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Getting Our Act Together

Climate-Proofing our Development Agenda

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Climate-Proofing our Development Agenda

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The Philippines is in the midst of rapid change. **It's time to get our act together.**

With economic growth surging over the past six years, the Philippines is set to transition to a high-income economy with an average annual GDP growth rate of 7% and an average annual per capita income growth of 5.96%. Favorable demographics including a younger and more connected workforce alongside the emergence of a vibrant and aggressive private sector are altogether allowing the Philippines to compete with its neighbors in Southeast Asia in ways that are expanding the service and industry sectors. Indeed, it would appear the country is positioned to meet its ambitions of delivering an inclusive and secure Philippines by 2040. **And yet, will this inclusive and secure Philippines by 2040 have the right energy mix to power its growth into the long-term and the proper safeguards to protect its citizens most at risk from the impacts of climate change?**

Indeed, some key questions remain unanswered:

- Why should government treat climate change as a priority policy agenda in the midst of its growth ambitions? How should the country's institutions work towards climate-proofing the economy in line with its global commitments?
- How do we ensure that secure, reliable, and sustainable energy is effectively and efficiently delivered, while providing enough flexibility for the country to take advantage of new disruptive technologies and business models in the global energy arena?
- How should government create the enabling environment to foster investment, innovation, and growth in the climate and energy sectors?

Climate-Proofing our Development Agenda

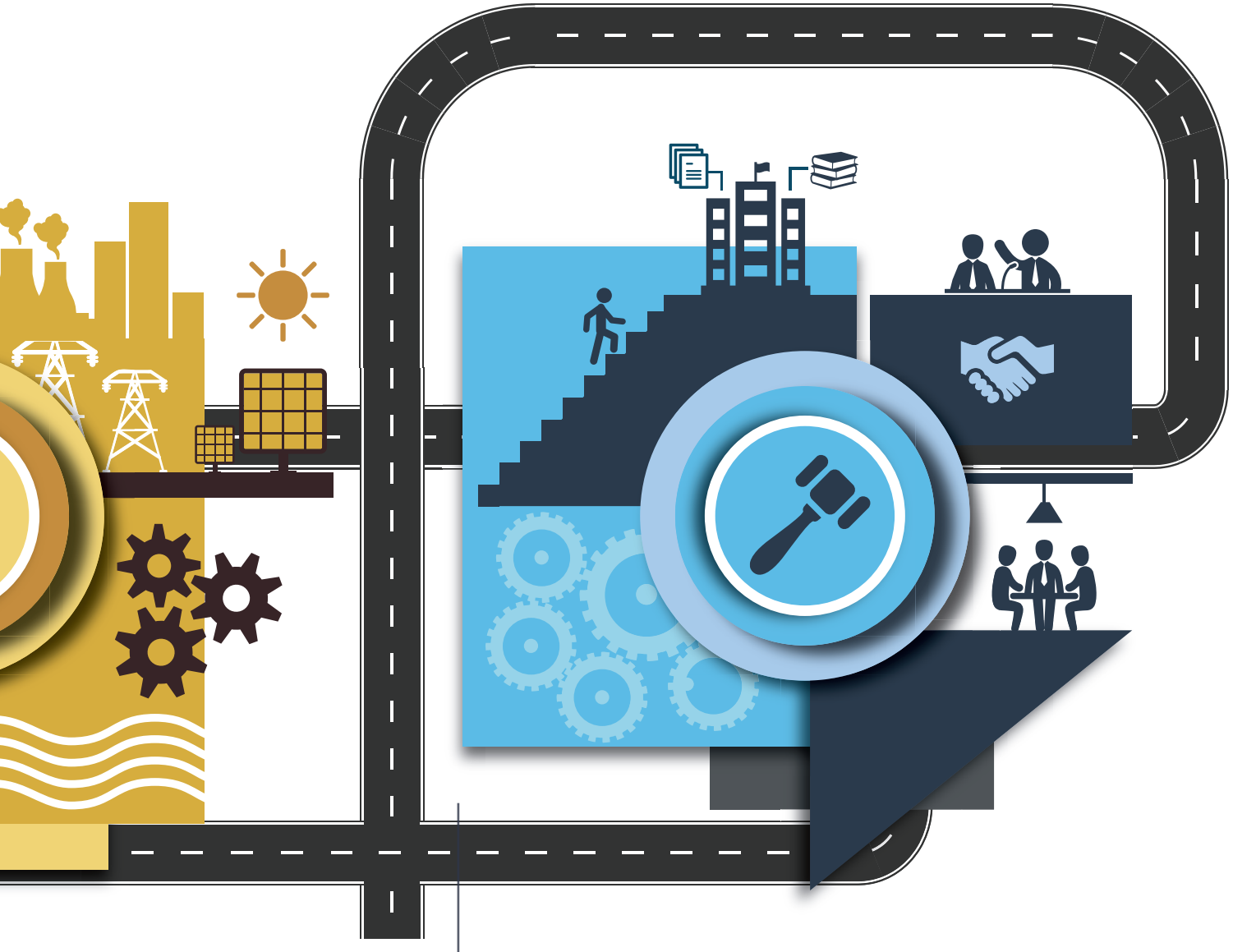
Ownership of climate change as a priority agenda enables the Philippines to climate-proof its growth

