a guiding framework to influence and steer sustainable practices and behaviour across sectors and levels of government by implementing programmatic policy reforms and actions over the short- (2020-2022), medium- (2022-2030), and long-term (2030-2040). It will

also contribute to achieving the country's Ambisyon Natin 2040 by laying down the policy reforms and actions to ensure that the present and future generations of Filipinos will enjoy a "matatag (strongly rooted), maginhawa (comfortable) at panatag na buhay (secure life)." The overall goal of the Plan is for more Filipinos to consume and produce green goods and services toward more sustainable and climate-smart lifestyles.

One of the four action nodes in the PAP4SCP is infrastructure. The plan intends to pursue

green infrastructure development that will facilitate timely environmental monitoring (e.g. ICT infrastructure), improve waste management (e.g. sanitary landfills, recovery/reuse, recycling and repair facilities, wastewater and sewage/septage treatment facilities), scale-up sustainable urban mobility solutions (e.g. car sharing, bike lanes/sharing, walkways), and promote resource-efficient and climate-smart practices and lifestyles (e.g. green buildings/facilities, off-grid renewable energy systems), among others.

## Snapshot: Climate policy

### The Government of the Philippines is firmly committed to the Paris Climate Agreement.

The effects of climate change and the risks associated with a greater than 2°C rise in global temperatures by the end of the century are significant: rising sea levels, increased frequency and severity of hurricanes, droughts, wildfires and typhoons, and changes in agricultural patterns and yields. The Global Climate Risk Index 2020 also places the Philippines in the top five most vulnerable nations in the world.<sup>67</sup>

As a country so vulnerable to the impacts of climate change, when the Philippines ratified the Paris Agreement on March 2017, they were sure to set an ambitious emission reduction target: committing to cut its emissions by 70% below business-as-usual (BAU) by 2030.<sup>68</sup> This target was preceded by years of policy and regulation striving to curb the effects of climate change.

As early as 2009, the Government of the Philippines had identified the necessity to mainstream climate change into development, as detailed in its Climate Change Act 2009.<sup>69</sup> Then, in 2010, the country's Climate Change Commission (CCC) formulated the 2010-2022 National Framework Strategy on Climate Change, which identified the long-term mitigation and low-carbon sustainable growth targets for the Philippines. The National Climate Change Action Plan (NCCAP) 2011-2018, introduced in 2011, detailed specific activities and outputs in different sectors such as developing a national renewable energy program for the energy sector and developing climate resilience infrastructure for the water sector.<sup>70</sup>

Other key programs developed by the CCC include:

**2016:** Development of The Green Jobs Assessment And Certification System And Guidelines<sup>71</sup>

**2017:** Development of A National Framework And Plan Of Action For Philippine Climate Smart Hospitals<sup>72</sup>

**2019:** The Communities for Resilience (CORE)

The Comprehensive Integrated Climate Change Adaptation and Resilience Program for the Indigenous Peoples<sup>73</sup>

Monitoring Of Climate Change Related General Appropriations Act Provisions<sup>74</sup>

National Climate Risk Management Framework<sup>75</sup>

**2020:** Development of Standards For Climate Smart Buildings (under development)<sup>76</sup>

In 2019, the government introduced an interagency green task force led by the Department of Finance (DOF) to facilitate the harmonization of climate policies across government agencies. The green inter-agency task force will seek to harmonize existing sustainability policies by identifying policy or technical gaps then allocating the appropriate resources to address these gaps. At the moment, the task force is working with the SEC and Central Bank to create a green taxonomy that outlines what projects constitute as green and ensure that these definitions are amenable to all government agencies.<sup>77</sup>

The green interagency task force aligns with President Duterte's instruction to involve all relevant ministry agencies to harmonize climate change and disaster-related risk solutions across the whole

government.<sup>78</sup> Further, the President has also urged to further accelerate the Philippines transition into a sustainable economy as he notably raised in his 2019 fourth State of the Nation Address. The President stated that to "fast-track renewable energy projects to reduce dependence on coal is the signal policymakers need to hear."<sup>79</sup> The country's dependency on coal remains one of the challenges in reducing the country's overall GHG emissions.

In 2019, the Philippines passed the Energy Efficiency and Conservation Act into law, which aims to reduce overall GHG emission demand by 24% below BAU by 2040.<sup>80</sup> This Act requires all local government units (LGUs) to implement their own local energy efficiency plans by 2022.<sup>81</sup> It is anticipated that the Act will result in 46,000 MW in energy savings by 2040. There is also ongoing work to improve the climate ambition in the country's Nationally Determined Contributions (NDC), which is planned to be updated by 2020.<sup>82, 83</sup>

### The Philippines' climate goals

As part of its NDCs under the Paris Agreement, the Philippines has defined the following mitigation targets/ GHG emission reduction targets:

- **70% reduction by 2030**, compared to business-as-usual scenario of 2000-2030

Reduction of CO2 emissions will come from energy, transport, waste, forestry, and industry sectors.

# Green finance trends and opportunities

## Global demand for green is growing

**There is a strong green finance momentum globally and significant further growth potential.**

Green-labelled products have become globally recognised as an effective means of directing investment capital towards climate change mitigation and climate change resilience and adaptation projects, including green infrastructure. The growing level of interest from investors in green projects has resulted in the development and growth of innovative financial products including green, social, ESG and sustainability bonds and loans; and green index products. In the future, green COVID-19 bonds may find a place in this list of themed green instruments.

Green bonds are currently the most developed segment of thematic instruments, carrying greater recognition from the investor base. To combat the effects of climate change, it is estimated that green bond issuance needs to reach USD1tn per annum by the early 2020s. A significant amount is expected to finance green infrastructure and assets in emerging markets.

*"As ASEAN grows and steadily fulfils its economic potential, opportunities exist across a wide range of industries. For example, ASEAN has over USD2tn worth of infrastructure investment opportunities – not just traditional ports, roads, and bridges, but support in ICT, education, agriculture, and healthcare."*

**Alexander Feldman**, *President & CEO, US-ASEAN Business Council*<sup>84</sup>

## ASEAN is increasingly appealing to investors

Several foreign entities, including development banks as well as foreign commercial banks, have issued green bonds in local ASEAN currency bonds demonstrating interest in these domestic markets. Other green bond issuers such as BNP Paribas, Société Générale, Bank of America and NAB have issued vanilla bonds in at least one of the local ASEAN currencies. Issuance in local currency allows foreign issuers to tap domestic investors for capital. Interest in ASEAN markets continues to grow.

*"We have some very long-term horizons. If you're a long-term investor, you can focus on specific areas, like Southeast Asia funds... [where] there is a source of growth."*

**Ted Lee**, *Senior Portfolio Manager, Canadian Pension Plan Investment Board*<sup>86</sup>

*"In recent years there has been significantly more engagement from institutional investors for integrating ESG in their investment process [in ASEAN] and the wealth management industry is now following."*

**Valentin Laiseca**, *Head of ASEAN Index Sales, MSCI*<sup>85</sup>

## CBI's Green Bond European Investor Survey shows interest in investment in emerging markets

CBI's *Green Bond European Investor Survey* shows interest in investment in emerging markets.

Outstanding emerging markets (EM) green bonds, as of 30 April 2019, amounted to USD114bn, or around 20% of the green bond market. Meanwhile, EM currently contribute 63% to global GHG emissions.<sup>87</sup> It is thus critical to determine how investors can support the expansion of EM green bonds.

Respondents of CBI's *Green Bond European Investor Survey* were asked to describe their appetite for EM green bonds and to outline what they could be receptive to buying. Most respondents (82%) can buy EM debt, with exposure limits at country and issuer level tending to apply more to respondents that have a greater degree of integration of green bonds. However, the most common restrictions are credit rating (69%), currency (65%) and deal size (58%).<sup>88</sup>

As most respondents can and would like to buy EM green bonds, EM issuers must consider how these requirements can be reconciled. Respondents expressed that

they would like to increase their holdings in EM sovereigns. Countries such as Indonesia (two bonds in USD), Seychelles (USD) and Lithuania (EUR) have issued green bonds and were met with a positive reception from investors. The Philippines has USD issuers of green and sustainable bonds.<sup>89</sup>

Three quarters of respondents able to buy EM green bonds treat EM differently from developed market green bonds, stating that they require more evidence of integrity to invest in green bonds from EM. So, respondents were also asked to rank factors that could make investing in EM green bonds more attractive and bring scale to the market. Credit enhancements available from multilaterals and/or public sector entities was the most frequently selected option, with more than half considering it important or very important.<sup>90</sup>

When respondents were then asked which features would give them more confidence to invest in EM green bonds, they listed the following:<sup>91</sup>

**1. Transparency**, e.g. adherence to GBP, reporting Use of Proceeds (65%),

**2. Reliability**, e.g. external reviews (SPO, audit, certification, etc) (48%),

**3. Risk**, e.g. insurance/CDS/guarantees, size of issue, currency (25%).

More information on this topic can be found in the *Green Bond European Investor Survey*, on the CBI website.



## Green finance is growing in the Philippines

### The Philippines is a leader in green finance in ASEAN.

The Philippines has been increasingly exploring the use of green debt as well as equity instruments and has been expanding credit enhancement mechanisms and risk sharing options. This includes green bonds and green loans, credit guarantees, and guarantee funds, as well as specialty funds for green infrastructure and renewable energy (see Annex I through IV for more information on green financial instruments and mechanisms in the Philippines). There has also been some 'greening' of the stock exchange and domestic banking.

To date, four domestic banks, the Bank of the Philippine Islands (BPI), Rizal Commercial Banking Corporation (RCBC), China Bank and BDO Unibank, have issued green bonds in three currencies: US Dollar, Philippines Peso and Swiss Frank with issuance in each currency amounting to USD600m, PHP15bn (USD309m), and CHF100m (USD108.6m) worth of green bonds. It is worth noting that the BPI CHF bond had a negative yield and is an example of a green bond that meets investor Emerging Market's (EM)

appetite for EM exposure with low credit risk (BBB+). The Development Bank of the Philippines (DBP) also issued a PHP18.12bn Sustainability bond, in which some proceeds were allocated for green projects.<sup>93</sup>

The government has also been developing national and regional policies for facilitating further growth in green finance. In 2019, the Philippines became members to the new Coalition of Finance Ministers for Climate Action and its Helsinki Principles, which promote national climate action through fiscal policy and the use of public finance. Prior to this commitment, the government and regulators have long been moving in this direction.

The Securities and Exchange Commission (SEC) Philippines has been leading the country's work in green finance at the ASEAN Capital Markets Forum (ACMF), as the co-chair to the ACMF Sustainable Finance Working Group. In this role they have been central to the development of the ASEAN Green Bond Standards, ASEAN Social Bond Standards, and ASEAN Sustainable Bond Standards as well as the Roadmap for ASEAN Sustainable Capital Markets. They have also represented ACMF at the Advisory Council of the Green Bond Principles and Social Bond Principles Executive Committee of the International Capital Markets Association (ICMA).

*"European industry still overwhelmingly sees ASEAN as an attractive region for growth and investment, as our 2017 Business Sentiment Survey showed. But that survey also showed a strong call for more progress on government initiatives to reach trade agreements, reduce barriers to trade, and realise the vision of the ASEAN Economic Community."*

**Donald Kanak**, Chairman, EU-ASEAN Business Council<sup>92</sup>

*"ThomasLloyd has been an investor and promoter of renewable energy in the Philippines for 10 years. Our work on Negros Island shows the huge opportunity to develop further its renewable energy and sustainable infrastructure capacity, to deliver the triple benefits of environmental protection, social improvement and financial returns."*

**Tony Coveney**, Managing Director, Head of Project Finance and CEO Americas, ThomasLloyd Group

## The ASEAN Green Bond Standards

The ASEAN Green Bond Standards<sup>94</sup> are based on the ICMA Green Bond Principles and seek to enhance transparency, consistency, and uniformity to help reduce issuance and investment costs. Key elements of the standards include the following:

- **the issuer or issuance of the green bond must have a geographical or economic connection to the region;**
- **fossil fuel power generation projects are explicitly excluded;**
- **information on the process for project selection and on the use of proceeds allocation, as well as the external review report must be made publicly available** on a designated website;
- **recommendation to obtain an external review** for the green bond framework, and is particularly recommended for the management of proceeds and annual reports; and
- **recommendation for the external review providers to disclose their relevant credentials and expertise** and the scope of the review conducted.

Led by the SEC, the Philippines has developed complimentary Guidelines on the Issuance of Green Bonds Under the ASEAN Green Bonds Standards in the Philippines (SEC MC. No. 12, s. 2018). It has also developed the Guidelines on the Issuance of Social Bonds Under the ASEAN Social Bonds Standards in the Philippines (SEC MC. No. 9, s. 2019) and the Guidelines on the Issuance of Sustainability Bonds Under the ASEAN Sustainability Bonds Standards in the Philippines (SEC MC. No. 9, s. 2019). Using these guidelines, the first green bond from the Philippines, under the ASEAN Green Bond Standards, was issued by Rizal Commercial Banking Corporation (RCBC) who is also the first entity to have release a Green and Sustainability Bonds Impact Report in the Philippines.

"We hope to build on our rapid, private sector-led entry into the green and sustainable market to become one of the leaders in ASEAN. We've received a lot of positive feedback from existing green bond issuers in the Philippines. They found the process to work well, particularly when using the ASEAN Green Bond Standards. When we created and adopted this standard it provided people with a clear reference point

to help them along to issue a green bond. The market really sees the importance of using a defined standard." Commissioner Ephyro Luis B. Amatong, Securities and Exchange Commission (SEC)

The SEC are also representing the country in another body for green finance: becoming a member of the UK Prosperity Fund ASEAN Low Carbon Energy Programme (LCEP) Green Force in 2019. This is a 4-year programme of policy support, capacity building and technical assistance to the participating governments. This aims to facilitate green finance flows and improve the regulatory, policy and practical conditions for energy efficiency measures.<sup>95</sup>

The Government of the Philippines is committed to greening the economy, as evidenced by the establishment of the Green Task Force, led by the Department of Finance (DOF). Policies encouraging public investment in green infrastructure have the potential to set the Philippines on a sustainable development pathway for the long run - sending an important signal to the market and providing an opportunity for the country to access new capital.

## Snapshot: The Philippines green bond market opportunity

The first green bond from ASEAN was issued in February 2016 by AP Renewables, Inc., a wholly owned subsidiary of Aboitiz Renewables, in the Philippines. Since then, Southeast Asian green bond issuance has grown, and the ASEAN market continues to have significant growth potential.

Globally, the volume of green bond and loan issuance rose sharply, from USD171bn in 2018 to USD259bn in 2019, buoyed by strong interest from both investors and issuers. Mirroring this trend, ASEAN issuance, supported by new regulation, also grew strongly, reaching USD8.1bn in 2019 from USD4.1bn in 2018, representing 3% of the global total and 12% of the Asia Pacific region. As at August 2020, the cumulative ASEAN issuance stood at USD15.4bn.<sup>96</sup>

Globally, it is estimated that green bond issuance needs to exceed USD1trn per annum to meet the goals of the Paris Agreement.<sup>97,98</sup> With the Philippines accounting for 0.35% of global emissions, this could translate into USD3.5bn per annum – or just over double 2019 issuance. Given that the global green bond market has to quadruple in size to meet the USD1trn target (2019 issuance was USD257bn), the Philippines is already on track. But the potential is far greater - the level of capital market development and

huge infrastructure opportunity could see the Philippines accounting for a greater share of the green bond market than its share of emissions.

Despite the economic pressures of the COVID-19 crisis, green bond issuance continues in most of the world. It is expected that this trend will be reflected by the ASEAN market, so the outlook for the region is optimistic.

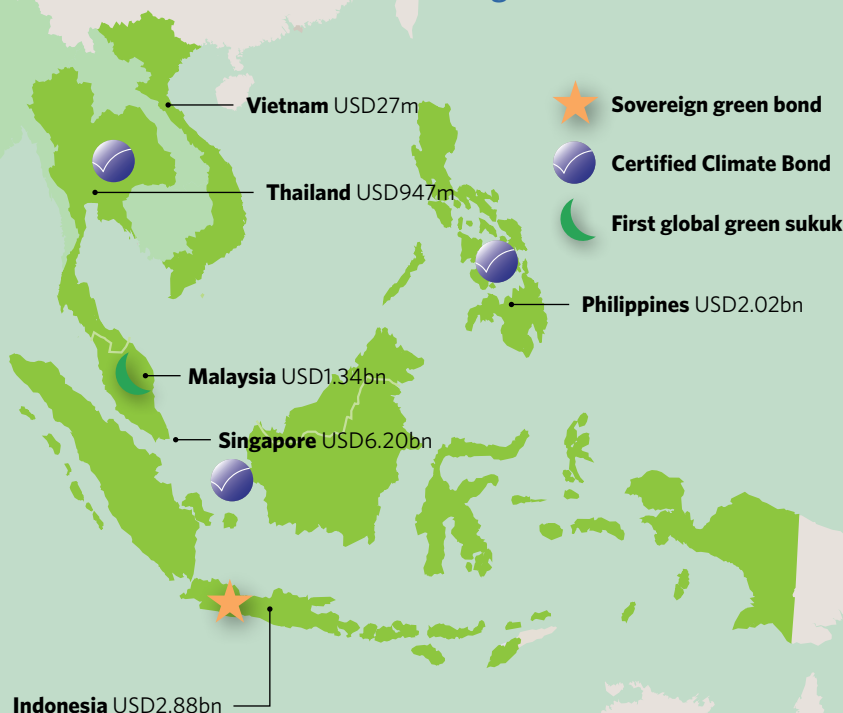
For more information on the ASEAN green bond market, please see the Climate Bonds report: ASEAN Green Finance State of the Market 2019.



*“We have been active both locally, and internationally, the DOF is a member of different international working groups that are focused on mainstreaming green finance. Internally, what the DOF has been doing is to call on different agencies through an inter-agency group that we call Green Force, which we are trying to work with the UK government through the prosperity fund. The goal of the inter-agency panel is to harmonize different government policies related to green or sustainability, and how finance can help them. Without the DOF actually stepping in to promote green finance [through the green task force], it was hard for the Climate Change Commission (CCC) alone to work with other government agencies on how you can craft a workable NDC target that is acceptable to all line agencies.”*

Assistant Secretary **Paola Alvarez**,  
Head of the Green Task Force,  
Department of Finance.

## ASEAN Green Bond market (as at August 2020)



### Philippines first Certified Climate Bond

**Issuer:** AP Renewables

**Instrument:** Green bond

**Sector:** Energy Geothermal

**Issuer type:** Non-Financial Corporate

**Amount:** 10,700m

**Currency:** PHP

**Date issued:** 29 February 2016

**Maturity:** 28 February 2026

**External review:** Certified Climate Bond, certified under the criteria for Geothermal, verification by DNV GL

**Use of proceeds:** Tiwi-Mak Ban geothermal power plant

## The Philippines is the 3rd largest green bond issuer in ASEAN

The Philippines is a leader in the ASEAN green bond market. In addition to issuing the very first green bond in the region - the AP Renewables' USD226m deal in early 2016 - it also issued the first Climate Bonds Certified green bond, a sign of best practice in the market in terms of climate ambition. The growth of the green bond market in the Philippines is notably driven by the private sector. To date, only one government entity has issued a green bond.

As of August 2020, Philippine entities had issued over USD2.6bn of green bonds (see methodology notes on Page 14), the majority of which were issued in 2019. 2019 was a record year for green bond issuance by Philippine entities, mostly in USD. Most of the proceeds were allocated to renewable energy. The largest issuer of green bonds in the Philippines is AC Energy, with four green bonds outstanding, ranging in size from USD75m to USD400m.

In 2020, two more bonds by Arthaland and AC Energy were issued. Arthaland, a publicly listed company developing green properties in the Philippines, issued a PHP3bn (USD59.1m) issuance with the use-of-proceeds for green buildings. AC Energy issued a USD60m green bond with the use-of-proceeds for renewable energy. This brings the cumulative green bond issuance in the Philippines to USD2.6bn.

In addition to the 13 green bonds, 2 sustainability bonds have also been issued amounting to USD796m.<sup>99</sup> We note here that green bonds in the Climate Bonds database are screened to ensure alignment with the Climate Bonds Taxonomy. As there is no established social taxonomy yet, bonds

with proceeds allocated to social projects (Sustainability and Social Bonds) are not yet included in the Climate Bonds Initiative (See Methodology box below).