Optimizing our Energy Mix

Diversification sets the stage for a secure, equitable, and sustainable energy mix

The Ateneo School of Government and **SSG Advisors** are proud to present the policy brief series entitled: GETTING OUR ACT TOGETHER. This policy brief series brings together insights and recommendations in the realms of climate and energy and crystallizes a clear policy direction for the Philippines to secure its growth ambitions. It draws from current thinking from the public, private and academic sectors and argues for a priority policy agenda that clearly sets the pathway for how climate and energy can and should drive inclusive development for the next decade.

We push for cooperation between the public and the private sector around an agenda to **GET OUR ACT TOGETHER:**



Creating an Enabling Environment to Support an Optimal Energy Mix for a Climate-Smart Philippines

Prioritizing an enabling environment allows the government and the private sector to more efficiently meet the country's growth ambitions and energy requirements

Getting our Act Together
Climate-Proofing our Development Agenda

Responding to climate change helps fulfill seven of the ten priorities identified in President Duterte's ten-point agenda.

Climate change is the single greatest threat facing humanity today.[1] This is especially apparent in the Philippines, which has already started experiencing the adverse impacts of climate change earlier and at a greater magnitude than other countries, resulting in lost lives, livelihoods, homes, and property. If climate change remains unabated, the Philippines stands to lose billions from massive crop damage, large-scale destruction of infrastructure, and land lost to sea level rise, in addition to water shortages, loss of biodiversity and ecosystem services, and a multitude of other impacts. The nation's long-term survival thus depends on a decoupling of high economic growth (which the country aspires for) from high carbon emissions (which the country must avoid, to survive).[2]

The response to climate change can take many forms, all of which must be systematic and sustained if they are to address the problem adequately. These include the implementation of mitigation and adaptation actions, the minimization of loss and damage arising out of climate change impacts, and a host of other options. Mitigation actions include shifting to renewable energy, sustainable transport systems, improved waste management, more efficient agricultural practices, and enhanced forest conservation.[3] Adaptation actions include improvements in coastal flood defenses; bridge, road, and building repairs; climate-proofing infrastructure; and building on the resilience of socioeconomic and ecological systems (*e.g.,* mangroves as natural coastal defenses).[4] Minimization of loss and damage includes providing insurance for catastrophic events as well as slow-onset impacts like drought and sea-level rise. It improves food and energy security; access to basic health services, water and sanitation; and reduces the overall vulnerability to and impact of large-scale disasters.