Four banks have issued green bonds in the Philippines, with RCBC and, BBB+- rated, Bank of the Philippine Islands (BPI) - making their debuts in 2019. The issue by BPI was particularly noteworthy, as it was the first CHF-denominated, offshore green bond for the Swiss market and achieved a negative yield of -0.02%, which was inside the initial price guidance. This issuance received significant interest from investors, being heavily oversubscribed in a short timeframe, and, according to some market participants, achieved the largest issuance discount for a Southeast Asian bank since 2016.<sup>100</sup> It was also followed five days later by the issuance of a USD300m senior unsecured five-year green bond. The Green Finance Framework published by BPI is in line with the ASEAN Green Bond Standards and the use of proceeds includes renewable energy, energy efficiency, sustainable water and wastewater management, pollution prevention and control, and green buildings.<sup>101</sup>

RCBC issued in February 2019 PHP15bn of 1.5-year green bonds, a three-fold increase from the PHP5bn, initially planned in response to "overwhelming" demand from investors. It also carried the ASEAN GBS label. The proceeds from the issuance were earmarked for the refinancing of loans and new lending in renewable energy, green buildings, clean transportation, energy efficiency, and pollution prevention and control. Later in the year, it issued its first sustainability bond, a USD300m five-year deal to finance energy, buildings, transport and waste projects.<sup>102</sup>

AC Energy, a subsidiary of Ayala Corporation, first issued a total of USD300m five-year green bond in two tranches in January 2019, and recently in June 2020 issued a USD60m tap issue from the January issuance. The January 2019 issuance was supported by the International Finance Corporation (IFC), acting as an anchor investor (USD75m). Proceeds are allocated to 5 GW of renewable energy projects in East Asia and the Pacific.<sup>103</sup> It was the first Certified Climate Bond listed on the Singapore Exchange, qualifying under the Thermal, Solar, Wind, and Geothermal Criteria of the Climate Bonds Standard. Following this was a private placement of USD110m with a ten-year term, of which USD20m was invested by ADB. The issuance was also Certified under the Climate Bonds Standard. The energy producer issued a USD400m perpetual green bond under the ASEAN Green Bond Standards. Finally, in 2020, AC Energy also issued a USD60m green bond, with the use-of-proceeds of renewable energy, in compliance with the ASEAN Green Bond Standards.<sup>104</sup>

*"Our green bond issuance was in line with the company's goal of achieving 5,000 MW of renewables capacity by 2025. Issuing the green bond was a smooth process. The green bond label and the Climate Bonds Certification helped with marketing our issuance. Our roadshows in Hong Kong, China; and Singapore gained traction not just from investors within Asia but green investors from Europe as well. The green bond issuance also strengthened the AC Energy organization's commitment towards sustainability."*

**AC Energy**

## Philippines green bond issuance

Issuer	Amount	Issue date	Issuer type	Use of proceeds
<b>Manila Water Company Inc.</b>	USD500m	Jul-20	Non-Financial Corporate	Water
<b>Ayala Corporation (AC Energy Finance International Ltd.)</b>	USD60m	Jun-20	Non-Financial Corporate	Energy
<b>Arthaland</b>	PHP3bn (USD61.8m)	Feb-20	Non-Financial Corporate	Buildings
<b>Ayala Corporation (AC Energy Finance International Ltd.)</b>	USD400m	Dec-19	Non-Financial Corporate	Energy
<b>BPI</b>	CHF100m (USD108.6m)	Aug-19	Financial Corporate	Energy, Buildings, Water, Waste
<b>BPI</b>	USD300m	Sep-19	Financial Corporate	Energy, Buildings, Water, Waste
<b>Ayala Corporation (AC Energy Finance International Ltd.)</b>	USD110m	Feb-19	Non-Financial Corporate	Energy
<b>RCBC</b>	PHP15bn (USD309m)	Feb-19	Financial Corporate	Energy, Buildings, Transport, Waste
<b>Ayala Corporation (AC Energy Finance International Ltd.)</b>	USD75m	Jan-19	Non-Financial Corporate	Energy
<b>Ayala Corporation (AC Energy Finance International Ltd.)</b>	USD225m	Jan-19	Non-Financial Corporate	Energy
<b>China Banking Corp</b>	USD150m	Oct-18	Financial Corporate	Energy, Buildings, Water, Waste
<b>BDO Unibank</b>	USD150m	Dec-17	Financial Corporate	Energy, Buildings, Water
<b>Aboitiz Equity Ventures (AP Renewables)</b>	PHP10.7bn (USD220.4m)	Feb-16	Non-Financial Corporate	Energy

Note: This list is based on the CBI Green Bond Database

### CBI Database methodology

The Climate Bonds Initiative Database<sup>105</sup> screens labelled green debt instruments by reference to the Climate Bonds Taxonomy to identify debt instruments such as bond, loans and ABS as eligible for the CBI Green Bond Database. CBI goes through a three-step process to include or exclude a green bond in the database:

**First, CBI identifies the green debt instruments.** The issuer of a green-themed bond, for example, must declare that the bond is intended to be environmentally beneficial through labelling the bond. The most commonly used label is 'green', but other labels are also considered such as Climate-awareness, Solar, Sustainable, Energy efficiency, and SDG.

**Second, CBI screens the projects or assets for alignment with the Climate Bonds Taxonomy.** Each debt instrument is reviewed based on the green credentials for the use of proceeds. The methodology for inclusion in the database is aligned with the Climate Bonds Taxonomy.<sup>106</sup> The taxonomy is grounded in the latest

climate science that is consistent with the 2°C warming limit set in the Paris Agreement, and has been developed through an extensive multi-stakeholder approach, leveraging the work of CBI's Technical and Industry Working Groups.

**Third, CBI evaluates the allocation of proceeds to aligned projects and assets.** Climate Bonds' focus is on climate change mitigation, adaptation and resilience. Only bonds or similar debt instruments which are expected to allocate 100% of net proceeds to aligned green assets, projects and activities are included in the Climate Bonds Initiative Green Bond Database. Note that if the instrument is labelled 'SDG' or 'Sustainable' but meets the project/asset screen (i.e. 100% of proceeds are allocated to eligible projects), then these are also included.

Notes:

- **Social bonds:** At present, bonds with proceeds allocated to social projects (Social bonds and some Sustainability bonds) are not included in the green bond database as there is no social taxonomy

to assess them against. These are collected in a separate database.

- **Sustainability bonds:** Refers to bonds where the proceeds will be exclusively applied to finance or re-finance a combination of both Green and Social Projects.
- **Occasionally, there is lack of sufficient information** to determine the alignment of use-of-proceeds which results in its exclusion. Excluded deals may be included retroactively if new information is available.
- **Country classification:** Bonds are given a country classification based on the 'Country of risk' of the issuing entity. This means that not all bonds denominated in a local currency are included in the country tally. For example, the PHP-denominated IFC bond is categorized as 'Supranational' and not included in the Philippines figures.

## Other labelled and COVID-19 bonds

Beyond green bonds, there is a wide range of different labelled bonds intended to achieve other goals, such as social and sustainability bonds. Under the ICMA and ACMF, a sustainability bond is defined as a bond where the proceeds will be exclusively applied to finance or re-finance a combination of both climate mitigation and adaptation (green) and social projects that respectively offer environmental and social benefits.<sup>107</sup>

Social bonds focus solely on social projects that will generate positive social impacts, such as proceeds toward SME financing and microfinance, or providing access to essential services such as healthcare. A recent example of a social bond in the Philippines is the Bank of Philippine Island's (BPI) social bond with proceeds to finance or refinance eligible micro, small, and medium-sized

enterprises (MSMEs).<sup>108</sup> Globally, the markets have seen a surge in the issuance of both social and sustainability bonds in response to the pandemic.

Government and development banks globally have been actively issuing bonds to provide immediate relief in the midst of the devastating impacts of COVID-19. In the first seven months of 2020, sustainable bonds issuance surpassed USD270bn, up by 5% from 2019.<sup>109</sup> This includes the issuance of 'pandemic bonds' largely driven by China (USD67bn issued up to July 2020), and as previously mentioned BPI's Social Bond.<sup>110</sup> China's pandemic bonds finance projects that provide immediate relief and response to COVID-19 such as medical waste management for quarantine centres, rent reductions, and an update and replacement of power generation equipment for epidemic prevention and control.

While initial pandemic-related spending has focused on short-term emergency response, as the global economy shifts towards post-COVID-19 recovery, spending priorities (and associated bond issuance) will also shift towards economic stimulus. The global narrative has been focused on ensuring that any recovery is a green recovery (green stimulus) of 'building back better.' Post-COVID-19 stimulus plans and spending will be critical to set economies on a pathway in line with the Paris Agreement. As echoed by the IMF and ADB, economic recovery stimulus can be used as an accelerator to spur green economic recovery in the greater Asia and Pacific region.<sup>111</sup> Alongside other thematic bonds such as the social and sustainability/SDG bond, green bonds can be used as an instrument to achieve a greener and more climate-resilient economic recovery.

## Potential green bond issuers

Based on the Climate Bonds' research, there are many potential green bond issuers in the Philippines—with most renewable energy providers as potential green bond issuers. The Energy Development Corporation has been identified as a potential issuer which could boost the country's green bond volume since the last issuance in 2016. They also have a track record of having issued a bond in hard currency. They have also borrowed the proceeds of IFC's peso green bond issued in 2018.<sup>112</sup>

Two state-owned Enterprises also have the opportunity to give a new impetus to green finance, having tapped both domestic and international markets for vanilla bonds in the past. The first is Land Bank, which was awarded a Green Leadership award for its Environmental Due Diligence (EDD) system in 2015. Its renewable energy lending program covers a wide range of technologies and eligible borrowers. The bank offers financing support to low carbon building initiatives.

The second is the Development Bank of the Philippines. It has already issued Sustainability Bonds and has a Green Financing Program designed primarily to assist strategic sectors, industries and LGUs in adapting environment-friendly processes and technologies and incorporating climate change adaptation, mitigation and disaster risk reduction measures, by providing financing and technical assistance. LGUs in the Philippines are also potential issuers of green municipal bonds.<sup>113</sup>

## Opportunities for local government green bond issuance

Although there has not yet been any issuance of local government green bonds in the Philippines, there may be potential for the future. There is political will, and opportunities for credit enhancement through Philguarantee.

The LGU Guarantee Corporation (LGUGC) previously provided credit enhancement opportunities for local government but was dissolved in December 2019.<sup>114</sup> The Electric Cooperative-Partial Credit Guarantee Program from the LGUGC was absorbed by Philguarantee.<sup>115</sup> Philguarantee is a result of the merger and consolidation of five Philippine guarantee programs and agencies, and it could potentially provide credit enhancement to LGUs.<sup>116</sup> In the past, the LGUGC had several successes providing guarantees for the funding of LGU infrastructure projects, including climate mitigation projects.

The government could also consider the municipal bond bank model as a tool to increase green local government bonds. Municipal bond banks have been a dominant source of finance in the US and have also been developed in Mexico. These are banks owned and operated by state government agencies, set up with the purpose of aggregating municipal financing needs and lowering the cost of funding. They issue general purpose bonds on the capital markets and redistribute the proceeds to municipalities.

Municipal bonds should be encouraged and facilitated using mechanisms like the former

LGUGC or municipal bond banks, as they could play a significant role in growing the Philippine green bond market.

Investors are increasingly confident that, as climate change accelerates, cities will prioritize projects that seek to mitigate the consequences.<sup>117</sup> Some investors consider green investments as more resilient than other types of long-term city projects and may be willing to pay for longer-term municipal bonds certified by the Climate Bonds Initiative compared with similar debt that does not carry that certification.<sup>118</sup>

## Greening the stock exchange

The SEC Philippines has also been involved in the development of the Sustainability Reporting Guidelines for Publicly Listed Companies (SEC MC. No. 4, s. 2019). This aims to help publicly listed companies assess and manage non-financial performance across economic, environmental, and social aspects of their organisation and to enable them to measure and monitor their contributions toward achieving national policies and programs as well as universal sustainability targets, such as the Sustainable Development Goals.<sup>119</sup> This was part of a wider program for greening the Philippine Stock Exchange (PSE). In May 2019, the PSE affirmed its commitment to sustainability by joining the UN's Sustainable Stock Exchanges (SSE) Initiative.<sup>120</sup>

The SEC and the PSE continue to actively promote sustainability in the Philippine market: co-organising a sustainable business conference in June 2019 and several roundtables, trainings, and workshops since then.<sup>121</sup> Into the future, one of the new initiatives being explored is the development of an Environmental, Social, and Governance (ESG) index on the exchange.<sup>122</sup>

## Banking on sustainability

Beyond the achievements of the regulators, leadership has been shown in the banking sector. Recently, the Bangko Sentral ng Pilipinas (BSP) is looking to ramp up its sustainable finance framework by encouraging banks to issue more green, social, and sustainability bonds. This year, BSP has invested in USD200m of green bonds.<sup>123</sup>

BSP has taken into account climate-related weather risk in calculating the inflation trends.<sup>124</sup> BSP acknowledges that the significant impacts from climate change pose a risk to the financial system, and affect the credit and operational risk exposure of the banks, which in turn affect profitability and solvency if climate-related risk remains unmitigated.<sup>125</sup>

BSP has issued their Guidelines on Sustainable Finance Framework: requiring the integration of sustainability principles including those covering environmental and social risk areas in the corporate governance and risk management frameworks.<sup>126</sup>

According to BSP, Philippine banks and financial institutions are now required to incorporate ESG and sustainability principles into their corporate strategy, risk management and bank operations framework.<sup>127</sup>

*"The reason for that additional allocation (of green bonds) was the growing significance of sustainability assets in the investment landscape. Green bonds offer institutional investors a means of accessing sustainable investments in the fixed income market, while providing greater transparency on how the funds are used by the issuer."*

Governor **Benjamin Diokno**, Bangko Sentral ng Pilipinas<sup>130</sup>

*"For us to choose the path of sustainability is as much about being a good corporate citizen as it is about strategic positioning. We believe that financial institutions, particularly banks must play an important role to support the UN Sustainable Development Goals and help meet the objectives of the Paris Agreement. We believe that caring for the environment, superior financial management, and profitability can and must co-exist. We wanted to make our balance sheet resilient to the effects of transition to a low carbon economy and physical risks brought upon by climate change. We also wanted to add another layer of diversity to our existing (well diversified) liability base."*

**Rizal Commercial Banking Corporation (RCBC)**.<sup>133</sup>

Private banks in the Philippines have led on green finance by issuing of green and sustainability bonds to fund and refinance green assets.<sup>128</sup> To date, the Philippine banks that have issued green bonds are the Bank of the Philippine Islands (BPI), RCBC, BDO Unibank, and China Banking Group. Many banks are also providing green loans and other tools for developing green infrastructure and renewable energy. For instance, the Sustainable Energy Finance (SEF) program, pioneered by BPI, provides access to capital and technical support for renewable project owners. This program has successfully deployed private renewable projects in the Philippines.<sup>129</sup> The SEF model has been replicated by other banks such as BDO Unibank. Other banks, such as Development Bank of the Philippines (DBP) has three initiatives for financing green projects and a sustainable bond program.

*"Our Sustainable Energy Finance (SEF) Program, in place since 2010, has allowed us to build our portfolio of green projects. BDO is always looking for opportunities to finance sustainable projects within the country and across the ASEAN region. To-date, BDO has financed 45 renewable projects situated in various regions of the Philippines, as well as the acquisition and construction of existing and new clean energy projects in China. We believe that green bonds are an effective alternative source of long-term financing for climate-smart projects that can help mitigate the impact of climate change while addressing ESG concerns of investors and relevant stakeholders."*

**BDO Unibank**<sup>132</sup>

*"As the country's preeminent development financing institution, DBP adheres to the principles of sustainability and has shown deep environmental and social commitment in both our operations and our lending activities. One of the developmental priority thrusts of the Bank is environmental protection. And in pursuit of this, the Bank, in 1997, came out with its Environmental Policy Statement which reiterates DBP's commitment to environmental protection and sustainable development and shall integrate and implement environmental consideration into all aspects of its operations and services, asset management and business decisions."*

*Furthermore, in 2019, the Bank developed its Sustainability Financing Framework which adheres to the ICMA Green Bond Principles 2018, Social Bond Principles 2018, Sustainability Bond Guidelines, and the corresponding ASEAN standards and guidelines issued by the Philippine Securities and Exchange Commission. Under this framework, the Bank issued Sustainability Bonds in November 2019 where it was able to raise PHP18.125 Billion to finance and refinance eligible projects."*

**Development Bank of the Philippines**<sup>131</sup>



## Green banking initiatives

Stakeholder	Initiative	Description
<b>Development Bank of the Philippines</b>	The Green Financing Program (GFP)	<p>The GFP provides financing and technical assistance primarily for LGUs to assist its green strategic sector projects. The program assists in adapting environmentally friendly processes and technologies and incorporating climate change adaptation and mitigation in their projects.<sup>134</sup></p> <p>The program promotes investments for environmentally friendly processes and systems such as cleaner production, waste minimization, resource conservation, energy efficiency, pollution prevention and control.<sup>135</sup></p>
	Financing Utilities for Sustainable Energy Development (FUSED)	FUSED aims to contribute in increasing access to electricity services through financing in order to help achieve inclusive growth and poverty reduction. <sup>136</sup>
	Program Assistance to Support Alternative Driving Approaches (PASADA) Financing Program	PASADA aims to support the implementation of the national government's Public Utility Vehicle Modernization Program (PUVMP) including revitalizing the PUVs to comply with emission standards and improve alternative transport technologies such as solar or electric power. <sup>137</sup>
	Energy Efficiency Savings (E2SAVE) Financing Program	The E2SAVE program is designed to boost productivity of public and private institutions by improving their energy efficiency projects. E2SAVE provides credit assistance based on the level of energy savings, such as Energy Saving Companies to further promote the development of energy efficiency projects. <sup>138</sup>
<b>Bank of the Philippine Islands</b>	Sustainable Energy Finance (SEF) Program	Capital Expenditure Financing: This option is for financing fixed asset acquisition such as new plant or building construction, expansion or modernization of operations, acquisition of machinery and equipment.
		Working Capital Financing: This is for the short-term financing needs of manufacturers or traders of EE and RE products, e.g. purchase of raw materials.
		Leasing: To finance the use of an asset or equipment over a specified period of time. Any type of asset can be leased as long as it is durable, identifiable, insurable, and has a good secondary market and reliable after sales support. <sup>139</sup>
<b>BDO Unibank</b>	Sustainable Energy Finance Program (SEFP)	In partnership with the IFC, BDO Unibank began developing its SEFP in 2010. BDO Unibank provides finance and technical advisory services for renewable project owners. BDO Unibank has increased its renewable energy loan portfolio over time.
<b>China Bank</b>	Sustainability Financing and Green Bond Program.	<p>Chinabank, in partnership with IFC, worked together in 2012 on a sustainable energy finance advisory project. In 2017, China Bank participated in the mobilization of PHP796bn in loans, bonds, and securities for projects and investments that contribute to the U.N. Sustainable Development Goals.</p> <p>In 2017, China Bank issued a green bond with a use-of-proceeds for climate-smart projects, including renewable energy, green buildings, energy efficiency and water conservation, in accordance with the Green Bond Principles.</p>

## Green funds

The Philippines has developed several funds for supporting green infrastructure and renewable energy projects. They are also eligible to access some regional and international green funds. A domestic initiative, led by the Climate Change Commission (CCC), is the People's Survival Fund (PSF), which was created as an annual fund intended for local government units and accredited local/community organizations to implement climate change adaptation projects that will better equip vulnerable communities to deal with the impacts of climate change.<sup>140</sup>

The Philippine government programmed at least PHP1bn into the fund, sourced from the national budget, which may be augmented by mobilizing funding sources such as counterpart local government units, the private sector, and individuals who support adaptation initiatives. The PSF

is intended for activities including water resources management, land management, and agriculture and fisheries, among others, and serves as guarantee for risk insurance needs for farmers, agricultural workers and other stakeholders.

The Philippines also has Access to Sustainable Energy Programme (ASEP), which is a joint undertaking of the European Union and the Philippine Department of Energy (DOE). Through ASEP, the EU has allocated a grant of over PHP3bn to assist the Government of the Philippines to meet its rural electrification targets by means of renewable energy, and to promote energy efficiency.

At the regional level, the ASEAN Infrastructure Fund Ltd. (AIF), established in 2012 and owned by the ASEAN member states and ADB is dedicated to fund infrastructure development needs by mobilizing regional savings, including foreign exchange reserves. The AIF has

committed an estimated USD500m for nine projects, with a total portfolio size of around USD3bn, including ADB co-financing.<sup>141</sup> These projects are from Indonesia, Vietnam, Myanmar, and the Lao People's Democratic Republic.<sup>142</sup> In 2019, the AIF launched the ASEAN Catalytic Green Finance Facility (ACGF) to support governments in Southeast Asia to prepare and finance infrastructure projects that promote environmental sustainability and contribute to climate change goals (see below).

There is also the Renewable Energy Asia Fund (REAF I) and REAF II, which invest in small hydro, wind, geothermal, solar, and biomass projects in Asian developing markets, with a primary focus to date in India, the Philippines, and Indonesia.<sup>143</sup> REAF made equity investments in small renewable energy projects such as on-grid solar, wind, waste-to-energy, and hydropower projects of between 5 MW and 100 MW in these three countries.<sup>144</sup>

### The Green Climate Fund

The CCC is the National Designated Authority (NDA) in the Philippines for the Green Climate Fund (GCF). The GCF is an international fund created by the United Nations Framework Convention on Climate Change to support paradigm-shifting low emission (mitigation) and climate resilience (adaptation) projects and programs in developing countries.<sup>145</sup> It has a multi-layered approach to mobilize climate finance in the form of investments including grants, loans (concessional), equity, and guarantees. The GCF promotes country ownership and they work closely with the NDA.

There is currently one GCF project in the Philippines, relating to disaster preparedness.<sup>146</sup> In the future, Philippine entities could seek funding for qualified projects and programmes, including those that improve the efficiency of buildings and appliances, the adoption of cleaner sources of energy such as solar and wind, the introduction of more efficient and sustainable transportation, or the improved use of land and reforestation.

### Development Finance Institutions (DFIs) have a unique role to play

DFIs have a mandate to support developing countries and can achieve this through blended finance and credit enhancement mechanisms, reducing risk exposure and enhancing market incentives for investors to mobilize private capital. This is particularly relevant for large-scale projects such as infrastructure development, where the blended finance approach can generate more bankable project pipelines by providing technical support and facilitating access to funding.<sup>147</sup>

DFIs can act as market facilitators, which is beneficial to increasing liquidity and issuance in local economies. For example, the IFC issued a green bond in June 2018 in Philippine peso (a Mabuhay bond) and one in Indonesian rupiah (a Komodo bond) in October 2018. Through deals like these, DFIs can support "market creation" by participating in first-time issuances and helping new issuers get their names out to investors. Effectively, this establishes pricing points, the idea being that issuers return to market publicly. So, the deals also act as demonstration issuance to spur market growth and can showcase how climate solutions can be funded with green bonds.<sup>148</sup>

DFIs in ASEAN, such as the International Finance Corporation (IFC), ADB, Asian Infrastructure Investment Bank (AIIB) and the World Bank, can also subscribe to private placements or be anchor investors in debt issuance and IPOs to help the company seeking funding to build investor confidence and catalyse investments from a wider pool of private actors.<sup>149</sup> So, they provide direct green financing; as anchor investors in debt issuance or in IPOs, DFIs can leverage their support to attract other investors.

They can help a company seeking funding to build investor confidence and catalyse investments from a wider pool of private actors (both international and domestic). For example, as previously mentioned, in early 2019, ADB and other development financiers launched the "ASEAN Catalytic Green Finance Facility" under the AIF, an initiative to mobilize over USD1bn for green infrastructure in Southeast Asia.<sup>150</sup> The facility will provide loans and technical assistance for sovereign green infrastructure projects such as sustainable transport, clean energy, and resilient water systems, which aims to catalyse private capital by mitigating risks through innovative finance structures.<sup>151</sup>



## ASEAN Catalytic Green Finance Facility

Launched in April 2019, under the ASEAN Infrastructure Fund (AIF), the ACGF signifies ASEAN member countries' commitment to promote sustainable infrastructure development and address climate change in the region.

The ACGF offers governments benefits of both loans and technical assistance to support government in identifying and preparing commercially viable green infrastructure projects. ACGF loans provided from the AIF's equity can be utilized to cover upfront capital investment costs, while a regional technical assistance, supported by ADB technical assistance resources and grants from development partners, supports project structuring and origination activities. This two-pronged approach "de-risks" green infrastructure projects, making them more attractive to private capital investors.<sup>152</sup> As of June 2020, the AIF Board had included three green infrastructure projects in its pipeline for funding under the ACGF, including one in the Philippines, and funding for other projects in the Philippines is currently being explored.

ACGF could further support post-COVID 19 green stimulus by channeling technical assistance support for developing de-risking mechanisms, on a country-by-country basis.<sup>153</sup> For instance

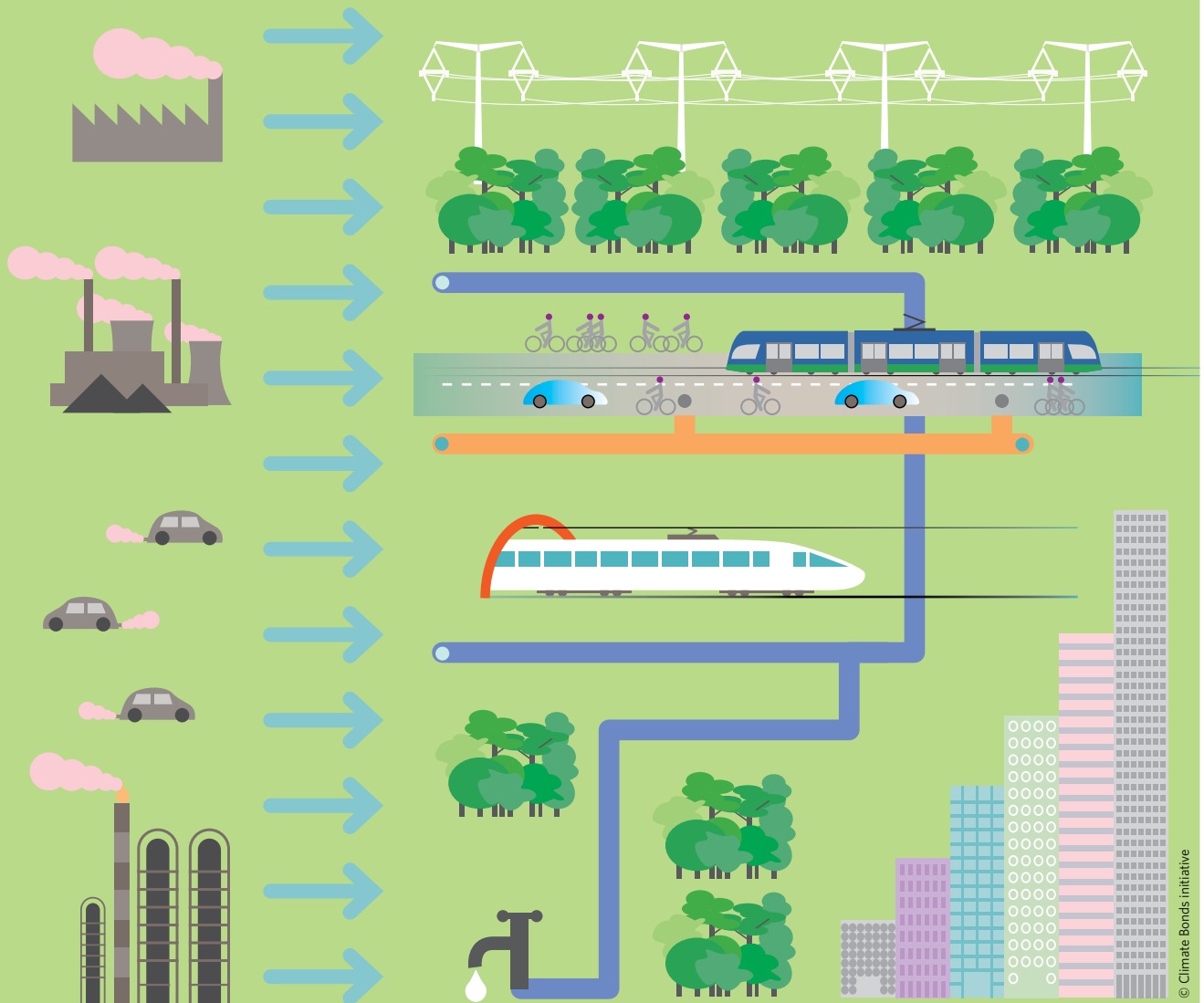
- **De-risking mechanisms**, such as insurance against specific risks, first-loss provisions, purchasing equity or mezzanine tranches of securitised bonds.
- **Support for the issuance of tailored structures**, such as zero-coupon bonds designed to avoid interest during the economic re-building of the coming five years, or step-up coupons with a similar objective.
- **Support for the development of asset-backed structures** that would allow off-balance sheet re-financing of sustainable assets and ease pressure on constrained public sector balance sheets.

These mechanisms could also be available to qualifying bond issuance programmes from banks, municipalities, and private companies.

*"Within the ACGF we are following a phased approach to supporting de-risking in green projects. The initial phase of support, which is being undertaken now, is using the classic approach, of providing concessional finance for reducing the blended cost of capital for a project for an initial 7 years which covers construction and initial operations. At the end of this period, the ACGF funding cost steps up, with the intention of focusing projects to consider refinancing ACGF out using commercial finance – we thus achieve the aim of leveraging at the start of a project, as well as catalyzing private investments once the risks are considerably reduced. ADB, as Administrator of the AIF is also exploring providing other innovative de-risking measures in future phases of the ACGF. An example of this is support for operations in the first 3-5 years through a minimum revenue guarantee support. Whilst still using a debt instrument for this, this provides further necessary de-risking to projects especially needed if suffering from the impacts of the COVID-19 pandemic. We are also exploring adding a first loss product to provide guarantees to projects which are trying to raise commercial finance or even through bonds. The roll out of these products will of course depend on projects, governments, and our own AIF Board considerations."*

**Anouj Mehta**, Unit Head, Innovative & Green Finance Hub and The ASEAN Catalytic Green Finance Facility, ADB

## Brown to green transition in the Philippines



© Climate Bonds Initiative

A brown-to-green (BtG) transition strategy reflects the fact that, in the short to medium term, large companies in many sectors will inevitably straddle both brown and green assets, progressively reducing exposure to brown assets and practices as they increase capex toward, and adoption of, greener modes of operation. It also embodies a recognition that, both globally and locally, the expectation of institutional investors is that progress toward low or zero-carbon business models is increasingly indicative of corporate performance, hedging of climate risks, and long-term value accretion.<sup>154</sup>

Global green investment opportunities are growing and yet there remains a scarcity of offerings, pointing to a lack of supply of green bond issuance particularly from non-financial corporates, i.e. the real economy. Furthermore, segments of the real economy that offer significant emissions reductions potential—such as cement and concrete, mining and metals, oil and gas, transport and manufacturing—are yet to be activated toward a BtG transition. When such industry sectors start to align with a 2-degree emissions trajectory, new green financing opportunities could be created for assets and projects with ambitious climate targets and an increased focus on low carbon production modes.<sup>155</sup>

A national BtG strategy should require GHG emissions-intensive industries ('brown') and organisations to commit to strategic

change, undertaking tangible and verifiably climate-relevant measures that relate to companies' core business activities. They will need to progress from broad statements of strategy or intent to disclosure of climate risk as envisioned by compliance with the Task Force on Climate-related Financial Disclosures (TCFD) and, ultimately, to a visible reflection of green investment on balance sheets, in capex plans and borrowing programs.<sup>156</sup>

Credible green bonds are a highly visible means to support this transition from brown into green. Even a small initial share of green capital expenditure could be a credible indicator of more to come, if it is combined with a re-orientation and acknowledgment to investors that achieving low carbon targets and then zero carbon operating models are inevitable business destinations between now and 2050.<sup>157</sup>

Transitioning to a green, climate-resilient economy is paramount to ensure that the region can reduce its GHG emissions, better hedge against climate change risks, and thrive in the long run.<sup>158</sup> The Philippines ambitious NDC is compatible with the 2-degree global emissions trajectory and could thus form the basis of a nationwide brown-to-green strategy. Any such strategy needs to be more than just targets—it should be accompanied by actual expenditure, policy tools, and capital raising plans to support the prioritisation and development of green projects across the economy.<sup>159</sup>

# Green infrastructure investment opportunities

The Philippine government aims to develop billions of dollars of new public works projects. Most major infrastructure projects in the Philippines are listed on central government websites and other publicly available sources or are listed by individual project proponents.

There are already green infrastructure projects and assets of many different sizes and technologies spread across the nation. These range from the USD1.4bn metropolitan rail project through to a USD20m waste management project. A list of 79 infrastructure projects has been compiled into a sample pipeline (see Annex VI).

This report uses the globally recognised Climate Bonds Taxonomy and Sector Criteria to determine which projects and assets are green. However, there are many other standards and schemes that can be used to measure the 'greenness' of projects in the Philippines, including global standards and those from Southeast Asia and the Philippines.<sup>160</sup> Most of these apply to either the development and retrofitting of buildings or a broad set of infrastructure projects and assets (see Annex V for more details).

Investors currently have too few tools to ensure that their investments are making a significant impact. Having common definitions of 'green' across global markets allows investors, potential issuers and policy makers to identify green assets and attract investment more easily.<sup>161</sup>

Ideally, the Philippines government could adopt a green standard to identify green projects during infrastructure planning and collating these in a single list. Then it can prioritise projects that are in line with international definitions for 'green' and provide clear 'green' labelling, when preparing future infrastructure pipelines.<sup>162</sup>

Providing this level of visibility for green infrastructure investment opportunities could facilitate increased access to private sector capital for the Philippines' economic development and accelerate the Philippines' transition to a low carbon economy in order to help meet global institutional investor demand for green assets.<sup>163</sup>

## Methodology<sup>164</sup>

The following section explores green infrastructure investment opportunities across the Philippines in four key sectors: renewable energy, low carbon transport, sustainable water management and sustainable waste management. Although not included here, the Philippines has some green projects across other sectors like green buildings, agriculture/forestry, and tourism.

There are various ways for an investor to gain exposure to a specific project, asset or portfolio. The possible investment pathways will vary depending on the asset ownership structure, the stage in the asset's financing lifecycle, and the investor's mandate. This can vary between projects with public and private funding.

Accordingly, metrics were used to classify the green infrastructure investment opportunities, by status:

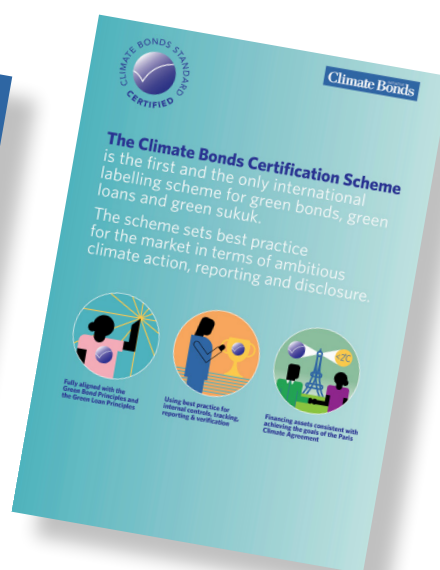
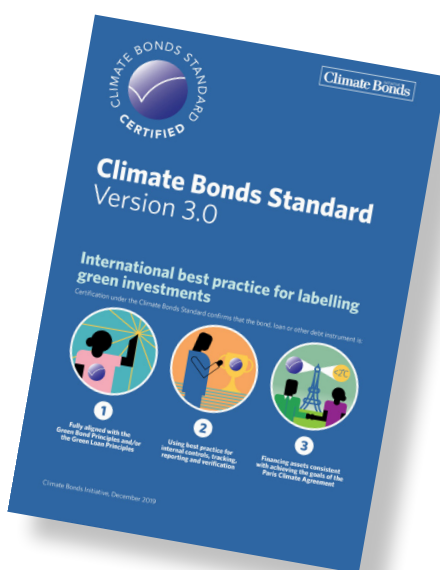
- **Completed projects:** high profile, recently completed projects;
- **Projects under construction:** major projects that are under construction; and
- **Planned projects:** major projects that have not yet begun construction but have been announced and/or have undergone business case planning and/or have been allocated budget.

Case studies and a sample pipeline have been developed for this report to show the different types of opportunities available in the short- and medium-term future in the Philippines. The case studies include both greenfield and brownfield projects and assets that could have been or could potentially be financed/refinanced via green bonds.

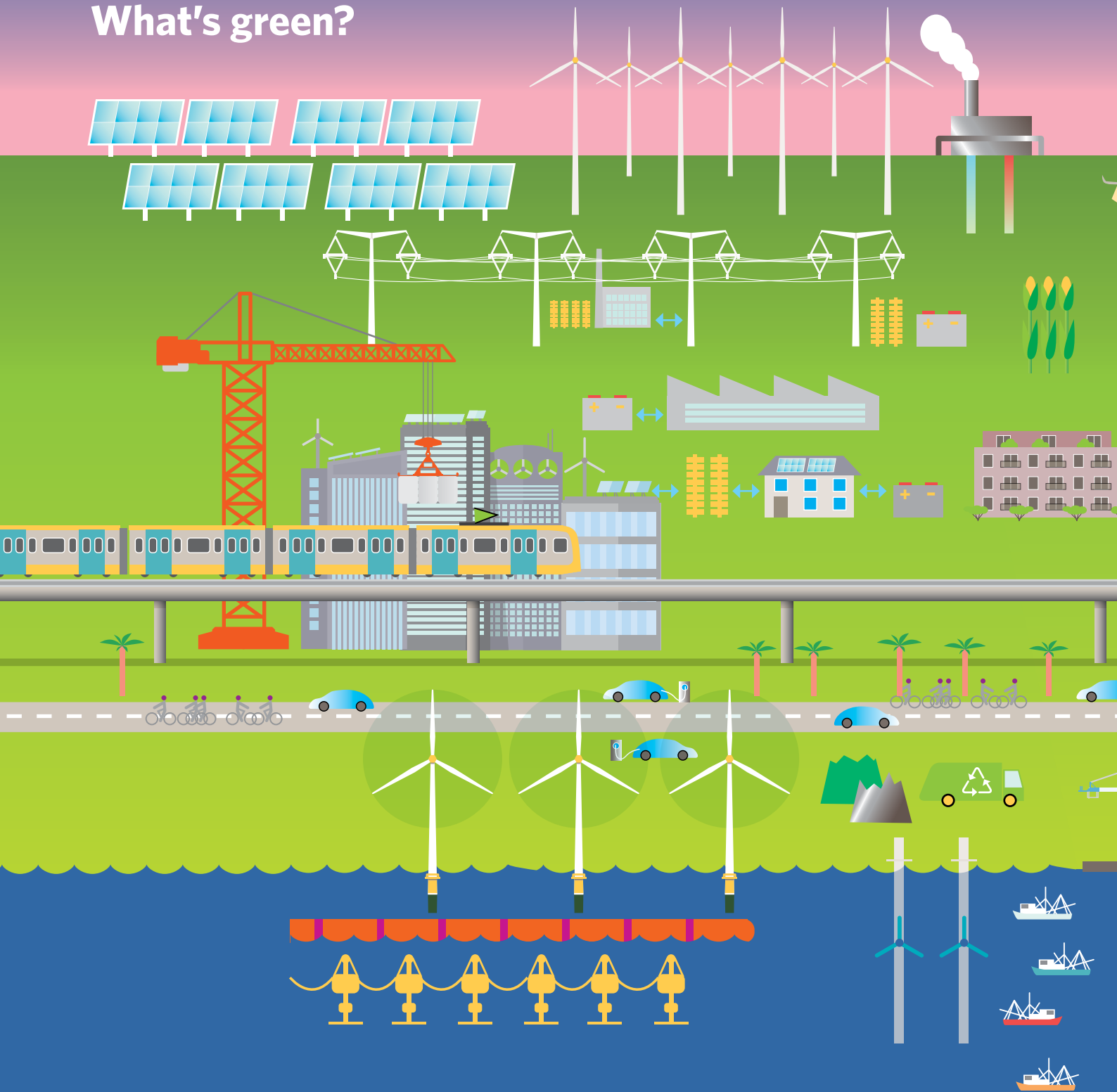
## Climate Bonds Taxonomy and the Climate Bonds Standard and Certification Scheme<sup>165</sup>

The Climate Bonds Taxonomy features eight climate-aligned sectors (see back cover). The purpose of the Taxonomy is to encourage common broad 'green' definitions across global markets in a way that supports the growth of a cohesive green bond market. The Climate Bonds Standard & Certification Scheme is used to provide a labelling scheme for bonds and other debt instruments.

The Sector Criteria for the Climate Bonds Standard & Certification Scheme provide eligibility conditions or thresholds which must be met for assets to be in line with a rapid trajectory toward a 2050 zero-carbon future. The criteria are developed based on climate science by technical expert groups with input from industry.



# What's green?



## Geothermal:



According to the Geothermal Energy Association, 39 countries could supply 100% of their electricity needs from geothermal energy, yet only 6% to 7% of the world's potential geothermal power has been tapped.<sup>166</sup>

### Drawdown Agenda

## Solar:



The world installed a record number of new solar power projects in 2017, more than net additions of coal, gas and nuclear plants put together.<sup>168</sup>

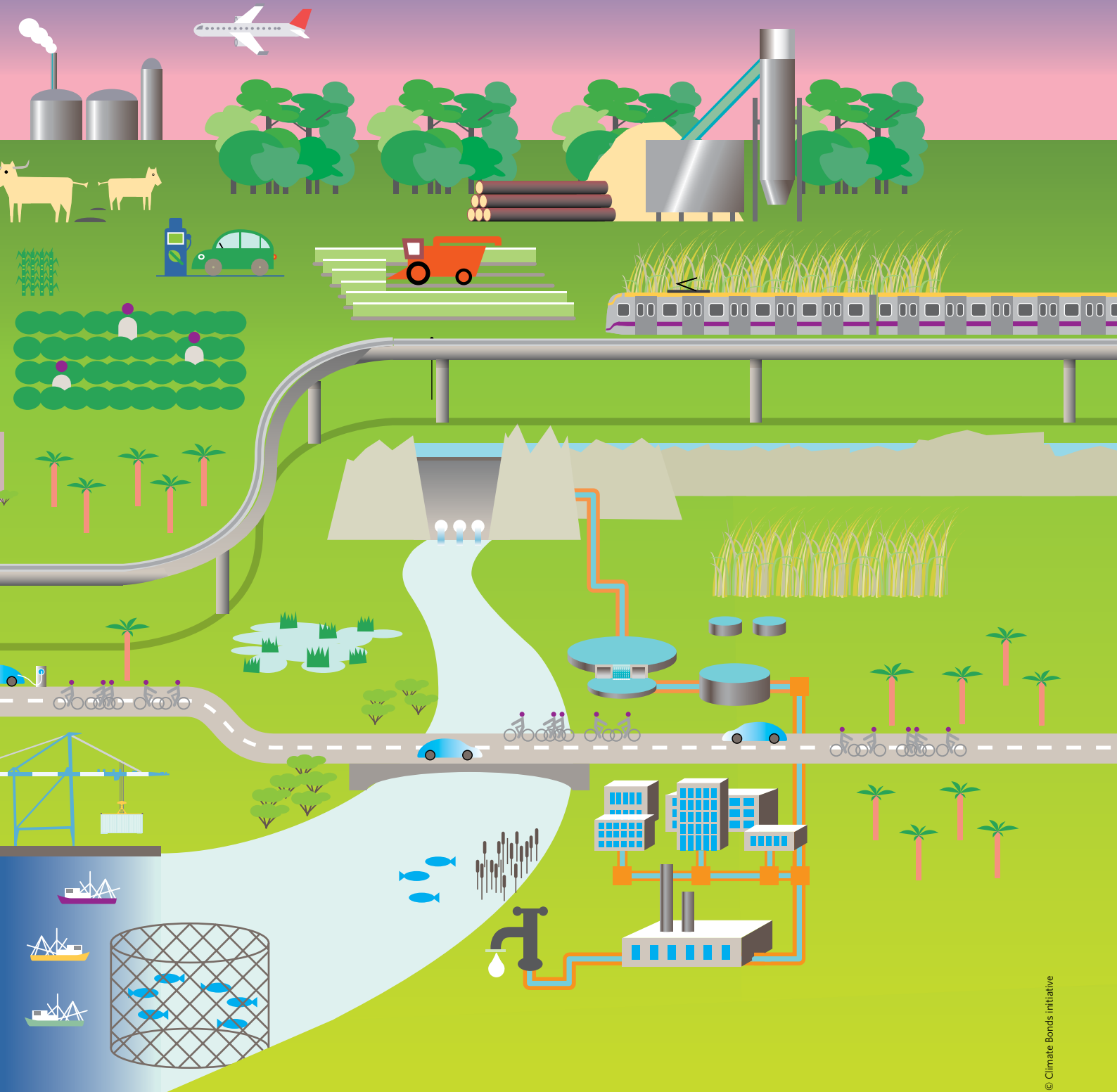
### UNFCCC

## Hydropower:



Hydropower is the largest source of renewable electricity in the world, producing around 17% of the world's electricity from over 1 200 GW of installed capacity, and is expected to remain the world's largest source of renewable electricity generation by 2022.<sup>167</sup>

### International Energy Agency



### Transport (rail):



75% of the world's countries have established strategies and targets to improve the environmental performance of their transport sector within their Intended Nationally Determined Contributions (INDCs). One-fifth of the transport-related (I)NDCs include measures in the railway sector.<sup>169</sup>

**UNFCCC**

### Water:



The UN says the planet is facing a 40% shortfall in water supply by 2030, unless the world dramatically improves the management of this precious resource.<sup>170</sup>

**UNFCCC**

### Buildings:



Building-related emissions account for about one-third of global GHG emissions and could double by 2050, making building efficiency a critical part of the COP21 agenda.<sup>171</sup>

**GreenBiz**

# Renewable energy

Energy generation, transmission or storage technology that has low or zero carbon emissions. This can include solar energy, wind energy, bioenergy, hydropower, geothermal energy, marine energy or any other renewable energy source.