"Pursuing climate actions fulfills Duterte's 10-point agenda"

Table 1. Climate Actions and co-benefits for Duterte's 10-Point Agenda

10-Point Agenda[5] / Climate Action	Promote rural and value chain development; increase agricultural and rural enterprise productivity and rural tourism	Ensure security of land tenure to encourage investments, and address land management bottlenecks	Promote science & technology to enhance innovation and creative capacity towards self-sustaining, inclusive development	Improve social protection programs (e.g., Conditional Cash Transfer)	Accelerate infrastructure spending to 5% of GDP, with Public-Private Partnerships playing a key role	Invest in human capital development, including health and education systems, and match skills and training	Increase competitiveness and the ease of doing business
Facilitate RE establishment, especially in off-grid areas, reduce rotating brownouts & reliance on diesel gensets	✓		✓		✓	✓	✓
Promote innovations in energy and transport (e.g., RE microgrids, SALt lamp, battery)	✓		✓	✓	✓	✓	✓
Expand electric grid infrastructure	✓	✓	✓	✓	✓	✓	✓
Expand rail, bus, and road networks, increase public transport use	✓		✓		✓		✓
Decongest cities, reduce traffic-related carbon emissions, free up roads, improve air quality, reduce health issues	✓		✓	✓	✓	✓	✓
Promote community-based natural resources management in rural areas	✓	✓	✓	✓		✓	✓
Provide risk insurance to minimize disruptions from extreme events		✓	✓	✓		✓	✓
Increase adaptive capacity (e.g., coastal defenses, bridge, road & building repair, climate-proofing infrastructure)		✓	✓	✓	✓	✓	✓
Increase crop diversity, sustainable food production & connect farms to markets	✓	✓	✓	✓	✓	✓	✓

The Paris Agreement does not impose limits on the country's right to industrialize; mitigation and adaptation actions can be pursued in a fair and equitable manner that does not compromise the country's development.

In his first State of the Nation Address (SONA), President Duterte declared that addressing global warming is a top priority of government, provided it is done in a fair and equitable manner that does not stymie the country's development and industrialization.[6] The UNFCCC and the Paris Agreement expressly recognize and address these concerns: [7]

Table 2. Key Government Concerns vis-à-vis the Climate Agreements

Key Government Concern	Climate change must be addressed fairly and equitably	Developed countries must take the lead in addressing climate change	Addressing climate change must not stymie national development	Developed countries must provide developing countries (like the Philippines) with adequate support to implement climate actions
UNFCCC and Paris Agreement Provisions	Climate change must be addressed in accordance with common but differentiated responsibilities and respective capabilities of parties, and with respect for their different national circumstances. [8]	Developed countries that have contributed the most to historical and current GHG emissions must take the lead in addressing climate change. Developing countries will grow to meet their social and development needs, and are encouraged to move over time towards economy-wide emission reduction targets. [9]	The global response to climate change should be done within the context of sustainable development and efforts to eradicate poverty. Economic and social development and poverty eradication are the first and overriding priorities of the developing countries. [10]	Developed countries must assist developing countries in meeting adaptation and mitigation costs, and in fulfilling their climate commitments. Support includes the provision of financial resources, technology, and capacities. The extent to which developing countries can effectively implement their commitments depends on the financial resources and technology they receive from developed countries. [11]