## Sector overview

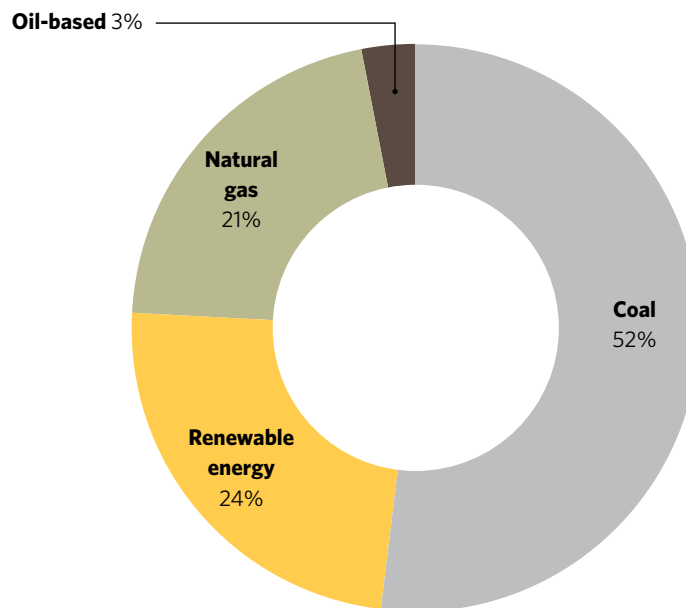
The Philippine Energy Plan of 2017-2040, introduced in 2017, prioritizes energy security while keeping pace with its rising energy demand.<sup>172</sup> In the 2015-2020 period, the country's electricity consumption growth rate (5.7%) had outstripped the 5.3% energy generation growth rate.<sup>173</sup> The Philippines is heavily reliant on imported coal to meet its current energy demand, specifically its transportation and power generation needs.<sup>174</sup> In 2018 alone, coal remained the sole type of energy source with the largest share in Philippines' energy mix; 52.05% of the country's power generation is sourced from coal,<sup>175</sup> and 75% of this is imported.<sup>176</sup>

The government has recognized that this is not sustainable and has indicated the need for renewable energy to play a critical role in achieving their energy targets. It has made significant progress in developing its indigenous renewable sources. This progress was spurred by the Feed-in-Tariff (FIT), introduced in 2012, that jump-started renewable energy deployment. The implementation of the FIT scheme in the Philippines is considered best practice.<sup>177</sup>

The FIT was an objective of the Philippines' Renewable Energy Act of 2008, which was the first comprehensive legislation on renewable energy in the ASEAN region.<sup>178</sup> Following this act, the National Renewable Energy Board (NREB) was immediately created, then followed by the National Renewable Energy Program (NREP) in 2011.

The NREP outlined and established fiscal and non-fiscal incentives for private sector investors, renewable energy equipment manufacturers, suppliers, and project developers.<sup>179</sup> Examples include incentives such as an income tax holiday, and a guarantee for the renewable energy market, through the renewable energy portfolio standard (RPS).<sup>180</sup> The private sector became the main driver of the deployment of Philippine renewable energy, in response to the government's favourable business policy.<sup>181</sup> The government also implemented the Energy Efficiency and Conservation Act that aims to institutionalize energy efficiency

## Philippines Energy Mix (2018)



and conservation and enhance the efficient use of energy, and provide incentive for energy efficient projects.<sup>182</sup>

Despite its remarkable progress with renewable energy deployment in the past, recent data suggests that the uptake of coal energy outpaced the deployment of renewable energy in 2018.<sup>183</sup> This is mainly due to the increasing utilization of the existing coal power generation facilities.<sup>184</sup> Without aggressive policy intervention power generated from coal will only peak by 2034 and the Philippines will likely miss its 35% renewable target.<sup>185,186</sup>

Renewable energy only accounted for 21% of the Philippines' total energy output in 2019.<sup>187</sup> With promising capacity for geothermal, hydropower, and ocean energy, and fairly good resources for solar and wind energy,<sup>188</sup> the country still has significant renewable energy development potential.

### Geothermal

The Philippines is the world's second largest producer of geothermal energy and has an untapped geothermal potential of 2,500 MW.<sup>189</sup> In 2018, geothermal had a total energy output of 10,435 GWh and an installed capacity of 1,944 MW.<sup>190</sup> Geothermal power is forecasted to increase by more than 600 MW in 2020. In the Philippine Energy Plan (2012-2030), the Department of Energy identified 26 sites to increase existing installed capacity by 62% throughout the 18-year planning period.<sup>191</sup>



### Hydropower

Hydropower currently accounts for 4% of primary energy supply in the Philippines and has an untapped potential of 13,097 MW.<sup>192</sup> Approximately 85% of this potential is suitable for large and small hydropower, and the rest consist of mini and micro-hydropower.<sup>193</sup> The government has identified 18 potential sites in 2017, which accounted for 86% of the total potential.<sup>194</sup> The energy output in 2018 for hydropower was 9,384 GWh, with an installed capacity of 3,701 MW.<sup>195</sup>



### Biomass

Almost half of the landmass of the Philippine archipelago is devoted to agriculture, and this industry produces a huge volume of agricultural waste. The largest volume of agricultural waste comes from rice straw, husks, and tropical fruit, which accounts for approximately 16 million tons of agricultural waste per annum.<sup>196</sup> Two million tons of rice husk per annum could be equivalent to five million barrels of oil, in terms of energy generation.<sup>197</sup> In 2018, the total biomass energy output in the Philippines was 1,105 GWh, and the total installed capacity was 258 MW.<sup>198</sup>



### Solar

In 2018, solar energy was generating 1,249 GWh in the Philippines, with an installed capacity of 896 MW.



Source: Philippines' Department of Energy Statistics, 2018<sup>21</sup>



Both the northern and southern parts of the Philippines are suitable regions for solar power generation, as they are equally exposed to solar irradiance. Of the different forms of solar energy generation, solar rooftop is the most popular in the Philippines. There is also a great opportunity to further develop floating solar projects located on hydro dams owned by the National Irrigation Administration. Such a project combines solar and hydropower to manage low water power. The Department of Energy estimated that by 2030 at least one-third of the total installed solar will be rooftop solar.<sup>199</sup>

In 2018, the Philippines' Board of Investment approved eight solar projects worth USD1.65bn through the Solar Philippines Commercial Rooftop Projects Inc. The enormous scale of investment is predicted to lower electricity cost and trigger a USD2.8bn new investment in 2030.<sup>200</sup> The steadily declining cost of solar PV by 18% annually has also made large-scale solar energy generation a more attractive investment for industrial and commercial companies.<sup>201</sup>

## Wind

In 2018, the Philippines generated 1,153 GWh of power from wind energy and had an installed capacity of 427 MW. The Feed-in-Tariff (FIT) policy has been attributed as driving installed capacity from 33 MW in 2012 to 426.9 MW by June 2018. Offshore wind has also successfully taken off following the FIT policy. In 2019, there were more than 50 wind projects registered with the Department of Energy.<sup>202</sup>



The wind resources in the Philippines are greatest in the northern and central areas such as the islands of Batanes and Babuyan, and the northern and central Luzon areas.<sup>203</sup> According to an International Energy Agency analysis, in 2017, the country had a total wind energy potential of 76,700 MW.<sup>204</sup> In 2020, the Philippines is taking the first steps into the offshore wind power sector with plans to develop 1.2 GW.<sup>205</sup>

Achieving greater energy diversification and faster deployment of indigenous renewable energy would bring the Philippines closer to achieving its energy security by reducing the country's dependency on imported coal, as well as cutting GHG emissions.<sup>206</sup> The private sector is already sending signals to shift away from coal investment. Corporations such as AC Energy and Manila Electric Company (known as Meralco) are either already divesting or moving toward cancellation of new coal plants.<sup>207</sup>

## Funding pathways

The vast majority of renewable energy projects in the Philippines are funded by corporate rather than project finance.<sup>208</sup> Local commercial banks have increasingly recognized the potential of lending to renewable energy projects. For most renewable energy projects, heavy costs are incurred in the project preparation phase, where there are still a few sources of local financing. However, local banks such as the Land Bank of Philippines and the Development Bank of the Philippines have offered special packages that could help developers fund renewables in the preparatory phase.<sup>209</sup>

Tapping into the debt capital market is another option for funding renewable energy. Green bonds are very well suited to large renewable energy projects or asset portfolios and can be structured in a number of ways, including project bonds, corporate bonds, covered bonds or ABS. The Philippines has plenty of examples in which project owners have issued green bonds to fund renewable energy projects.

The 2016 AP Renewables green bond issuance was intended to fund the Tiwi-MakBan geothermal project.<sup>210,211</sup> This transaction was also aided by ADB, who provided credit enhancement in the form of a guarantee of 75% principal and interest on the bond.<sup>212</sup> This was also Climate Bonds Initiative's first certified bond in the Philippines.<sup>213</sup> More green bond issuance for renewable energy has since followed. Most of these bonds have been backed by development banks such as the World Bank, through the IFC, and ADB.

In 2017, BDO Unibank issued a USD150m green bond with the IFC being the sole investor.<sup>214</sup> The green bond proceeds were used to finance seven renewable energy projects with a total generating capacity of 95 MW.<sup>215</sup> Then, in 2019, AC Energy, a subsidiary of Ayala Energy, raised USD225m for its green bond<sup>216</sup> listed on the Singapore Stock Exchange.<sup>217</sup>

AC Energy's green bond was the first Climate Bonds Certified bond to be issued publicly and in USD. ADB was the anchor investor of this bond, investing USD20m in the green bond to crowd-in other institutional investors.<sup>218</sup> AC Energy is a repeat green bond issuer in the Philippines, it has issued green bonds six times to date. In December 2019, AC Energy issued a perpetual green bond that will be used to finance the company's plans to install up to 5GW of renewable energy across multiple projects in Asia Pacific to 2025, including in the Philippines.<sup>219</sup>

Then in 2018, Chinabank also issued a USD150m green bond with the use-of-proceeds for climate-smart projects, including renewable energy, green buildings, energy efficiency, and water conservation, in accordance with the Green Bond Principles.<sup>220</sup>

Renewable energy project developers and asset owners could have access to a wide variety of funding options, including banks, project financiers, debt clubs, investment funds, direct investors, and the capital markets. Renewable energy funds are being used to support greenfield projects and stimulate innovation. The aggregation of smaller projects can be done through securitisation or by banks originating green loans and refinancing in the green bond market. In some countries, local governments are able to aggregate their debt requirements to access green financing at a lower cost of capital than they would have otherwise been able to access - in the Philippines, this would be a useful mode for LGUs to follow, particularly for financing their smaller projects like waste-to-energy projects. We note, however, that there are numerous challenges to making such collaboration work in practice, particularly in the short term.

## Geothermal plant funded by a green bond: **Tiwi-MakBan geothermal complex expansion**<sup>228</sup>

**Proponent:** AP Renewables Corporation

**Location:** Province of Albay

**Status:** Under construction. Most of the plant is complete and operational; however, there is an expansion under construction.

**Classification:** Generation facility, geothermal, energy

**Description:** The Tiwi-MakBan Geothermal Complex is one of the biggest geothermal facilities in the country and the region. Currently, the complex has a total capacity of 458 MW at the MakBan geothermal site in the provinces of Batangas and Laguna, and 289 MW at the Tiwi geothermal site in Albay, in the Bicol Region.

The expansion seeks to drill 12 new production wells over a six-year period to increase steam availability for the power plant facilities by about 20%.<sup>222</sup>

**Output:** The geothermal plants reduce the Philippines' dependency from fossil fuel energy, such as oil, and improve the Philippines energy security.



Source:<sup>225</sup>

Over the period of 1979-2003, it is estimated that power generated from existing geothermal plants displaced 152.6 million barrels of oil, saving the country an estimated USD3.21bn in terms of foreign exchange.<sup>223</sup>

**Cost:** PHP10.7bn (USD220.4m)

**Financial structure:** Green bond (USD225m green bond, in 2018, supported by ADB)<sup>224</sup>

## Wind farm in the archipelagic province of Aklan: **Nabas 2 wind project**<sup>229</sup>

**Proponent:** PetroWind Energy, subsidiary of Petro Energy Resources Corporation (PERC)

**Location:** Nabas, Aklan Province

**Status:** Planned

**Classification:** Generation facility, wind, energy

**Description:** The project would expand the 36-MW wind facility by 14 MW. The expansion of the 14-MW Nabas 2 will involve seven turbines. Nabas 2 is targeted to be ready for connection to the grid by early 2021.

PERC owned several other renewable energy assets, including the 32 MW Maibarara geothermal plant in Sto. Tomas, Batangas by Maibarara Geothermal, Inc. (MGI), the 36 MW Nabas-1 wind farm operated by PetroWind Energy Inc. (PWEI), and the 70 MW Tarlac solar project in Tarlac City under PetroSolar Corporation (PSC).



Source:<sup>227</sup>

**Output:** An increased capacity for a reliable renewable energy power supply. The wind farm will supply energy to the Negros-Panay-Cebu grid project by the National Grid Corporation of the Philippines. The grid is currently under construction, set to be completed in 2021.<sup>226</sup>

**Cost:** PHP1.4bn (USD28.8m)

**Financial structure:** Corporate finance

## Milling Company constructs Biomass Power Plant: **Victorias Milling Company Biomass Power Plant**

**Proponent:** The Victorias Milling Company (VMC)

**Location:** Victorias City, Negros Occidental Province

**Status:** Completed

**Classification:** Generation facilities, bioenergy, energy

**Description:** The 40 MW facility uses bagasse, the by-product of sugarcane, to produce biomass. The plant is also the largest stand-alone biomass plant in the Philippines registered with the Department of Energy (DOE).<sup>230</sup>

**Output:** The plant will export 25 MW of the energy produced from the biomass plant into the grid and use the rest for its own operations.



Source:<sup>231</sup>

**Cost:** PHP2bn (USD41.2m)

**Financial structure:** Corporate finance

## Solar farm in Zambales: **GIGASOL3 Solar Power Project**<sup>234</sup>

**Proponent:** GIGASOL3, Inc.

**Location:** Palauig, Zambales

**Status:** Under construction (to be completed on Q1 2021)

**Classification:** Generation Facility, Solar Energy

**Description:** GIGASOL3 Solar Power Plant is a greenfield project developed by AC Energy located in the Municipality of Palauig, Province of Zambales. Covering a 58-hectare Comprehensive Agrarian Reform Program (CARP)-exempted land in an industrial zone, the project will be connected to the Luzon Grid through the existing 69kV Botolan-Candelaria Transmission Line maintained by the National Grid Corporation of the Philippines.

**Output:** With 63MW DC Capacity, the project intends to export 50MW AC of its generated capacity to the Luzon Grid. Potentially,



Source:<sup>232</sup>

the project can power more than 30,000 houses and can reduce annual carbon emission by approximately 56,000 MT CO<sub>2</sub>.

**Cost:** PHP2.5bn (USD51.5m)

**Financial structure:** All-Equity Financing

## Negros Biopower Plant: **BioPower 70MW Biomass Portfolio in Negros, Philippines**

**Proponent:** Bronzeoak Philippines

**Location:** Province of Negros Occidental, Philippines

**Status:** Completed - Testing & Commissioning Phase

**Classification:** Generation facility, biomass, energy

**Description:** BioPower's presence in the island province of Negros Occidental is composed of three biomass power plants namely, San Carlos BioPower, North Negros BioPower, and South Negros BioPower. These renewable energy developments will collectively generate 70-MW of baseload capacity, fuelled primarily by sugarcane trash sourced within the same region. These BioPower plants are the first in the world to purely run on sugarcane trash, a residual biomass remaining on fields after sugarcane has been harvested.

To secure feedstock supply to the three plants, the proponents established a comprehensive fuel harvesting and logistics supply chain capability. BioPower owns and operates multiple transloading stations located in strategic parts of the Negros region to collect and utilize more than 610,000 metric tonnes of feedstock as fuel every year.

**Output:** BioPower intends to provide electricity to an area of short supply and increasing demand for baseload power. Generated power from the plants is expected to reach around 610,000 people.

The biomass projects in Negros have provided substantial countryside development in host communities, adding income to local farmers and sourcing personnel requirements within the



Source:<sup>233</sup>

region. The plants will operate virtually round the clock, 365 days per year with several shifts per day to meet the labor-intensive demands of biomass power generation.

As the three plants consistently make use of indigenous biomass resources, it also adds value to sugarcane trash while maintaining the environmental integrity of the sugarcane farming industry. Utilization of sugarcane trash by BioPower plants will offset 57,600 tonnes of carbon dioxide (CO<sub>2</sub>) a year while also mitigating the practice of open field burning, without additional investment from planters.

**Cost:** PHP15bn (USD309m)

**Financial structure:** Loan from ThomasLloyd, a clean technology infrastructure fund



# Low carbon transport

Transportation modes and ancillary infrastructure that produce low or zero direct carbon emissions. This can include national and urban passenger rail and freight rail networks, Bus Rapid Transit (BRT) systems, electric vehicles, and bicycle transport systems.

## Sector overview

The Philippine Development Plan (2017-2022) identifies the improvement of connectivity and mobility through transportation as one of the key drivers for economic development in the Philippines.<sup>235</sup> The plan also outlines that a significant expansion of mass transport infrastructure is needed in order to decarbonize transport emissions and combat the extreme traffic congestion experienced in the Manila greater metropolitan area.<sup>236</sup>

The transportation sector is central to the Philippines' emissions reduction strategy, because without transition into mass transport and a cleaner source of transport energy, the sector is expected to account for up to 90% of total energy demand in 2030.<sup>237</sup> The government had introduced numerous green policies to make the transport sector more efficient and environmentally sustainable. For example, the government mandated gasoline be blended with 10% ethanol and 5% biodiesel through the Biofuels Act in 2007.<sup>238</sup> The government is also modernizing PUVs and massively expanding the MRTs and LRTs.