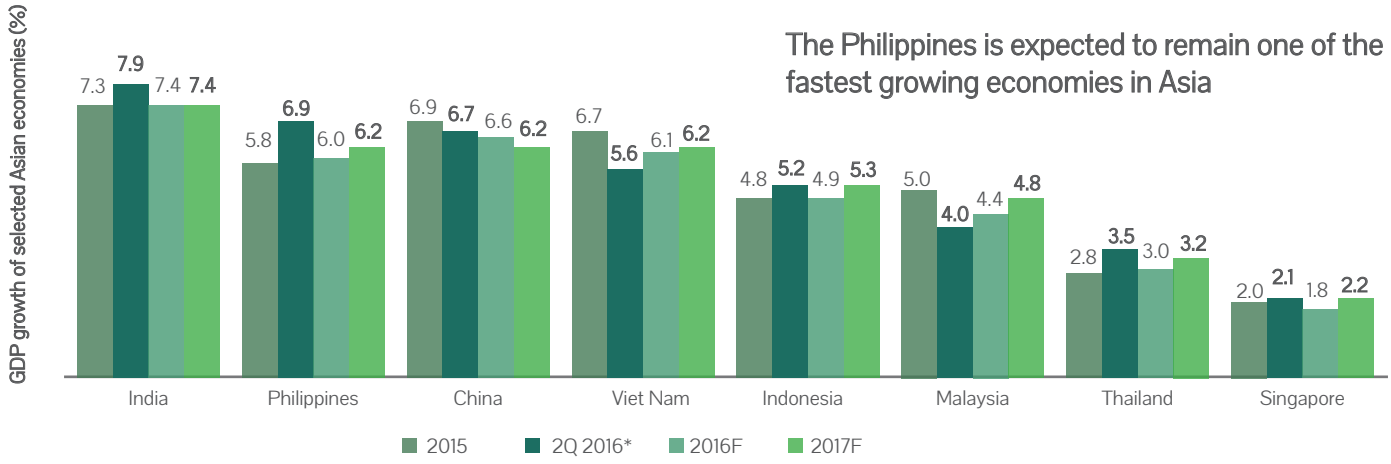
Both the UNFCCC and the Paris Agreement are framed within the context of sustainable development. The guiding principle of common but differentiated responsibilities and respective capabilities (CBDR-RC) is intended precisely to incorporate justice and fairness in State obligations, while ensuring broad participation.[12] This cooperative global effort is particularly important for developing countries like the Philippines, which contributed little to the problem yet suffer its effects disproportionately more.

These should address the government's concern that any climate action the Philippines implements must be fair and equitable. That developing countries should have emission reduction targets under the global climate agreement does not mean that developed countries are putting limits on developing countries' industrialization. Indeed, the Philippines should make only those commitments that do not unduly restrict its ability to develop its economy, including its capacity to provide reliable, affordable energy that is needed to support such economic growth in a sustainable manner. This is not incompatible with—in fact, it is found in the guiding principles of—the Paris Agreement.

Pursuing climate actions makes sense considering global population, macro-economic, climate, and technological trends. It also helps the Philippines fulfill global goals envisioned in the SDGs and the Sendai Framework for DRR.

According to the UN Population Fund (UNFPA), global population already reached 7.3 billion in 2015.[13] Under the medium population growth scenario, the UNFPA projects that the population will approximate 10 billion by the middle of the 21st century and will level off at around 11 billion by 2100.[14] An increasing population means greater demand for food, water, and commodities. This means more energy is required to meet these needs of a growing population. In the Philippines, it is not just population, but also the economy, that is forecasted to grow in the medium- to long-term horizon. According to the National Economic and Development Authority (NEDA), the Philippines is expected to be one of the fastest growing economies in Asia: [15]

Figure 1: Philippines' Economic Growth Forecast (NEDA, 2016) [16]



Source: IMF-WEO April 2016, July 2016 Update, Article IV consultations for forecast values, and various government websites for actual values.
Note: FY2016 and FY2017 are IMF estimates. 2Q2016 figures for India and Philippines are as of 1Q2016

Historically, economic growth has been relatively elastic to GDP growth, which means that changes in energy levels are positively correlated with economic output fluctuations: as GDP goes up, energy demand goes up.[17] With current technology, greater energy demand means higher GHG emissions, and consequently, greater radiative forcing or warming.

In 2015, climate scientists found that the global mean temperature that year had already breached 1.02°C (±0.11°C) above pre-industrial levels, [18] and that the world was on track to exceeding 2°C.[19]

A high temperature increase is expected to have massive impacts on the Philippines and Southeast Asia. An integrated assessment model estimates annual losses of up to 2.2% of GDP in the Philippines, Indonesia, Thailand and Vietnam by 2100 due to climate change, under a medium-high emissions scenario, considering market impact alone.[20] This is well above the projected global average loss of ~0.6% annually by 2100.[21]

Loss and damage from climate change impacts (e.g., extreme weather events) will be more expensive than early investments in mitigation and adaptation, vulnerability reduction, and resilience measures. Already, the Philippines has suffered massive losses. It is estimated that Supertyphoon Yolanda cost the country ~PHP 424bn (3.7% of GDP) in damaged physical assets, ~PHP 571bn (4.9% of GDP) in total loss and damage, and ~PHP 361bn (3.1% of GDP) in reconstruction costs.[22]

Thus, the Philippines should, among others, consider the long-term costs of BAU policies holistically vis-a-vis the costs of early climate actions. Conducting cost-benefit analyses (CBA) of BAU policies versus climate policies could be helpful in determining whether or not perceived savings under the BAU truly result in lower overall costs to the country in the long term.

It is to have a fair chance of keeping the temperature rise within 2°C that the international community accepted the duty to pursue ambitious programs. These include peaking emissions as quickly as possible, taking into account national circumstances and the needs of sustainable development, and then rapidly

decarbonizing, to achieve a balance between GHG emissions and removals, within the second half of this century. [23] This, because GHGs emitted into the atmosphere remain for up to thousands of years, and so, even if all countries were to completely stop all emissions today, it would take many human lifetimes for GHG levels to go down.[24]

However, rapid advancements in technology in different parts of the world are expected to minimize the impacts of an increasing population with growing energy demand. For example, innovations in solar and wind technology, as well as research and development around carbon capture and storage (CCS), are bound to change the global landscape in fundamental ways. The support mechanisms of the Paris Agreement provide the Philippines the opportunity to leverage the best available technology, capacity, and financial resources (from the private sector, developed countries, international organizations, multilateral development banks, and other funding sources) as they become available, to allow the country to leapfrog from a pathway that is dependent on fossil fuels for growth to a sustainable pathway that uses cleaner energy paid for by external sources.

Pursuing climate actions also helps the Philippines fulfill the Sustainable Development Goals and implement the Sendai Framework on Disaster Risk Reduction:

Figure 2: Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction (SFDRR)

Through the years, the Philippines has been actively participating in international climate negotiations, recognizing that climate change is the single largest threat facing humanity and that addressing it requires global cooperative action.

At the conclusion of COP21 in Paris in 2015, 196 Parties, including the Philippines, adopted a new climate agreement, which is meant to guide global climate action post-2020. On 22 April 2016, the first day it was opened for signature, the Philippines signed the Paris Agreement.[25]

Box 1: UNFCCC, Paris Agreement, INDCs

The international response to climate change is guided by the United Nations Framework Convention on Climate Change (UNFCCC), to which the Philippines and virtually every other nation are parties. [26] The UNFCCC provides the framework for international cooperation on climate change, with the goal of stabilizing atmospheric greenhouse gas (GHG) concentrations "at a level that would prevent dangerous anthropogenic interference with the climate system." [27] The Paris Agreement, which 196 parties adopted at the conclusion of the 21st Conference of the Parties to the UNFCCC (COP) in December 2015, puts specific numbers to this level: It sets categorical, ambitious long-term goals of keeping the global average temperature increase to well below 2°C above pre-industrial levels and pursuing efforts to limit this increase to 1.5°C. [28]

The Paris Agreement recognizes that meeting the temperature goals requires the cooperation of all States, developed and developing. Thus, under the Paris Agreement, while developed countries must take the lead in addressing climate change (through economy-wide absolute emission reduction targets), developing countries should also move towards emission reduction targets over time, as they grow their economies and enhance their capacity to abate emissions.[29] Towards this end, the Paris Agreement requires parties to determine voluntarily how, and how much, they intend to contribute to the global climate goals. Each party is to submit its Nationally Determined Contribution (NDC) periodically to the UNFCCC Secretariat.

Preliminarily, and prior to the 21st COP, the UNFCCC Secretariat invited parties to communicate their intended nationally determined contributions (INDCs). Parties were requested to set their own emission reduction goals; quantifiable reference points (*e.g., base year or period*); implementation time frames, scope and coverage; assumptions and methodological approaches (*e.g., for estimating and accounting for emissions and removals*); how they consider their INDC as fair and ambitious in light of their national circumstances; and how their INDC contributes to achieving the UNFCCC's Article 2 objective.[30]

The path towards the NDCs and their full implementation requires support in the form of adequate, reliable, and sustainable financing. There are several channels through which developing country parties (like the Philippines) can access financing for climate actions, including international and regional multilateral financing institutions, bilateral financing institutions, government, and private sector. *Annex 2* describes each channel, while *Annex 3* lists a number of options that can be pursued to fund mitigation and adaptation actions, while also providing co-benefits to Filipino communities by improving food security, energy security, access to basic health services, water and sanitation, and reducing overall vulnerability to disasters.