Public utility vehicles (PUV), locally known as the Jeepneys (a local mini-bus public transportation), is the most popular mode of public transportation in the Philippines. Jeepneys are abundantly spread across the Philippines' municipal areas and the cheapest form of public transportation.<sup>239</sup> However, Jeepneys have been relying heavily on fossil fuels, mainly diesel, which worsen the air pollution in the Philippines' metro area.<sup>240</sup>

To curb air pollution from the transport sector the government introduced the Public Utility Vehicle Modernization Program (PUVMP) in June 2017. The PUVMP is a comprehensive plan that aims to overhaul the Philippines' public transportation industry to be more efficient and environmentally sustainable by 2020.<sup>241</sup> One of the key objectives of the PUVMP is to replace outdated diesel-run Jeepneys with electric Jeepneys (e-Jeepney).<sup>242</sup> The implementation of the e-Jeepney program will also improve safety standards, as many of the Jeepneys of today are made from scavenged parts, without doors or bar handles for passengers.<sup>243</sup>

To enable this transformation, the Philippines' Department of Transportation has signed 17 Memoranda of Agreement (MoA) with e-Jeepneys manufacturing companies in 2018. From the MoA, these manufacturing companies agreed to supply approximately 20,000 units of e-Jeepneys annually and help Jeepney operators to meet their financial requirements to transition to the e-Jeepneys.<sup>244</sup>

The Land Transportation and Franchising Regulatory Board (LTFRB) of the Philippines had given Jeepney operators until July 2020 to phase out their old Jeepneys.<sup>245</sup> The first batch of e-Jeepneys was rolled out in June 2018. By 2019, approximately 2,595 units were modernized out of the estimated 180,000 units of Jeepney nationally.<sup>246,247</sup> Drivers and operators have to pay higher cost to replace their Jeepneys, even with existing government subsidy in place, which is causing some resistance.<sup>248</sup>

Beyond the PUV, the Government of the Philippines has made substantial progress in scaling up the construction of railway transport infrastructure. Some major projects include the rehabilitation of the North-South Commuter Railway (NSCR), rehabilitation of the Metro Rail Transit Line 3 (MRT-3), and the extension of the Light Rail Transit Line 1 (LRT-1) in Cavite, and the Subic-Clark Railway.<sup>249</sup> The Philippines is expected to expand its the total railway length to 1,144 km in 2022, a significant expansion from only 77 km in 2016.<sup>250</sup> The cost of the most prominent four railway projects currently under construction range between USD2.03bn to USD6.85bn.<sup>251</sup>

The construction of new railway projects in the Philippines has boosted growth in the construction sector, with the USD7bn fully underground 25 km Metro Manila Subway (Phase I) being the key driver.<sup>252</sup> Early predictions from Fitch Ratings suggested that the railway sector would grow by 8.6% in 2020.<sup>253</sup>

We note that marine transportation such as ferries are not included in our methodology for this report. These fall under the Shipping criteria within the Climate Bonds Standard and Certification scheme which were launched in November 2020.<sup>254</sup>

## Funding Pathways

Transportation infrastructure is traditionally funded by government budget, but under President Duterte's Build, Build, Build campaign, the Philippines has successfully pushed numerous bilateral and multilateral

partnerships to fund infrastructure projects. Currently, the largest railway infrastructure funding is provided by the Japan International Cooperation Agency (JICA) and ADB.<sup>255</sup>

The private sector is also providing funding to narrow the government's infrastructure funding gap.<sup>256</sup> These private investors consist of a combination of local banks, development banks, and domestic investors. Domestic banks in Philippines are also highly liquid; BDO, BPI, MetroBank, and the Land Bank of the Philippines are all dominant players in infrastructure financing.<sup>257</sup>

Public-Private Partnerships (PPPs) will remain a critical tool for transportation project development. The World Bank considered the Philippines' PPP framework and PPP management to be strong.<sup>258</sup> There have been relatively few bond offerings for transport PPPs as trading platforms have limited guidance and policy for PPP project bonds. Although, in 2017, the Philippine Dealing System Group (PDS) announced that it will consider rules to allow more PPP fixed-income trading on its platform. In 2016, Philippine Stock Exchange (PSE) eliminated the requirement to show three years of cash flow as proof of creditworthiness, which eased one of the restrictions for companies to raise equity.<sup>259</sup>

There are also potential funding structures available to encourage private sector involvement in the long-term financing required for low-carbon transport projects including green bonds, outright asset acquisitions, and the securitization of green assets. Green bonds provide indirect exposure for investors to specific projects and assets and provide attractive credit and liquidity credentials for institutional investors. In 2019, the RCBC issued a PHP15bn green bond with use of proceeds allocated for low carbon transportation (along with energy, buildings, and waste).

Government-backed concessional loans are a new structure that exists in ASEAN, which provide greater leverage against the revenue streams of transport (i.e. fares). Another innovative mechanism is 'value capture,' which refers to the value that is generated for private landowners from infrastructure and surrounding business operations. As private sector appetite increases, funding sources will continue to diversify, and investment will accelerate.<sup>260</sup>

## Major Metro upgrade in Manila: **MRT-11 Project**<sup>267</sup>

**Proponent:** Department of Transportation

**Location:** National Capital Region (NCR)

**Status:** Planned

**Classification:** Railway, low-carbon transportation

**Description:** The project involves the construction of an approximately 18 km Metro Railway Transit System (MRTS) of elevated structure starting from Epifanio Delos Santos Avenue (EDSA), Balintawak in Quezon City traversing along Quirino Highway, Novaliches and Zabarte Road in North Caloocan City up to Barangay Gaya-gaya in San Jose del Monte, Bulacan.

A passenger transfer facility shall also be provided proximate to the EDSA-Balintawak station of LRT Line 1 and the MRT 11 Balintawak station.

**Output:** Reduced traffic congestion from usage of private vehicles, reduced air pollution, and overall increased efficiency of travelling.<sup>261</sup>



Source:<sup>265</sup>

**Cost:** PHP71.1bn (USD1.45bn)

**Financial structure:** Potentially funded by Official Development Assistance (ODA) and Public-Private Partnerships (PPPs)<sup>262</sup>

## Connecting East and West: **East-West Rail Project**<sup>268</sup>

**Proponent:** Philippine National Railways (government proponent)

**Location:** Quezon City

**Status:** Planned

**Classification:** Railway, low-carbon transportation

**Description:** The railway will be an elevated 9.4-km railway line from Diliman, Quezon City to Lerma, Manila including provision of interconnecting facilities with neighbouring rail systems.

**Output:** Ease traffic congestion from usage of private vehicles, reduced air pollution, and an overall increased efficiency of travelling.<sup>263</sup>

**Cost:** PHP51.17bn (USD1.05bn)<sup>264</sup>

**Financial structure:** PPP - East-West Rail Transit Corporation and Alloy MTD Philippines Incorporated (Consortium)



Source:<sup>266</sup>

## Makati Skytrain Project: **Fort Bonifacio-Makati Skytrain**

**Proponent:** Department of Transportation (DoTr)

**Location:** Taguig, Philippines

**Status:** Planning

**Classification:** Railway, low-carbon transportation

**Description:** This project involves the design, engineering, construction, operation, and maintenance of a 1.873 km monorail system connecting Fort Bonifacio and the EDSA Guadalupe.<sup>269</sup>

**Output:** This project aims to facilitate easy and fast access to and from uptown Bonifacio and reduce travel time and mitigate traffic congestion along the major thoroughfares in the area.<sup>270</sup>

**Cost:** PHP3.52bn (USD75.5m)



Source:<sup>271</sup>

**Financial structure:** Unsolicited, Build-Transfer-Operate (BTO)

## Light rail extension in Manila: **Manila LRT Line 1 Cavite Extension and Maintenance**

**Proponent:** Light Rail Manila Corporation

**Location:** National Capital Region, Metro Manila Region

**Status:** Planned (construction begins 2021)

**Classification:** Railway, low-carbon transportation

**Description:** The LRT Line 1 was the first metro line of the Manila LRT system. The project will connect the existing 20.7 km line serving Metro Manila in the Philippines by approximately 11.7 km. The proposed project will extend the existing line from Baclaran to Bacoor city in Cavite Province.

A passenger transfer facility shall also be provided proximate to the EDSA-Balintawak station of LRT Line 1 and the MRT 11 Balintawak station.

**Output:** Ease the traffic congestion in the Paranaque-Las Pinas-Cavite corridor, improving commuting efficiency, and carry more than 1 million passengers per-day.

**Cost:** PHP64.9bn (USD1.34bn).<sup>272</sup>



Source:<sup>274</sup>

**Financial structure:** PPP (Consortium of Ayala Corporation, Metro Pacific Light Rail Corporation, and Macquarie Infrastructure Holdings), 32-year concession and Official Development Assistance by the Japan International Cooperation Agency

## Automatic Fare Collection System for Metro and Light Rail: **Automatic Fare Collection System**<sup>276</sup>

**Proponent:** Department of Transportation (DOTr)

**Location:** National Capital Region

**Status:** Completed

**Classification:** Railway, low-carbon transportation

**Description:** The project involved the decommissioning of the previous magnetic-based ticketing system and replacing the same with contactless-based smart card technology called the Beep Card™ on LRT Line 1 and 2 and MRT Line 3, with the introduction of a centralized back office that will perform apportionment of revenues. The private sector operates and maintains the fare collection system.<sup>273</sup>

**Output:** Increase the convenience, efficiency, and accessibility of these public transport modes to people.

**Cost:** PHP1.72bn (USD35.43m)



Source:<sup>275</sup>

**Financial structure:** PPP, Build-Transfer-Operate (BTO), and Build-Own-Operate (BOO)



# Sustainable water management

Assets that do not increase greenhouse gas emissions or that aim at emission reductions over the operational lifetime of the asset, address adaptation, and increase the resilience of surrounding environments. These assets cover built as well as nature-based water infrastructure.

Water management projects could include water capture and collection, water storage, water treatment (with methane emissions treatment), flood defence, drought defence, stormwater management, and ecological restoration and management.

## Sector overview

The Philippines is one of the most vulnerable countries to the impacts of climate change due to its high exposure to extreme weather events such as typhoons and floods.<sup>277</sup>

The Philippines has been facing a challenge to sustain its water supply as climate change-induced prolonged drought strains the availability of water supply.

In March 2019, the greater Manila area experienced one of the worse water crisis—exacerbated by the El Niño—that led to 60% decline in rainfall and prevented dams from achieving ideal water elevations.<sup>278,279</sup>

Delays to the construction of other water reservoirs exacerbated the situation.<sup>280</sup>

The challenge of water insecurity, caused by climate change, is compounded by increased population growth and urbanization.

Despite the challenges imposed by rising population and climate change, the Philippines has made progress in increasing access to clean potable water. Between 2016 and 2017, the Philippines increased access to clean water by 5%. In the 2017 Annual Poverty Indicators Survey (APIS) by the Philippine Statistics Authority (PSA), 88% of the Filipino families have improved source of drinking water, compared to 83.2% in 2016.<sup>281,282</sup> The number

is slightly higher in urban areas than rural areas, 97% and 91%, respectively.<sup>283</sup>

The government has also set an ambitious water access and sanitation target by 2022. According to the Philippine Development Plan 2017-2022 released in 2017, the government aims to achieve 97.46% of basic sanitation access, and 95.16% access to safe water supply by 2022.<sup>284</sup> The Philippines annual water supply and sanitation investment needs currently exceed the available funding by approximately five-fold.<sup>285</sup> The World Bank indicated that the present value of additional investment in water supply and sanitation alone, needed through 2030, will exceed USD1.7tn.<sup>286</sup>

The Philippine Development Plan also aims to continue its largest flood management initiative, the Metro Manila Flood Control Management Project, which began construction in January 2018.<sup>287</sup> Under Duterte's administration, the government is also rolling out massive flood control and mitigation infrastructure projects.

Some of these projects are the USD650m Ambal-Simuay River and Rio Grande de Mindanao River flood control project, and the USD195m Cavite Industrial Area Flood Management project. Both are set to begin construction in 2020.<sup>288</sup> Secretary of the Department of Public Works and Highways (DPWH) Mark A. Villar expressed that the DPWH will “continue to build more flood control structures nationwide on highly susceptible areas, as a mitigation measure to protect citizens, properties, and livelihood.”<sup>289</sup>

## Financing pathways

Most of the Philippines' sustainable water projects are funded by a combination of bilateral government agencies, multilateral banks, and the national government budget. For example, the flagship flood protection project, Metro Manila Flood Control Management Project, was funded collectively by the World Bank, Asian Infrastructure Investment Bank (AIIB),

and the national government. They each contributed USD207.6m, USD207.6m, and USD84.79m, respectively, totaling USD500m to fund the project.<sup>290</sup>

PPP and joint ventures are also used by the government to develop sustainable water projects. Joint ventures are cited as the preferable form by the private sector. In 2018, the World Bank engagement with water supply and sanitation private sector stakeholders indicated that joint ventures are preferred over the PPP framework. Although, there exist major opportunities in PPP projects. Global Water Intelligence identified that the size of the total proposed investment for water-related PPPs was USD1.05bn between 2016-2017.<sup>291</sup>

The participation of the private sector is central to developing water infrastructure under the administration's Build, Build, Build agenda.<sup>292</sup> To attract greater private sector participation, the government has offered several services to reduce the risk for private sector investment in water projects, such as Viability Gap Funding and the blending of public or donor funds to catalyse commercial investments that would otherwise have higher risk.<sup>293</sup>

The Manila Water Inc. USD500m Sustainability bond, issued on July 2020, is an example of how green and sustainability bonds are well suited to fund water infrastructure, and could complement the funding of public water infrastructure issued by the local governments (provinces, cities, or utility companies owned by them). Local banks could also issue a green bond to fund green projects. For example, the Bank of the Philippine Islands (BPI) recently issued a CHF100m public Swiss franc-denominated bond to fund eligible green projects. The eligibility of the green project is determined based on BPI's green bond framework that is aligned to the ASEAN green bond standards. Sustainable water infrastructure project is an eligible green project category under the framework. Three other green bonds issued in the Philippines also allocated use of proceeds to water projects.

## Baggao Water Supply Project

**Proponent:** Municipal government of Baggao

**Location:** Baggao, Cagayan Province

**Status:** Under construction (scheduled to be completed end of 2020)

**Classification:** Water treatment, water infrastructure, water

**Description:** The water supply facility will be comprised of a reservoir, a piped distribution network, with adequate treatment facility, and household taps. This project is structured as Build-Operate-Transfer with a 25-year concession period.<sup>294</sup> This project will provide clean and potable water supply to individual households (Level 3) in the 24 barangays (administrative district).

**Output:** The water supply system will serve some 21,160 population out of the total municipal population of 78,200 or service coverage of 27.6%.<sup>295</sup>

**Cost:** PHP84m (USD1.7m)

**Financial structure:** PPP, Build-Operate-Transfer



Source:<sup>299</sup>

## Angat Water Transmission Improvement Project (AWTIP)<sup>298</sup>

**Proponent:** Metropolitan Waterworks and Sewerage System (MWSS)

**Location:** Norzagaray Municipality, Province of Bulacan

**Status:** Under construction

**Classification:** Water distribution, water infrastructure, water

**Description:** The project involves the construction of a new hydraulic tunnel including a new intake structure at Ipo reservoir and channel, connecting the tunnel outlet to existing aqueducts. The tunnel has a length of 6.45 km with an internal diameter of 4.2m.<sup>296</sup> Whilst the tunnel has been completed ancillary works are ongoing.

**Output:** The project will improve the reliability of the raw water supply for Metro Manila through rehabilitation of the transmission system from Ipo to La Mesa and the introduction of water safety, risk, and asset management plans.<sup>297</sup>



Source:<sup>300</sup>

**Cost:** PHP6.1bn (USD125.7m)

**Financial structure:** Loan, Ordinary capital resources



## Integrated Flood Risk Management Sector Project<sup>301</sup>

**Proponent:** The Department of Public Works and Highways

**Location:** Six river basins (Apayao-Abulog and Abra in Luzon, Jalaur in Visayas, and Agus, Buayan-Malungon, and Tagum-Libuganon in Mindanao)

**Status:** Planned

**Classification:** Flood risk management

**Description:** The Integrated Flood Risk Management Sector Project will reduce flood risks in six river basins by (i) improving flood risk management (FRM) planning through strengthening data acquisition and data management, and improving flood protection asset management; (ii) rehabilitating and constructing flood protection infrastructure; and (iii) raising community awareness and preparing and implementing disaster (flood) risk reduction and management plans to reduce different groups' vulnerabilities.

**Output:** The project will reduce flood risk in the six river basins, addressing flood risk and enhancing climate resilience.

**Cost:** PHP27bn (USD556.2m) (indicative)

**Financial structure:** Loan from ADB with co-financing (indicative)



Source:<sup>303</sup>

## Water supply in Central Luzon: Bulacan Bulk Water Supply Project<sup>302</sup>

**Proponent:** San Miguel Holdings Corp. and Korea Water Resources Corporation

**Location:** Central Luzon

**Status:** Completed (April 2019)

**Classification:** Water treatment and distribution

**Description:** The project included the construction of various components, such as a water treatment plant - complete with support buildings and structures, treated water reservoir, including Sludge Treatment Facility and, raw and Treated Water conveyance facilities complete with necessary appurtenances.

The private partner will undertake the financing, detailed design and construction, and maintenance of conveyance facilities, treatment facilities and water source.

**Output:** This project provides millions of residents from 24 localities in Bulacan fresh, and potable surface water, to meet the needs from growing population, industry, agriculture, and environment in the area.



Source:<sup>304</sup>

**Cost:** PHP24.41bn (USD502.8m)

**Financial structure:** PPP (Build-Operate-Transfer)

## Wawa Bulk Water Supply Project in Central Luzon: **Wawa Bulk Water Supply Project**<sup>309</sup>

**Proponent:** Metropolitan Waterworks and Sewerage System (MWSS) (government proponent), Razon's Prime Infra (private proponent), Oscar Violago's San Lorenzo Ruiz Builders Group (private proponent).<sup>305</sup>

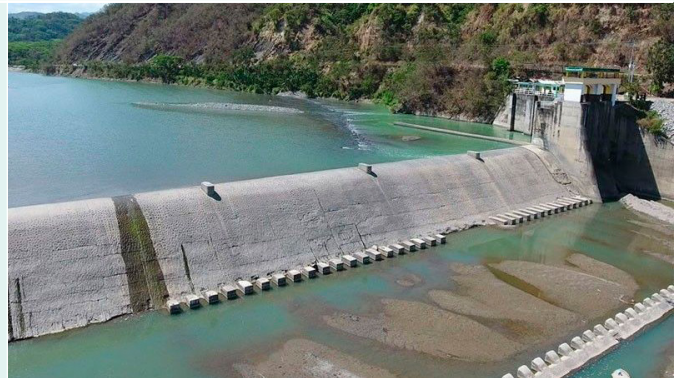
**Location:** Central Luzon

**Status:** Planning

**Classification:** Water treatment, water infrastructure, water

**Description:** This facility will ensure water security for the greater Metro Manila area in the coming years, this project will help address the water supply deficit in the Eastern Zone under Manila Water.<sup>306</sup>

**Output:** This project will supply 80 million liters per day of water in 2021, and more than 500 million liters-per-day (MLD) of water supply in 2025. The facility will provide water to the Wawa catchment area in Rizal province that will traverse the municipality of Rodriguez and the city of Antipolo.<sup>307</sup>



Source:<sup>310</sup>

**Cost:** PHP20bn (USD412m)<sup>308</sup>

**Financial structure:** Joint venture



# Sustainable waste management

The efficient use of resources to cut down on waste production, coupled with collection and disposal systems that promote reuse and recycle, thereby minimising residual waste going into energy from waste facilities. Where waste must go to landfill, there are gas capture systems installed to minimise emissions as well as measures to minimise run-off and other negative impacts on surrounding environments.

## Sector overview

The waste sector in the Philippines is the third largest contributor to the country's GHG emissions.<sup>311</sup> In 2012, the waste sector contributed 10% of total GHG emissions, after the energy (36%) and transportation sectors (16%), and it remained the third largest GHG contributing sector in 2018.<sup>312</sup>

The country is estimated to generate 40,000 tons of solid urban waste per day, or 14.6 million tons annually.<sup>313</sup> The large volume of municipal solid waste in the Philippines is mainly driven by urbanization and the growing population, with the National Capital Region (NCR) producing the largest volume of waste.<sup>314</sup> Plastic is a big part of the national waste issue, with 50% of the waste collected being plastic. Since mid-2019, 3,810 tons of plastic garbage was collected from the Greater Manila area alone.<sup>315</sup>

Philippines' National Solid Waste Management Commission (NSWMC) estimated that Philippine cities will increase their municipal solid waste production by 165% to 77,776 tons daily by 2025.<sup>316</sup> If this challenge remains under-managed, the waste sector will pose a more serious risk for health and environmental problems in the Philippines, such as the contamination of ground and surface water and the spread of disease.<sup>317</sup>

The most relevant waste management regulation for waste today is the Ecological Solid Waste Management Act introduced in 2000. It aims to manage waste collection and disposal sustainably.<sup>318</sup> Two notable targets from the legislation were establishment of materials recovery facilities (MRF), and the closure of open dumpsites and conversion into sanitary landfill and disposal facilities that prevent liquid discharges from polluting ground and surface waters.<sup>319,320</sup>

Waste management in the Philippines is administered by local government units (LGUs). The legislation requires LGUs to submit a Sustainable Waste Management

10-year plan and to comply with the reduce, reuse, and recycle (3R) principle.<sup>321</sup> By 2018, 100% of LGUs in the NCR had submitted a Sustainable Waste Management plan, but many LGUs do not yet comply fully with their plans, with only 308 out of 1,634 LGUs having operational sanitary landfills.<sup>322,323</sup>

LGUs face challenges in the construction, operation and monitoring of sanitary landfill facilities.<sup>324</sup> This is mainly due to insufficient technical and financial resources and capacity to help the LGUs achieve the RA 9003 sanitary landfill target.<sup>325</sup> Some LGUs have tried to solve this problem by outsourcing waste collection service to private contractors, but further private sector participation is needed, especially to scale up the construction of waste treatment and recovery facilities. The Government of the Philippines has been pushing policies to attract investors to participate in sustainable waste management.<sup>326</sup>

The Philippines generates a high percentage of organic and recyclable waste: in 2018, biodegradable waste (52%) dominated the waste component, followed by recyclable waste (28%).<sup>327</sup> The majority of LGUs have successfully established community-level activities in waste collection, segregation, and in establishing materials recovery facilities and composting facilities - through partnerships established at a small scale with local informal partners.<sup>328</sup>

There are many opportunities to improve and develop sustainable waste management infrastructure. For example, the increasing interest from LGUs to develop Waste-to-Energy (WtE) facilities is cited as a large opportunity by the Public-Private Partnership (PPP) Center for potential renewable energy and sustainable waste investors.<sup>329</sup> Investing in WtE facilities can yield both environmental and financial benefits.

WtE electricity production is only considered low emissions technology when the waste used has been sorted and does not include plastics or metals. These facilities can mitigate GHG emissions by generating energy from landfill gas, reducing waste, and promoting reuse/recycling practices. They also create new revenue streams (or savings) for municipalities as they sell off excess energy into the grid.

The Philippines also has multiple plastic waste recycling facilities, including an innovative model that makes roads and cement with plastic garbage. Philippine companies like San Miguel Corp. and Aboitiz Equity Ventures Inc. are using discarded shopping bags,

sachet wrappers, and plastic packaging to fire cement plants and build roads in support of the country's infrastructure development plans.<sup>330</sup> In November 2019, San Miguel laid down the first road, combining plastic scraps with asphalt; the surface material, developed with Dow Chemical Co., used 900kg of plastic to pave 1,500-square meters of road.<sup>331</sup>

## Financing pathways

Most of the major waste management assets and projects in the Philippines are publicly owned, with public financing used primarily for waste treatment facilities, waste-to-energy processing, and sanitary refill infrastructure. Waste treatment facilities usually demand significant capital. Development via PPPs or through the issuance of green bonds could offer options for municipalities to fund projects.

Public-Private Partnerships (PPPs) are a key avenue for the private sector to invest in sustainable waste management projects. The Philippine government is preparing and planning for WtE projects under its PPP scheme - the first of which was approved in 2018. The USD108m project owned by the Puerto Princesa Local Government and AusWorks Corp should enter into construction in 2020.<sup>332</sup> The PPP Center is also currently preparing for WtE proposals in Quezon City in Cebu, Naga City in Camarines Sur, and Calahunan Engineered Sanitary Landfill in Mandurriao District, Iloilo City.<sup>333,334</sup>

The PPP Center recognized the challenge of the lack of bankable infrastructure projects and introduced several policies to address this. For example, the Center is looking to bundle smaller projects by LGUs to make them more attractive for investors.<sup>335</sup> Additionally, the government is introducing a hybrid PPP scheme, commonly referred as blended finance, where the initial project stages are funded using government funds or multilateral development banks, with the PPP component reserved for project operation and maintenance.<sup>336</sup>

Green bonds are also a viable pathway to invest in the country's green projects: four green bonds have been issued in the Philippines with use of proceeds for waste. The Development Bank of the Philippines is one of the public sector issuers that has a Green Financing Program to assist strategic sectors, industries, and LGUs in adapting environment-friendly processes and technologies and incorporating climate change adaptation, mitigation, and disaster risk reduction measures by providing financing and technical assistance.<sup>337,338</sup>

## Waste-to-energy: **Quezon City Integrated Solid Waste Management Facility**<sup>339</sup>

**Proponent:** Quezon City Government

**Location:** Quezon City, National Capital Region (NCR)

**Status:** Planned

**Classification:** Facilities for collection, sorting and material recovery, preparation, waste and pollution control

**Description:** The project involves the design, financing, construction, operation, and maintenance of a biodegradable source separated waste treatment and residual combustible waste treatment facility. It has a WtE component.

**Output:** The facility is capable of processing up to 3,000 metric tons of municipal solid waste per day and generate 36 MW per day.

**Cost:** PHP22bn (USD453.2m)



Source:<sup>341</sup>

**Financial structure:** PPP (Joint venture) - Consortium composed of Metro Pacific Investments Corporation, Covanta Energy LLC, and Macquarie Capital Limited

## Recycle Plant: **Coca-Cola Beverages Philippines Inc. Recycling Facility (food-grade)**<sup>340</sup>

**Proponent:** Coca-Cola Beverages Philippines (CCBPI) and Indorama Ventures

**Location:** General Trias, Cavite

**Status:** Under construction (set to be completed in 2021)

**Classification:** Recycling facilities, recycling, waste and air pollution control

**Description:** The recycling facility will collect, sort, clean, and wash post-consumer polyethylene terephthalate (PET) plastic bottles and turn them into new bottles using advanced technology. The plant is projected to handle 30,000 metric tons of plastic a year, or almost 2 billion pieces of plastic bottles per year.

**Output:** The facility will contribute to the improvement of PET collection and recycling rates in the Philippines



Source:<sup>342</sup>

**Cost:** PHP1bn (USD20.6m)

**Financial structure:** Joint venture

## Waste-to-energy (WTE) facility Pangasinan: **Waste-to-energy facility Pangasinan**<sup>343</sup>

**Proponent:** Green Atom Renewable Energy Corporation

**Location:** Inmanduyan, Pangasinan

**Status:** Under construction (set to be operational in 2022)

**Classification:** Waste to energy plants (e.g. incineration, gasification, pyrolysis, and plasma), waste-to-energy, waste and pollution control

**Description:** This plant will convert garbage and wastes into a 6 MW power generator.

**Output:** Improved waste management capacity, and additional energy supply

**Cost:** PHP4.5bn (USD92.7m)

**Financial structure:** PPP



Source:<sup>344</sup>

## Reclamation facilities: **IRI Philippines, Inc. solid waste recycling and reclamation facility**<sup>346</sup>

**Proponent:** IRI Philippines, Inc.

**Location:** Calamba City, Laguna

**Status:** Completed

**Classification:** Recycling facilities, recycling, waste and air pollution control

**Description:** IRI specializes in solid waste recycling and reclamation. It has been primarily servicing the semiconductor and electronics industries, offering the best prices for production rejects, scrap, and excess materials. IRI recycles and reclaims these materials which are mostly non-ferrous and precious metals. It also recycles plastic wastes and is into the import and export of non-ferrous and precious metals.<sup>345</sup>

**Output:** This project is reducing the amount of waste going to landfill and reclaiming non-ferrous and precious metals - from electronic production rejects, computer parts and telecommunication equipment.



Source:<sup>347</sup>

**Cost:** PHP350m (USD7.2m)

**Financial structure:** Corporate financing

## Sustainable Tourism Development Project : **Baguio City Sanitation Improvement Project (BCSIP)**

**Proponent:** Department of Natural Resources and Environment; City of Baguio

**Location:** Baguio City

**Status:** Planned

**Classification:** Sewerage network and treatment plant; septage collection and treatment

**Description:** This project involves the rehabilitation and expansion of existing sewerage treatment plant and the sewer network in Balili catchment area, development of a new treatment plant and sewer network in Asin Galiano catchment area, and development of a fecal sludge management strategy including fecal sludge treatment facilities for the whole city of Baguio.

**Output:** The project will support Baguio City to efficiently and sustainably deliver sanitation services



Source:<sup>348</sup>

**Cost:** USD100m

**Financial structure:** Loan from ADB

# Other green opportunities

## Green and energy efficient buildings

Green buildings will play an important role in achieving the Philippines climate and energy efficiency targets. According to the Philippines' Department of Energy, building energy consumption accounts for about 15-20% of nationwide electric power consumption.<sup>349</sup> Reducing energy loss through improved efficiency in buildings can deliver both economic and environmental benefits by reducing GHG emissions and energy bills.<sup>350</sup>



Residential and commercial buildings have the greatest energy efficiency potential in the Philippines Energy Efficiency and Conservation Roadmap (2017 - 2040). The roadmap provides a trajectory for the Philippines to achieve its energy efficiency goal by 2040. In the plan, the Philippines commits to reduce energy consumption in commercial buildings by 25% and in residential buildings by 20%, against a 2014 baseline, by 2040.<sup>351</sup> One of the key outcomes of the roadmap was the passing of the Energy Efficiency Conservation Act, which was signed into law on 12 April 2019 and which aims to standardize energy efficiency and conservation measures by regulating energy-efficient technologies in buildings.<sup>352</sup>

Prior to the introduction of the roadmap, the Philippines had already been retrofitting old buildings to be more energy efficient and using green building codes to ensure that future buildings meet energy efficiency standards. In 2013, through a project supported by ADB, the government retrofitted 135 government buildings, and almost 4,000 public park and streetlights with energy-efficient lighting systems. This resulted in a total cumulative energy saving of 321 GWh per year, or almost a third of the buildings' average energy consumption. The successful implementation facilitated the development of the Green Building Rating System in the Philippines.<sup>353</sup>

In 2015, the government introduced the Green Building Code (GB code), which aims to reduce emissions through increasing energy efficiency in building design, construction, and operation. It sets the minimum green standard related to energy efficiency, water and wastewater management, solid waste management, site sustainability, and indoor environmental quality.<sup>354</sup> The scheme is consistent with existing international green building certification entities.

Prior to the introduction of the code, voluntary green building certification already existed. For example, international green building certification schemes such as LEED and the Philippines' own local green building certification, BERDE (Building for Ecologically Responsive Design Excellence) have been widely adopted by real estate developers.<sup>355</sup>

However, the major step taken to formalize the code has pushed the Philippines closer to fulfilling its GHG emission reduction goal for 2030. The implementation of the code is expected to reduce GHG emissions and energy consumption nationally by at least 20%.<sup>356</sup> It also should boost the growth of green building initiatives in the private sector, as the statute enforces project owners and property developers to comply with the green standard at the outset by making it difficult to obtain a building permit without meeting the green building standard.<sup>357,358</sup>

Strong support from the government and the development of green building-enabling regulations creates a promising opportunity for an increase in green buildings and retrofit projects in the Philippines.

Projects relating to green buildings and buildings retrofits are not included in the project pipeline within this report as they are not traditionally seen as 'infrastructure'. However, they make up a large proportion of the global green bond market and opportunity for green bond growth in the Philippines. Already, six of the Philippines green bonds have proceeds allocated to green buildings. In February 2020, Arthaland issued a PHP3bn green bond to finance green buildings.

Going beyond buildings efficiency, there are also huge opportunities for both emissions reductions and green finance within broader urban planning and development (such as district heating and cooling) as well as in industrial efficiency. The definitions of what can be included as Paris-aligned within industrial energy efficiency are still being discussed within the Climate Bonds Initiative, the European Taxonomy and globally. It is likely, however, that any such definitions will fit within the ambitious efforts to align hard-to-abate sectors with the Paris Agreement as articulated recently in the Climate Bonds white paper 'Financing Credible Transitions'.<sup>359</sup>

Green loans also have the potential to grow, with banks such as Bank of Philippine Islands having successfully provided financing for hundreds of projects involving energy efficiency and climate resilience.<sup>360</sup>

## Sustainable land use

Land plays a key role in climate change mitigation, as a source and sink of GHGs. Land-related GHG emissions are largely caused by land-use change activities such as clearing forest for agricultural land.<sup>361</sup> Globally, poor land management has led to degradation of soils, a loss in biodiversity and desertification.<sup>362</sup> The rate of land degradation will be intensified by the effects of climate change through increased flooding, drought and heat stress.<sup>363</sup>



In the Philippines, poor land management causes stress on the nation's long-term capacity to ensure food security and provide ecosystem services for tourism activities. It is estimated that the Philippines has a total of 132,275km<sup>2</sup> of degraded lands and 5.3m hectares of land that is severely eroded.<sup>364,365</sup>

In 2016, the government created the national Land Degradation Neutrality (LDN) targets and framework. The LDN is achieved when the availability of land resources necessary to support ecosystem functions remain stable and able to sustain the country's long-term land needs.<sup>366</sup> The LDN addresses existing land management challenges, opportunities, and identifies land-based emission reduction pathways from different sectors.


These LDN targets have been incorporated into the Philippine National Action Plan, 2017-2022, and are tied to national climate adaptation solutions. The LDN targets and framework provide a linkage between the sectors that are critical to the SLM progress, such as the agriculture and forestry sectors.<sup>367</sup>

The incorporation of targets into the NDC steps was monumental in enabling the Philippines to further attract and tap into global financing opportunities for sustainable land management and climate change, such as through the Green Climate Fund. The LDC framework makes the sustainable land management progress more trackable, therefore able to demonstrate the direct contribution of the agriculture and natural resources management sectors to the national climate change mitigation and adaptation targets.<sup>368</sup>

The ambitious sustainable land use efforts described mean the Philippines is well-positioned to attract public and private funding for sustainable land use management. This could also result in the first Philippines green bonds relating to sustainable land use in the future.

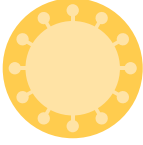
# Measures for growing green infrastructure

The growth of green infrastructure pipelines and associated green finance (including the green bond market) in the Philippines can be aided by key policy and institutional changes. Such measures could aim to raise the profile of green infrastructure, support critical finance channels for infrastructure development stakeholders, diversify risks and create more options for investors. Key measures for could include to:<sup>369</sup>

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**Incorporate climate risk exposure into new infrastructure plans,** accounting for future depreciation of assets due to change in precipitation patterns, temperature increases and extreme weather events.
- Improve the visibility of green investment opportunities** to help investors understand that there is a sufficiently large pool of financially attractive investments that are also green.
- Adjust regulatory requirements,** including the promotion of a standardized Green Tagging approach for project finance and integration of climate criteria.

- 
**Issue a sovereign green bond, to send a strong signal to the market.** Sovereign bonds are well understood, frequently issued products that are included in most investment strategies. A sovereign green bond can kickstart a local green bond market by bringing scale to domestic markets through benchmark pricing, liquidity, and precedent. For governments with access to domestic and international capital markets, sovereign green bonds can also help attract the private sector-based investment needed for sustainable developments and to fulfil the objectives of its NDC.

- Promote the issuance of local government green bonds** – this could include incentives such as credit enhancement for local governments or establishing a green municipal finance for local governments to aggregate debt requirements and access lower cost of capital.

- 
**Promote “COVID Recovery” bond programmes,** with the issuance of green, resilience and/or blue bonds that support a more sustainable recovery, and which exclude activities which are at risk from future shocks, for instance assets that could become stranded as a result of climate policy changes, or which are not resilient to climate physical risks.

- Offer incentives, such as government-backed grants,** to cover green bond issuance costs (often including the cost of obtaining an external review); subsidy schemes for interest rates or third-party engagement; and/or launch incentives for issuers or investors, such as a tax-exemption to increase investor engagement.

- 
**Partner with development entities,** moving beyond loans, to leverage and reduce the risk of infrastructure projects and attract a wider range of investors, for example, through the development of foreign exchange products, political coverage and credit enhancement products or offering credit guarantees, and adopting a blended finance approach in order to channel capital flows—possibly in combination with credit support to improve the bankability of projects.

## Annex I: Green debt instruments<sup>370</sup>

Debt Instrument	Definition	Example
<b>Sovereign green bonds</b>	Proceeds are allocated to nominated projects and assets. Debt securities carry the credit rating of the issuing State. However, an independent rating may be assigned by ratings agencies.	The Republic of Indonesia issued a USD1.25bn 5-year green sovereign sukuk in 2018 to finance eligible projects under a range of categories: renewable energy, energy efficiency, adaptation, transport, green buildings, sustainable agriculture, sustainable management of natural resources and green tourism.  This instrument has not yet been used in the Philippines.
<b>Supra-national green bonds</b>	Proceeds are allocated to nominated projects and assets. Debt securities carry the credit rating of the issuing supra-national. However, an independent rating may be assigned by ratings agencies.	In the Philippines, the bond, dubbed “Mabuhay bond” is the first peso-denominated, internationally rated triple-A, issued by International Finance Corporation (IFC), a multilateral bank. <sup>371</sup> The PHP4.8bn (USD98.9m) proceeds will go to repair the Malitbog Geothermal Power station that was damaged due to an earthquake. This project is owned by local renewable energy developer Energy Development Corporation (EDC), located in Kananga city in Leyte province. <sup>372</sup>
<b>Sub-sovereign green bonds</b>	Proceeds are allocated to nominated projects and assets within the sponsoring region. Credit rating is based on that of the issuing municipality and the credit quality of the underlying assets, but it can also receive a guarantee from the central government, if it does not have its own rating.	In 2016, the Vietnam Ministry of Finance approved a pilot project for municipal green bonds. In September 2016, the People’s Committee of Ba Ria Vung Tau Province came to market with a VND80bn (USD4m) 5-year green bond to finance a water resource management project. Shortly after, Ho Chi Minh City Finance and Investment State- Owned Company issued a VND523.5bn (USD23m) 15-year green bond with proceeds allocated to 11 projects related to the water, adaptation, and infrastructure sectors.  This instrument has not yet been used in the Philippines.
<b>General obligation green bond</b>	Proceeds are allocated to nominated projects and assets within the sponsoring region. The bond will carry the credit rating of the issuing entity.	Singapore state development bank DBS Group issued a USD500m 5-year green bond in July 2017. Proceeds will be allocated to green buildings, transport, renewable energy, energy efficiency, waste, and adaptation.  This instrument has not yet been used in the Philippines.
<b>Green revenue bond</b>	Proceeds are allocated on nominated projects and assets linked with a municipal government. As the green bonds are backed at least partially by the specific revenue streams (most often tax receipts, lease fees or other receivables) bonds with no recourse to the issuer.	In 2017 Beijing Enterprises Water Group, which operates 19 water treatment plants under contracts with 16 municipalities, issued a securitisation backed by water treatment service fee receivables. The proceeds are to be invested in 9 new water infrastructure projects.  This instrument has not yet been used in the Philippines.
<b>Green convertible bond</b>	Proceeds are allocated on nominated projects and assets. The debt security can be converted into a predetermined amount of the company’s common stock. The bond may carry the credit rating of the issuing entity, but they are often unrated.	Japan-based Sumitomo Forestry Co., Ltd issued the first green convertible bond in September 2018 to refinance the acquisition of 30,000 hectares of FSC certified timberlands and plantation forests in Nelson, New Zealand. The Stock Acquisition Rights give bondholders the option to acquire the company’s common stock.  This instrument has not yet been used in the Philippines.
<b>Green project bond (project finance)</b>	Proceeds are allocated on nominated projects and assets. Credit rating is based on the quality of the backing green assets and the returns stream of the underlying project.	On February 2020, the boutique property developer Arthaland Corp. launched on a green bond offer worth as much as PHP3bn, raising fresh funds for its growing portfolio of green developments. <sup>373</sup>  In the Philippines, AP Renewables, a subsidiary of Manila-based energy company Aboitiz Power, issued a green bond to refinance a 676.9MW geothermal project in the Philippines which it had bought from the government in 2009. <sup>374</sup> Issued in 2016, this PHP10.7bn (USD220.4m) deal was the first green bond in ASEAN to be certified under Climate Bonds Standard. <sup>375</sup>



Debt Instrument	Definition	Example
<b>Green sukuk</b>	Proceeds are allocated on nominated projects and assets using a shariah-compliant trust structure. Credit rating is based on the quality of the backing green assets and the lease payment stream of the underlying project.	<p>In July 2017, Tadau Energy Sdn Bhd, a Malaysian-based renewable energy and sustainable technology investment firm issued the world's first green sukuk of RM250m. The proceeds are used to finance the construction of large-scale solar (LSS) photovoltaic power plants in Kudat, Sabah, with a tenure of 2 to 16 years.<sup>376</sup></p> <p>This instrument has not been used in the Philippines.</p>
<b>Green structured finance (senior unsecured)</b>	Debt securities backed by a pool of underlying assets. Proceeds are allocated only to nominated projects and assets. The credit risk is dependent on the asset risks.	<p>In the Philippines, in <b>January 2019</b>, AC Energy Finance International Limited, a wholly owned subsidiary of AC Energy Inc issued a USD-denominated senior Green Bond, at an aggregate principal amount of USD585m with a 5-year tenor and a coupon of 4.75% per annum, priced at 99.451. The Bonds have received pre-issuance certification as Climate Bonds under the Climate Bonds Standard ("CBS"). This is the first publicly syndicated CBI-certified USD Green Bond in Southeast Asia.<sup>377</sup></p> <p><b>September 2019:</b> The Bank of the Philippine Islands (BPI) has raised USD300m from the issuance of green bonds, making it the first Philippine bank to issue dollar-denominated ASEAN green bonds. The senior unsecured fixed rate ASEAN green bonds due September 2024 were priced at 99.641 with a re-offer yield of 2.577 percent. The bonds carry a coupon of 2.5 percent per annum, payable semi-annually. Net proceeds from the bonds would be used for the financing or re-financing of green eligible projects, as further described in BPI's Green Finance Framework.<sup>378</sup></p> <p><b>August 2019:</b> Bank of the Philippine Islands (BPI) has raised an equivalent of about PHP5.28bn from a pioneering Swiss franc-denominated green bond issue that gives it two-year interest-free money. This is the first public Swiss franc-denominated benchmark bond (CHF100m) from the Philippines, the first ASEAN (Association of Southeast Asian Nations) green bond benchmark for BPI and the first rated Philippine green bond in the international market. It is also the first negative-yielding bonds to be issued out of the Philippines in the international capital markets. These bonds carry zero annual coupon and will mature in 2021. Net proceeds from the bonds will be used for the financing and/or re-financing of "green" eligible projects such as sustainable water and wastewater management, pollution prevention and control, and green buildings.<sup>379</sup></p> <p><b>February 2019:</b> RCBC issued a PHP15bn ( USD309m) green bond; proceeds from the issue will be used to support RCBC's expansion and initiatives in the green space.<sup>380</sup> In particular, the additional capital will be allocated to fund and refinance loans issued for renewable energy, green buildings, clean transportation, energy efficiency as well as pollution prevention and control. This bond is aligned with ASEAN Green Bond Standards 2018.</p> <p><b>2017:</b> BDO Unibank issued its first green bond investment for USD150m to fund climate-smart projects such as renewable energy, green buildings, and energy-efficient equipment. The International Finance Cooperation (IFC) is the sole investor of this bond.</p>
<b>Private Placement</b>	Green bond placed directly with the investor/s. Details of the deal such as pricing and maturity may remain confidential, but the issuer is expected to disclose details on the nominated projects and assets to be financed.	<p>In the Philippines, BDO Unibank issued its first green bond investment for USD150m to fund climate-smart projects such as renewable energy, green buildings and energy efficient equipment. The International Finance Cooperation (IFC) is the sole investor of this bond.<sup>381</sup></p>

Debt Instrument	Definition	Example
<b>Structured finance: Green securitisation, Green tranches in ABS and MBS deals</b>	Debt securities backed by a granular pool of underlying loan or mortgage assets. Proceeds are allocated only to nominated projects and assets. Often an independent credit rating is issued by a rating agency, but this is not a requirement. The credit risk is dependent on the assets' risks.	Harvest Capital (China) has issued Green Commercial Mortgage-backed Securities (CMBS) secured on a LEED Gold Certified office building owned by China Energy Conservation and Environmental Protection Group (CECEP).  This instrument has not yet been used in the Philippines.
<b>Structured finance: Mezzanine and subordinated debt</b>	Proceeds are allocated on nominated projects and assets. Hybrid capital investments, from development banks seeking to support private investment in the senior debt or from investors with a higher risk appetite.	Global investment manager AMP Capital provided a EUR245m mezzanine finance facility of EUR245m to Neoen, a French renewable energy provider. In May 2018, Canadian insurance company Manulife Financial issued a CAD600m (USD464m) 10-year green subordinated secured bond.  This instrument has not yet been used for green projects in the Philippines.
<b>Environmental impact bonds/pay-for-results green bonds</b>	Proceeds allocated to nominated green projects/assets. Part of the project's risk is transferred from the issuer to investors. The payments to investors are conditional to the project achieving an expected outcome after a third-party evaluation has been conducted.	DC Water and Sewer Authority issued a USD25m private placement in 2016 to finance the construction of green infrastructure designed to mimic natural processes to absorb and slow surges of stormwater during periods of heavy rainfall. If the outcome of the project meets expectations, no contingent payment will be due to investors. If it exceeds expectation, investors will make a Risk Payment Share of USD3.3m to DC Water. If it does not achieve expectations, DC Water will make an outcome payment to investors.  This instrument has not yet been used in the Philippines.
<b>Green loans, syndicated loans and credit lines</b>	Provide lending to encourage market development in climate-aligned sectors in line with the Climate Bonds Taxonomy and in compliance with the Green Loan Principles. Interest rates are based on borrower credit scores or an ESG score assigned by an ESG rating agency.	Land Bank has a renewable energy lending program that covers a wide range of technologies and eligible borrowers. The bank offers financing support to low carbon building initiatives.
<b>Perpetual Green Bond</b>	A perpetual bond is a fixed income security with no maturity date. This type of bond can be considered as a type of equity, rather than debt. This type of bond pay a steady stream of interest payments forever or until they are called.	AC Energy issued a USD400m perpetual green bond under the ASEAN Green Bond Standards in December 2019. Proceeds are used to expand renewable energy projects across the Asia Pacific, including the Philippines. <sup>382</sup>

## Annex II: Green equity instruments<sup>383</sup>

Equity Instrument	Definition	Example
<b>Public- Private Partnership (PPP)</b>	A long-term contract between a public entity and a private party aimed at developing and supporting a public asset or service. The private party takes on significant risk and management responsibility, and remuneration is linked to performance.	In the Philippines, the Light Rail Transit (LRT) 6 Cavite Line A involves the construction, operation, and maintenance of an approximately 23.5 km rail. The rail will extend to cover all cities in the Province of Cavite. The PPP structure of this project is build-operate-transfer. <sup>384</sup> The project is due to be completed in 2022. <sup>385</sup> Prime Asset Ventures Inc. (PAVI) proposed to undertake the design, financing, construction, O&M of the Project. <sup>386</sup>
<b>Joint venture, partnership</b>	Business agreement between two or more parties that pool their capital, skills and resources to achieve a specific project or business activity.	In the Philippines, the local government of Quezon City recently linked up with a consortium by the Metro Pacific Investments Corp (MPIC), Covanta Energy, LLC and Macquarie Group Ltd. to undertake an integrated solid waste management facility (ISWM) as a joint venture. <sup>387</sup>  The facility will be able to process up to 3,000 metric tons per day of the city's municipal solid waste and convert this into some 42 MW of renewable energy. The energy generated will be enough to power between 60,000 to 90,000 homes. <sup>388</sup> The project will have a concession period of 35 years. At the moment, Quezon City local government is inviting local and international entities to submit comparative proposals for the design, financing, construction, operation, and maintenance for the facility. <sup>389</sup>
<b>Private equity, venture capital, and unlisted equity funds</b>	Fund allocations to innovative pilot-scale green projects including for qualified green infrastructure. Aid project developers and entrepreneurs to secure a funding stream for green projects. PE often incorporates green indicators into process.	The Renewable Energy Asia Fund (REAF I) and REAF II invest in small hydro, wind, geothermal, solar and biomass projects in Asian developing markets, with a primary focus to date in India, the Philippines, and Indonesia. <sup>390</sup> REAF made equity investments in small renewable energy projects such as on-grid solar, wind, waste-to-energy and hydropower projects of between 5 MW and 100 MW in these three countries. <sup>391</sup>
<b>Subsidiary/project financing vehicles/ YieldCos</b>	Use of proceeds to fund a portfolio of (offbalance sheet) green projects. Private or publicly traded vehicle consisting of pools of long-term cash-generating green assets, may have tax advantages.	City Developments Limited (CDL) issued an SG100m (USD71m) senior secured Certified Climate Bond in April 2017 through its wholly owned subsidiary CDL Properties Ltd to refinance an intercompany loan extended by CDL to CDLP for Republic Plaza, one of Singapore's tallest skyscrapers and a premium Grade A office building in the heart of Singapore's Central Business District. US YieldCos Terraform Global and Terraform Power were established by SunEdison in 2015 and issued green bonds to finance solar, hydro and wind assets.  This instrument has not yet been used in the Philippines.
<b>Investment Trusts</b>	Use of proceeds to fund a portfolio of green projects. Publicly traded vehicle consisting of pools of long-term cash generating green assets, may have tax advantages.	US REIT Hannon Armstrong issued a debut USD100m ABS in 2013. The deal was secured on ground lease receivables from 78 solar and wind farms. Leasing land to renewable energy operators carries lower risk than owning and operating the solar and wind farms. Pooling the leases creates diversity of income streams, a prized feature of securitisations, which further lowers deal risk.  This instrument has not yet been used in the Philippines.
<b>Green Exchange-Traded Funds</b>	The fund buys green bonds to replicate a public index	Solactive/Carbon Care Asia's Sustainability Bond Index has been created and hopes to generate sufficient interest to get ETFs going, providing new liquidity (from retail investors, for example) to the green bond market.  This instrument has not yet been used in the Philippines.
<b>Infrastructure/ property funds</b>	Fund directly investing in nominated infrastructure projects. Funds can have a mixed financing structure by both investing directly in assets and through debt subscription.	The ASEAN Infrastructure Fund (AIF), launched in 2011, is dedicated to fund green infrastructure development needs by mobilizing regional savings, including foreign exchange reserves. By September 2019, the AIF has committed USD520m for nine projects and has a total portfolio size of around USD3bn, including ADB co-financing. <sup>392</sup>  At the moment, these projects are from Indonesia, Vietnam, Myanmar, and the Lao People's Democratic Republic, but green projects in the Philippines are eligible for this fund. <sup>393</sup>

## Annex III: Credit enhancement mechanisms<sup>394</sup>

Credit enhancement mechanisms	Definition	Example
<b>Full or partial credit guarantee (PCG)</b>	A credit guarantee or PCG is created to absorb part or all the debt service default risk of an infrastructure project, irrespective of the cause of default. PCGs can be used for any commercial debt instrument (loans, bonds) from a private lender. The existence or proposed implementation of a PCG is indicative of confidence in the product being floated by the guaranteeing entity and can even assist in bringing new lenders to the table.	<p>The Government of Vietnam provides partial credit guarantees (maximum coverage level at 70% of the project's total investment capital) for green projects (e.g. the renewable energy sector) through the Vietnam Development Bank.<sup>395,396</sup></p> <p>This instrument has not yet been used for green projects in the Philippines.</p>
<b>Partial risk guarantee/ Project Completion Risk/ Political risk guarantee</b>	<p>PRGs cover private lenders and investors for certain risks of lending to private, sovereign or sub-sovereign borrowers. A PRG can cover a number of sovereign or sub-sovereign risks such as currency inconvertibility, repatriation, expropriation, political force majeure such as war, regulatory risk, and government payment obligations (such as tariffs). It can also cover private projects for completion risk. Some additional risks can be covered with insurance companies.</p> <p>Rating agencies may look favourably to projects, which benefit from specific risk insurance, such as completion risk or other types of risk, resulting in a higher credit rating for the resulting green bond issuance.</p>	<p>On December 31, 2015, the Multilateral Investment Guarantee Agency (MIGA) issued a USD39.7m guarantee to a number of lenders, led by Goldman Sachs and Bank of Tokyo Mitsubishi. The loan was guaranteed by the Ministry of Finance - acting for and on behalf of the Government of Vietnam - to support the construction of the Hoi Xuan Hydropower Plant in Thanh Hoa, Vietnam. The plant was to produce and sell electricity to the national utility company, Vietnam Electricity (EVN), under a power purchase agreement. The guarantee covered the risk of non-honouring of sovereign financial obligations with regard to the Government's repayment guarantee to the lenders with tenor of 15 years.</p> <p>This instrument has not yet been used for green projects in the Philippines.</p>
<b>Infrastructure guarantee mechanisms</b>	Guarantee Funds	<p>Local Government Unit Guarantee Corporation (LGUGC) facilitates access of creditworthy LGUs with financially viable infrastructure or development projects to the private capital market by providing guarantees for bank loans or bond flotations. LGUGC managed the guarantee funds for Access to the Sustainable Energy Project and the Department of Energy-Loan Guarantee Fund Program.</p> <p>The LGUGC was dissolved in December 2019, and some aspects of its function were absorbed by the Philguarantee.</p>
	Credit guarantee	Credit Guarantee and Investment Facility (CGIF) provides guarantees for local currency denominated bonds issued by corporations in the region. Such guarantees will make it easier for corporations to issue local currency bonds with longer maturities.
<b>Partial risk swap guarantees</b>	Partial Swap Guarantees cover investors against the risks arising from currency swaps in cross-border transactions or where the debt service cash flow is in a different currency from the deal cash flows, which would require the issuer to hedge the currency mismatch to provide comfort to investors that payments can be made in the debt currency.	<p>Brazil-based private sector bank Unibanco issued JPY25bn 10-year amortising notes backed by the banks' USD denominated offshore remittance flows. The deal was placed with Japanese institutional investors, who required a hedging on the currency mismatch. To reduce the credit exposure for the institution providing the currency swap, the issue obtained a PSG from the IFC.</p> <p>This instrument has not yet been used for green projects in the Philippines.</p>
<b>Foreign Exchange Counterparty Risk Hedging</b>	Investors often prefer to invest in hard currency and local borrowers want to borrow in their domestic currency. When an issuer hedges the FX risk of an offshore bond issue, it will need to book a perfect hedge with a bank. This creates market-to-market credit risk exposure. Some guarantors offer, against an upfront payment, to assume this risk.	<p>MFX Solutions offers a mechanism to take the mark-to-market counterparty exposure for FX hedges, in particular for illiquid currencies or longer tenor, which the TCX Fund can offer.</p> <p>This instrument has not yet been used for green projects in the Philippines.</p>

Credit enhancement mechanisms	Definition	Example
<b>First-loss provisions</b>	First-loss provisions refer to any clause designed to protect investors from the loss of capital that is exposed first if there is a financial loss of security. These could be debt, equity or derivatives instruments including mezzanine finance, cash facilities or guarantees. They could also take the form of insurance that insures debt security providers who are liable to pay compensation to the investors, irrespective of the cause of the loss. They can also be structured as an equity note in a structured deal transaction: buyers of these notes will see their capital written off, in case the amount of losses on the underlying portfolio exceeds the assumptions made on the overcollateralization of the underlying portfolio.	<p>The Green Cornerstone Bond Fund, created by the IFC and Amundi and launched in March 2018, is the world's largest targeted green bond fund focused on investing in emerging markets. To lower risk and attract private sector investments, the IFC will provide a first-loss coverage through a junior tranche.</p> <p>The Credit Guarantee Investment Facility provides credit guarantees for local currency denominated bonds issued by investment grade companies in ASEAN+3 countries. Companies from Thailand, Vietnam, Singapore, Indonesia, and the Philippines have used this facility.<sup>397</sup></p>
<b>Contingent loans</b>	Contingent loans are often used in project finance to backstop the main debt by providing a payment option for specific case scenarios. For instance, if the government fails to obtain quality cash flows, the contingent loan is triggered, and investors are paid.	<p>There have been no green projects using contingent loans to date.</p> <p>This instrument has not yet been used for green projects in the Philippines.</p>
<b>Concessional loan</b>	Concessional loans are loans that are granted on substantially more generous terms compared to market loans, which is achieved through below-the-market interest rates, longer grant periods or a combination of both.	<p>The HDBank solar power programme, which amounted to VND7,000bn,<sup>398</sup> was established to exclusively finance solar power projects. The solar power loans aim to provide up to 70% of the project's total investment capital with a duration of no more than 12 years.<sup>399</sup></p> <p>This instrument has not yet been used for green projects in the Philippines.</p>
<b>ESCOs (Energy Service Companies)</b>	ESCOs provide technical and financial services for the implementation of energy efficiency solutions. Under a Guaranteed Saving Scheme, the ESCO guarantees a certain level of energy savings, thus assuming the performance risk. With a Shared Savings Model, higher energy savings determine a lower cost of the energy service. In both schemes, financing can come either from the ESCO or a third party.	<p>SolarBK is an example of an ESCO in Vietnam. The company provides two main services through the ESCO model, namely: Solar Power and Solar Water Heating. Finance is generated based on energy savings efficiency brought about by ESCO.<sup>400</sup></p> <p>This instrument has not yet been used for green projects in the Philippines.</p>
<b>Viability gap funding (VGF)</b>	VGF is used specifically in infrastructure to cover for the heavy upfront funding that is required to kickstart projects. An analysis of the viability of a proposed project points out the weak areas that prevent large-scale funding from being obtained. A VGF scheme can be implemented through capital grants, subordinated loans or even interest subsidies to target specific issues that are affecting the viability of the project. A blended finance approach could also be used to reduce project risk.	<p>The Coc San Hydropower project in Vietnam was successfully implemented through Viability Gap Funding in the form of a USD5m grant from the Technical Assistance Facility by The Private Infrastructure Development Group (PIDG), in 2013.<sup>401</sup> The finance helped to offset part of the up-front preparation costs of pro-poor infrastructure investments in Coc San, Lao Cai province - the most mountainous area in Vietnam. (This was not specifically labelled as a green deal; however, it was financing for a green project.)</p> <p>This instrument has not yet been used for green projects in the Philippines.</p>
<b>A/B loans or grants</b>	A/B loans or grants are where a Multilateral Development Bank (MDB) offers the "A" portion of the loan while attracting other lenders to join in a second (or "B") tranche. The MDB will be the lender-of-record, lead lender, and administrative agent in the transaction. This reduces part of the risks of the operations, by also being covered by the "umbrella" of the MDBs that include a preferred creditor status and de jure immunity from taxation.	<p>Italian transmissions system operator Terna issued a USD81m green loan in project finance format in July 2017. The Inter-American Development Bank offered the USD56m A loan and BBVA subscribed a B loan for USD25m. The deal will finance the design and construction of a 213km transmission line of 500kv in the northeast of Uruguay.</p> <p>This instrument has not yet been used for green projects in the Philippines.</p>

## Annex IV: Risk transfer/ risk sharing mechanisms<sup>402</sup>

Risk transfer mechanism type	Mechanism available in the Philippines	Example description
<b>First-loss capital</b>	May provide a risk-buffer for green structures and thereby encourage institutional investors. First loss capital incorporated into the capital structure usually as a junior equity tranche or as subordinated debt.	The Clean Energy Finance Corporation's (CEFC) AUD100m equity investment in Australian Prime Property Fund Commercial.  This instrument has not yet been used for green projects in the Philippines.
<b>Synthetic green capital notes or securitisation</b>	Risk management (de-risking) to release loss reserves, with the use of freed capital to fund green projects. Reduce risk weighting of assets, while keeping the assets tied to the banks' balance-sheet and the current operations.	A global example is Credit Agricole's USD3bn synthetic ABS used to free up risk capital for green loan origination.  This instrument has not yet been used in the Philippines.
<b>Loan loss reserves</b>	Pooled public funds set aside by a financial institution to partially recover loss in their loan portfolio in the event of borrower defaults. If the institution issues green bonds, loan loss reserves can improve the risk profile of the deal by providing additional assurance on the issuer's cash flows.	This instrument has not yet been used for green projects in the Philippines.
<b>Risk sharing facility (RSF)/Default swap</b>	These structures support a transaction involving a loss-sharing agreement, where the originator will be reimbursed in the case of a loss of principal on a portfolio of eligible assets (mortgages, consumer or student debt, energy efficiency loans, SME loans, receivables). Originators are mainly banks and corporations.	The Scaling Up Energy Efficiency for Industrial Enterprises in Vietnam project, funded by the World Bank and the Green Climate Fund will offer a Risk Sharing Facility amounting to USD78m for energy efficiency investment. The project will facilitate more than 100 industrial enterprises to reduce energy consumption and mitigate GHG emission of 120 MtCO <sub>2</sub> over the lifetime of the investment. <sup>403</sup> This instrument has not yet been used for green projects in the Philippines.
<b>Currency Risk Hedge</b>	Non-deliverable forward hedging	The Currency Risk Protection Program (CRPP) of the Philippine Central Bank is aimed at alleviating demand pressures in the foreign exchange spot market from borrowers seeking to hedge their future foreign exchange exposures. <sup>404</sup>  This could apply to green projects in the Philippines.

## Annex V Green standards applicable in the Philippines<sup>405</sup>

Green Standard	Description	Sectors	Applicability in the Philippines
<b>Philippines Green Building Code</b>	<p>The Green Building Code, referred to as the GB code, was launched in June 2015 by the Department of Public Works and Highways (DPWH) with the assistance of the World Bank-IFC and with the technical support of the Philippine Green Building Initiative (PGBI).<sup>406</sup> This GB Code is a set of regulations with minimum standards for compliance and is not intended to rate buildings.<sup>407</sup></p> <p>The Code seeks to improve the efficiency of building performance through a framework of standards that will enhance sound environmental and resource management to counter harmful gases, throughout the building's life cycle, including the efficient use of materials, site selection, planning, design, construction, use, occupancy, operation, and maintenance without significant increases in cost.<sup>408</sup></p>	Buildings	This code can be applied to hotels/resorts, schools, hospitals, business offices, and mixed occupancy properties with required minimum total gross floor area of 10,000 sq. meters; 15,000 sq. meters for malls; and 20,000 sq. meters for condominiums. <sup>411</sup>
<b>Building for Ecologically Responsive Design Excellence (BERDE)</b>	BERDE Program was established by the Philippine Green Building Council (PHILGBC) in 2009 as an appropriate response to the Philippine building industry's need to proactively address the negative impacts of climate change. BERDE is recognized by the government, through the Department of Energy (DOE), as the National Voluntary Green Building Rating System. <sup>409</sup>	Building, energy efficiency	This framework is applicable throughout the Philippines. The Net Lima, an office building, was the first project to be certified under the BERDE rating tool of the Philippine Green Building Council with a 4-star rating in 2017. <sup>412</sup>
<b>ASEAN Green Bond Standards (AGBS)</b>	The standards were developed and launched in November 2017 by the ASEAN Capital Markets Forum. The standards also provide guidance on the classification of green projects in the region that are qualified for AGBS label in the region. These projects specifically exclude fossil fuel-related projects. Companies in Malaysia, Singapore, and Indonesia have already issued bonds labelled as ASEAN Green Bonds. <sup>410</sup>	Energy, Transport, Water, Buildings, ICT, Waste, Nature-Based Assets, Industry and Commercial activities	On August 2018, The Philippines' Securities and Exchange Commission (SEC) approved the AGBS. They adopted guidelines in line with the ASEAN Green Bond Standards that provide for the rules and procedures for the issuance of ASEAN Green Bonds in the Philippines. <sup>413</sup>
<b>ASEAN Sustainability Bond Standards (ASEAN SUS)<sup>415</sup></b>	The standards provide the framework to finance or re-finance a combination of both Green and Social Projects that respectively offer environmental and social benefits. It also provides guidance on classification of sustainable projects.	Energy, Transport, Water, Buildings, ICT, Waste, Nature Based Assets, Industry and Commercial activities	<p>The SEC Philippines approved on April 2019 the "Guidelines on the Issuance of Sustainability Bonds Under the ASEAN Sustainability Bond Standards (ASEAN SUS)" through Memorandum Circular Nos. 8, Series of 2019.</p> <p>RCBC bank is the first to issue a Philippine ASEAN Sustainability bond amounting to PHP8bn on June 2019.</p>
<b>National Standards for Environmental Management Systems (ISO 14001)<sup>416</sup></b>	The ISO 14001 standard specifies requirements for an effective environmental management system (EMS). It provides a framework that an organization can follow to better control its environmental impacts.	Waste, commercial activities	The Department of Environmental and Natural Resources (DENR) is the first public agency in the Philippines to meet ISO 14001 in 2015. The agency is in the process of rolling out a training program to make all regional offices ISO 14001 certified. <sup>414</sup>

Green Standard	Description	Sectors	Applicability in the Philippines
<b>Effective energy management systems (EnMS)/ ISO 50001<sup>423</sup></b>	The ISO 50001 standard establishes an international framework for the supply, use, and consumption of energy in industrial, commercial, and institutional organizations. Implement an ISO 50001 compliant sustainable energy management system and demonstrate organization's commitment to continuously improving energy performance, leading to economic benefits and reduced greenhouse gas emissions.	Renewable energy, Energy efficiency	This framework is applicable in the Philippines. In 2017, there were six ISO 50001 certified companies in the Philippines: ADB, Manila Water, Shimano, Continental Temic, Maynilad, and Cemex. <sup>418</sup>
<b>Certified Emission Reduction (CERs)</b>	Certified Emission Reduction (CERs) is a Clean Development Mechanism (CDM) that allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (Annex B Party) to implement an emission-reduction project in developing countries. CERs is used to identify projects that can earn saleable carbon credits. <sup>417</sup>	Energy, Transport, Water, Buildings, ICT, Waste Treatment	This framework can be applied in the Philippines. The Methane recovery and combustion with renewable energy generation from anaerobic animal manure under the Land Bank of the Philippines' (LBP) Carbon Finance Support Facility is an example of a project that is certified CER. <sup>419</sup>
<b>Climate Bonds Taxonomy<sup>424</sup></b>	Climate Bonds Taxonomy is used to identify green projects and assets which are aligned with achieving the goals of the Paris Agreement. This excludes fossil fuel power generation, internal combustion engine personal vehicles and new roads and infrastructure that facilitate their movement, and freight rail that is primarily used for fossil fuel transportation.	Energy, Transport, Water, Buildings, ICT, Waste, Nature- Based Assets, Industry and Commercial activities	There is currently one green bond from the Philippines that is aligned to the Climate Bonds Taxonomy. AP Renewables' USD226m deal from early 2016 was the first in ASEAN to be Certified under the Climate Bonds Standard, a sign of best practice in the market in terms of climate ambition. The proceeds finance geothermal power generation.  The USD410m total green bond issuance by AC Energy - USD300m issued on January 2019; and USD110m issued on February 2019 - is also CBI certified.
<b>SOURCE</b>	SOURCE is a global standard created by Sustainable Infrastructure Foundation (SIF). It offers governments a global, reliable, secure, and user-friendly project preparation software to maximize public sector users financing options including PPPs by providing well-prepared projects in a consistent and transparent way to the international community of contractors, investors, and lenders.	Infrastructure	The Philippines completed its SOURCE integration implementation on May 2019. This implementation is supported by the Asian Development Bank (ADB). The focal agency of the integration has been the National PPP center, under the oversight of the Ministry of Finance. <sup>420</sup>
<b>The Standard for Sustainable and Resilient Infrastructure (SuRe)</b>	SuRe is a global voluntary standard which integrates key criteria of sustainability and resilience into infrastructure development and upgrade, through 14 themes covering 61 criteria across governance, social, and environmental factors.	Infrastructure	This framework could be applied in the Philippines. There is an ongoing pilot project desktop assessment on motorway, harbour, and urban development in the Philippines. <sup>421</sup>
<b>Envision</b>	Envision is a framework that includes 64 sustainability and resilience indicators, called 'credits' organized around five categories: Quality of Life, Leadership, Resource Allocation, Natural World, and Climate and Resilience. These collectively address areas of human wellbeing, mobility, community development, collaboration, planning, economy, materials, energy, water, sitting, conservation, ecology, emissions, and resilience.	Infrastructure	No certified projects in the Philippines at the moment, but this framework could be applied in the Philippines. <sup>422</sup>



## Annex VI: Sample Green Pipeline

This sample pipeline includes a list of 'green' and 'potentially green' projects taken from various publicly available sources. The four sectors are covered in the list are: low carbon transport, renewable energy, sustainable water management and sustainable waste management. The assessment of the 'greenness' of each project was based on the Climate Bonds Taxonomy (see back cover).

### Methodology

An analysis of two key government project pipelines and various projects owned by different proponents show that there are various green projects of different sizes and technologies spread across the country. These pipelines are obtained mainly from

the official infrastructure project list by the Philippines National Economic Development Authority (NEDA) and the Public-Private Partnerships Center (PPPC). This analysis also includes projects from the Asian Development Bank (ADB), various media sources such as articles, press releases, and other government Departments.

### Project Status

**Completed:** High profile, recently completed projects, including projects that are currently operational

**Under construction:** Major projects from national, state and local government pipelines that are under construction

**Planned:** Major projects from national, state and local government pipelines that have not yet begun construction but have been announced and undergone business case planning and/or have an allocated budget. This includes those projects that are either waiting for relevant government bodies, at pre-construction stage, at procurement stage, or under development.

**Potential (optional):** Speculative projects and/or plans featured in strategy documents and/or media announcements but are less concrete, e.g. (but limited to) no specific budget and/or no specific investor and/or no specific time-line.

Green projects							
Sector	Project name	Location	Cost	Status	Greenness	Pipeline source	Notes
	<b>MRT-11 Project</b> <sup>425</sup>	Manila, National Capital Region	PHP71.10bn (USD1.5bn)	Planned	Green	PPP Center	For approval of relevant government bodies
	<b>East-West Rail Project</b> <sup>426</sup>	Diliman, Quezon City to Lerma, Manila	PHP55.46bn (USD1.1bn)	Planned	Green	PPP Center	For approval of relevant government bodies
	<b>Cebu Monorail Transit System Project</b>	Central Visayas National Capital Region	PHP73.24bn (USD1.5bn)	Planned	Green	PPP Center	For approval of relevant government bodies
	<b>LRT 2 West Extension</b> <sup>427</sup>	National Capital Region	PHP10.2bn (USD210.12m)	Under construction	Green	NEDA	
	<b>MRT Line 7</b> <sup>428</sup>	National Capital Region	PHP62.7bn (USD1.3bn)	Under construction	Green	PPP Center	
	<b>Light Rail Transit Line No. 3 (MRT 3)</b> <sup>429</sup>	National Capital Region	USD655m	Completed	Green	PPP Center	Operational
		National Capital Region	PHP 5.5bn (USD113.3m)	Under construction	Green	NEDA	
	<b>Metro Manila BRT Line 1 (Quezon Ave)</b> <sup>430</sup>	National Capital Region	PHP357bn (USD7.4bn)	Under construction	Green	NEDA	
	<b>Metro Manila Subway Project Phase 1</b> <sup>431</sup>	Luzon	PHP57bn (USD1.2bn)	Under Construction	Green	NEDA	
	<b>MRT 4</b> <sup>432</sup>	Luzon	USD149bn (USD3.1bn)	Under construction	Green	NEDA	
	<b>North South Commuter Railway (PNR North 1)</b> <sup>433</sup>	Quezon City	PHP628bn (USD12.9bn)	Under construction	Green	NEDA	
	<b>North South Commuter Railway Extension (PNR North 2, PNR South commuter)</b> <sup>434</sup>	Luzon				NEDA	

## Green projects

Sector	Project name	Location	Cost	Status	Greenness	Pipeline source	Notes
 Transport	<b>Railway Line 4 Project</b> <sup>435</sup>	Quezon City	PHP59.3 (USD1.2bn)	Planned	Green	NEDA	
	<b>PNR South Long Haul</b> <sup>436</sup>	Luzon	PHP175bn (USD3.6bn)	Planning	Green	NEDA	
	<b>Cebu Bus Rapid Transit</b> <sup>437</sup>	Luzon	PHP16.3bn (USD335.8m)	Under construction	Green	NEDA	
	<b>Davao Public Transport Modernization Project (DPTMP)</b>	Mindanao	PHP18.6 (USD383.1m)	Planned	Green	NEDA	
	<b>Subic Clark Railway</b>	Luzon	PHP50bn (USD1bn)	Under construction	Green	NEDA	
	<b>C5 MRT 10 Project</b> <sup>438</sup>	Manila, National Capital Region	PHP93.7bn (USD1.9bn)	Planned	Green	PPP Center	For approval of relevant government bodies
	<b>Fort Bonifacio - Makati Skytrain Project</b> <sup>439</sup>	Manila, National Capital Region	PHP3.6bn (USD74.2m)	Planned	Green	PPP Center	For approval of relevant government bodies
	<b>Davao People Mover</b> <sup>440</sup>	Davao Region	PHP30bn (USD618m)	Planned	Green	PPP Center	For approval of relevant government bodies
	<b>Modified Light Rail Transir (LRT) Line 6 Project</b> <sup>441</sup>	Province of Cavite, CALABARZON	PHP73.2bn (USD1.5bn)	Planned	Green	PPP Center	For approval of relevant government bodies
	<b>Cagayan North Railway System Development</b> <sup>442</sup>		PHP4.8bn (USD99m)	Planned	Green	NEDA	
	<b>LRT Line 1 Cavite Extension and Operation &amp; Maintenance</b> <sup>443</sup>		PHP64.9bn (USD1.3bn)	Under construction	Green	PPP Center	Cost is inclusive of the PHP19.83bn ODA component
	<b>South Integrated Transport System Project (Taguig Integrated Terminal Exchange)</b> <sup>444</sup>		PHP5.2bn (USD107m)	Under construction	Green	PPP Center	1. Currently undergoing pre-construction 2. Cost is inclusive of the C5-FTI-Skyway Connector Road (access ramp] and cost of land.
	<b>Southwest ITS Project (Parañaque Integrated Terminal Exchange)</b> <sup>445</sup>		PHP2.5bn (USD51.5m)	Completed	Green	PPP Center	Operational
	<b>Automatic Fare Collection System</b> <sup>446</sup>		PHP1.7bn (USD35m)	Completed	Green	PPP Center	Operational

## Green projects

Sector	Project name	Location	Cost	Status	Greenness	Pipeline source	Notes
<b>Renewable Energy</b>							
<b>Hydro-power</b> 	<b>Angat Hydroelectric Power Plant Project Rehabilitation, Operation and Maintenance of Auxiliary #4 and #5</b> <sup>447</sup>	Central Luzon	USD23m	Planning	Potentially green	Others	
	<b>Bakun A/B and C Hydroelectric Power Plant</b> <sup>448</sup>	Cordillera Administrative Region	USD83m	Completed	Potentially green	PPP Center	Operational
	<b>Benguet Province Mini Hydroelectric Power Plant</b> <sup>449</sup>	Cordillera Administrative Region	USD22m	Completed	Potentially green	PPP Center	
	<b>Binga Hydroelectric Plant</b> <sup>450</sup>	Cordillera Administrative Region	USD143m	Completed	Potentially green	PPP Center	
	<b>Bubunawan run-of-river hydro power project</b> <sup>451</sup>	Cagayan de Oro, Northern Mindanao	USD190m	Planned	Potentially green	Others	
<b>Geothermal</b> 	<b>Leyte-Cebu Geothermal Power Plant</b> <sup>452</sup>	Eastern Visayas	USD305.53m	Completed	Potentially green	PPP Center	
	<b>Leyte-Luzon (Malitbog) Geothermal Power Plant</b> <sup>453</sup>	Eastern Visayas	USD630.85m	Completed	Potentially green	PPP Center	
	<b>Makban Binary Geothermal Plant</b> <sup>454</sup>	Calabarzon	USD33m	Completed	Potentially green	PPP Center	
	<b>Mindanao I Geothermal Plant</b> <sup>455</sup>	Soccsksargen	USD79.57m	Completed	Soccsksargen	PPP Center	
	<b>Mindanao II Geothermal Plant</b> <sup>456</sup>	Soccsksargen	USD72.31m	Completed	Potentially green	PPP Center	
	<b>Makban Binary Geothermal Plant</b>	Calabarzon	USD33m	Completed	Potentially green	Others	
<b>Wind</b> 	<b>Burgos wind farm (150 MW)</b> <sup>457</sup>	Burgos, Ilocos Norte	USD450m	Completed	Green	Others	
	<b>Palawan wind farm</b> <sup>458</sup>	San Vicente, Palawa	TBD	Planned	Green	Others	
	<b>Bangui wind farm</b> <sup>459</sup>	Bangui, Ilocos Norte	USD35m	Completed	Green	Others	
	<b>Caparispisan wind turbine (81 MW)</b> <sup>460</sup>	Caparispisan, Ilocos Norte	USD220m	Completed	Green	Others	
	<b>San Lorenzo Wind Farm (54 MW)</b> <sup>461</sup>	San Lorenzo, Guimaras	PHP6.7bn (USD138m)	Completed	Green	Others	
<b>Solar</b> 	<b>Basilan Solar PV Power Plant Project</b> <sup>462</sup>	Province of Basilan	PHP556m (USD11.4m)	Planned	Green	NEDA	Preparation for feasibility studies
	<b>Barangay Vista Alegre solar plant (50 MW)</b> <sup>463</sup>	Bacolod City	PHP2bn (USD41.2m)	Planned	Green	Others	
	<b>GIGASOL3 AC Energy Solar Power Project (60 MW)</b> <sup>464</sup>	Palauig, Zambales	PHP6.2bn (USD127.7m)	Under construction	Green	Others	
	<b>Toledo Solar Project (60 MW)</b> <sup>465</sup>	Toledo City, Cebu	PHP4.3bn (USD86.5m)	Completed	Green	Others	

## Green projects

Sector	Project name	Location	Cost	Status	Greenness	Pipeline source	Notes
<b>Solar</b>	<b>Transforming landscape for off-grid electrification Solar PV</b> <sup>466</sup>	Camotes and Bantayan Islands, Cebu	PHP848m (USD17.5m)	Planned	Green	PPP Center	Project concept note completed
<b>Biomass</b> 	<b>North Negros Biopower (25 MW)</b> <sup>467</sup>	Municipality of Manapla, Negros Occidental	PHP5.6bn (USD155.3m)	Completed	Green	Others	
	<b>South Negros Biopower (25 MW)</b> <sup>468</sup>	LaCarlota, Negros Occidental	PHP5.6bn (USD115.3m)	Completed	Green	Others	
	<b>San Carlos BioPower (20 MW)</b> <sup>469</sup>	San Carlos City, Negros Occidental	PHP3.8bn (USD78.2m)	Completed	Green	Others	
	<b>Victorias Milling Company Biomass Power Plant</b>	Victorias City, Negros Occidental Province	USD2bn	Completed	Potentially green	Others	
<b>Sustainable Water Management</b> 	<b>Bulacan Bulk Water Supply Project</b> <sup>470</sup>	Central Luzon	PHP24.4bn (USD502.6m)	Completed	Potentially green	PPP Center	Operational
	<b>Integrated Disaster Risk Reduction and Climate Change Adaptation Measures in the Low-Lying Areas of Pampanga Bay</b> <sup>471</sup>	Luzon	PHP6.5bn (USD133.9m)	Under Construction	Green	DPWH	
	<b>Silway River Corridor Redevelopment Program (Flood mitigation measures)</b> <sup>472</sup>	General Santos City	PHP1.7bn (USD35m)	Planned	Green	NEDA	Ongoing business case
	<b>Cavite Industrial Area Flood Management Program</b> <sup>473</sup>	Luzon	PHP9.9bn (USD204m)	Under Construction	Green	NEDA	
	<b>Clark Water Supply and Sewerage Project</b> <sup>474</sup>	Central Luzon	PHP240bn (USD4.9bn)	Completed	Potentially green	PPP Center	Operational
	<b>Subic Water and Sewerage Project</b> <sup>475</sup>	Zambales, Central Luzon	USD120m	Completed	Potentially green	PPP Center	Operational
	<b>Baggao Level III Water Supply Project</b> <sup>476, 477</sup>	Baggao, Cagayan, Cagayan Valley Region	PHP80m (USD1.6m)	Planned	Potentially green	PPP Center	Under procurement
	<b>Angat Water Transmission Improvement Project</b> <sup>478</sup>	Angat, Bulacan	USD134m	Planned	Potentially green	ADB	
	<b>Ambal Simuay River and Rio Grande de Mindanao River Flood Control Projects</b> <sup>479</sup>	Mindanao	PHP39.2bn (USD807.5m)	Under construction	Green	DPWH	
	<b>Chico River Pump Irrigation Project</b> <sup>480</sup>	Luzon	PHP4.7bn (USD96.8m)	Under construction	Potentially green	Others	
	<b>Kabulnan-2 Multipurpose Irrigation and Power Project</b> <sup>481</sup>	Mindanao	PHP32bn (USD659.2m)	Under construction	Potentially green	National Irrigation Administration (NIA)	
	<b>Wawa Bulk Water Supply Project</b> <sup>482</sup>	Luzon	PHP20bn (USD412m)	Planned	Green	Others	
<b>Bislig City Bulk Water Supply and Septage Project</b> <sup>483</sup>	Bislig City, Surigao del Sur, Caraga	TBD (to be determined)	Planned	Potentially green	PPP Center	Under development	

## Green projects

Sector	Project name	Location	Cost	Status	Greenness	Pipeline source	Notes
<b>Sustainable Water Management</b> 	<b>Lumbo Bulk Water Supply Project</b> <sup>484</sup>	San Pablo City, Laguna and Dolores, Quezon, Calabarzon	PHP103m (USD2.1m)	Planned	Potentially green	PPP Center	Under procurement
	<b>Angat Hydroelectric Power Plant (AHEPP) Project Rehabilitate, Operation and Maintenance of Turbines #4 and #5</b> <sup>485</sup>	Central Luzon	TBD	Planned	Potentially green	PPP Center	Under development
	<b>Marinduque Water Supply System Project</b> <sup>486</sup>	Marinduque, Mimaropa	TBD	Planned	Potentially green	PPP Center	Under development
	<b>Ormoc City Water Supply System Project</b> <sup>487</sup>	Ormoc City, Leyte, Eastern Visayas	TBD	Planned	Potentially green	PPP Center	Under development
	<b>Tuguegarao City Septage Management Project</b> <sup>488</sup>	Tuguegarao City, Cagayan, Cagayan Valley	PHP90m (USD1.8m)	Planned	Potentially green	PPP Center	For Approval of Relevant Government Bodies
	<b>Integrated Flood Risk Management Sector Project</b> <sup>489</sup>	Nation-wide	USD400m	Under construction	Green	ADB	
<b>Sustainable Waste Management</b> 	<b>Iloilo City Integrated Solid Waste Management Facility Project</b>	Iloilo City, Iloilo, Western Visayas	TBD	Planned	Potentially green	PPP Center	Under development
	<b>Coca-Cola Beverages Philippines Inc. Recycling Facility (food-grade)</b> <sup>490</sup>	City of Parañaque	PHP1bn (USD20.6m)	Under construction	Potentially green	Others	
	<b>Waste-to-energy (WTE) facility Pangasinan</b> <sup>491</sup>	Pangasinan, Luzon	USD90m	Planned	Potentially green	DOE	
	<b>Renewable Energy (RE) Production and Solid Waste and Management (SWM) Facility in Ormoc City</b> <sup>492</sup>	City Government of Ormoc	PHP411mn (USD8.5m)	Planned	Potentially green	NEDA	Pre-feasibility studies
	<b>WTE facilities Cebu</b> <sup>493</sup>	Cebu	USD320m	Planned	Potentially green	Others	
	<b>IRI Philippines, Inc. solid waste recycling and reclamation facility</b> <sup>494</sup>	Calamba City, Laguna	USD7m	Completed	Potentially green	Others	
	<b>Baguio-La Trinidad-Itogon-Sablan-Tuba- Tublay (BLISTT) Integrated SWM Facility</b> <sup>495</sup>	BLISTT, Province of Benguet	PHP500m (USD10.3m)	Planned	Potentially green	NEDA	Pre-feasibility studies

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












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## Climate Bonds Taxonomy

The Climate Bonds Taxonomy identifies the assets and projects needed to deliver a low carbon economy and gives GHG emissions screening criteria consistent with the 2-degree global warming target set by the COP 21 Paris Agreement. More information is available at <https://www.climatebonds.net/standard/taxonomy>.



ENERGY	TRANSPORT	WATER	BUILDINGS	LAND USE & MARINE RESOURCES	INDUSTRY	WASTE	ICT
Solar 	Private transport 	Water monitoring 	Residential 	Agriculture 	Cement production 	Preparation 	Broadband networks
Wind 	Public passenger transport 	Water storage 	Commercial 	Commercial Forestry 	Steel, iron & aluminium production 	Reuse 	Telecommuting software and service
Geothermal 	Freight rail 	Water treatment 	Products & systems for efficiency	Ecosystem conservation & restoration 	Glass production 	Recycling 	Data hubs
Bioenergy 	Aviation	Water distribution 	Urban development	Fisheries & aquaculture	Chemical production 	Biological treatment 	Power management
Hydropower 	Water-borne 	Flood defence 		Supply chain management	Fuel production 	Waste to energy 	
Marine Renewables 		Nature-based solutions 				Landfill 	
Transmission & distribution 						Radioactive waste management 	
Storage							
Nuclear							

 Certification Criteria approved  
 Criteria under development  
 Due to commence

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