Under the Philippine Constitution, for treaties or international agreements to be valid and effective domestically, they must be ratified by the President with the concurrence of at least 2/3 of all Senators.[31] Thereafter, they will form part of the law of the land and must be implemented. [32] The Philippines now needs to make two crucial decisions: (1) whether to ratify the Paris Agreement or not, and (2) if it decides to ratify, how best to move forward from its INDC to an NDC.

Box 2: Paris Agreement will enter into force on 4 November 2016

The Paris Agreement will enter into force on the 30th day after the date on which (1) at least 55 UNFCCC Parties (2) accounting for at least ~55% of the total global GHG emissions have deposited their instruments of ratification, acceptance, approval or accession.[33] On 5 October 2016, the UNFCCC Secretariat announced that both key thresholds had been met, with 75 Parties accounting for ~59% global GHG emissions becoming parties, and so the Paris Agreement will enter into force on 4 November 2016.[34] Entry into force sets off several important actions, such as the launch of the Agreement's governing body (the Conference of the Parties to the Convention serving as the meeting of the Parties to the Paris Agreement, or the CMA).[35] This is expected to take place during the 22nd COP in Marrakech, Morocco in November 2016.[36] If the Philippines wishes to vote on critical initial decision points, it should consider ratifying as soon as possible, so it can fully participate starting from this first CMA in November 2016.

Box 3: Paris Agreement Ratification and the NDC

Means of implementation, particularly financial support, can be provided by various sources to help developing countries like the Philippines meet climate goals. If the Philippines ratifies the Paris Agreement, as a party to the agreement it will be entitled to access financial, technological, and capacity-building resources that the Agreement expressly obliges developed country parties to provide to developing country parties. By being party, the Philippines can augment its means to transition to a clean energy system, conserve and enhance its forests, improve land use, make its urban areas more habitable, and support environmentally friendly industrialization.[37] Conversely, if the Philippines does *not* ratify the Paris Agreement, it will risk cutting off its access to these support mechanisms,[38] including the US$100 billion annual funding, which is to be increased through the years.[39]

"Ratification will ensure continued access to financing and other support mechanisms under the Paris Agreement."

Strictly speaking, the ratification of the Paris Agreement and the formulation of an NDC are two different processes. However, they are closely interlinked because the NDC is the principal substantive obligation under the Paris Agreement, and all other obligations are ancillary to it.[40] Ratification provides countries their first opportunity to demonstrate their clear commitment to climate action and triggers their obligation to formulate NDCs. The latter, in turn, allows countries to state in categorical terms how they intend to implement the Agreement in their territory. Hence, the formulation of an NDC roadmap is a critical step to accessing support mechanisms, since it identifies priority actions and the means necessary to implement them.

In a scenario where the Philippines decides not to ratify the Paris Agreement, it may not be able to take advantage of the financial, technological, and capacity-building support available to developing countries who are parties to the agreement, including its loss-and-damage mechanism [41] for large-scale disasters like Super-Typhoon Haiyan. In such a case, it must be ready to address climate change on its own, with its domestic resources, and without expecting external aid. Not ratifying may result in the Philippines being left out of the global climate regime, since most international response henceforth is expected to occur within the framework of the Paris Agreement. It will also relegate the Philippines to the status of an observer in Paris Agreement proceedings, with no voting rights. The right to vote is critical, particularly as regards the formation of detailed rules governing the parties' conduct, as well as their obligations, under the Paris Agreement. In the longer term, there may be trade implications, especially if grant-giving countries establish trading preferences (e.g., carbon pricing schemes; internationally transferred mitigation outcomes (ITMOs) towards NDCs) with Paris Agreement parties.[42]

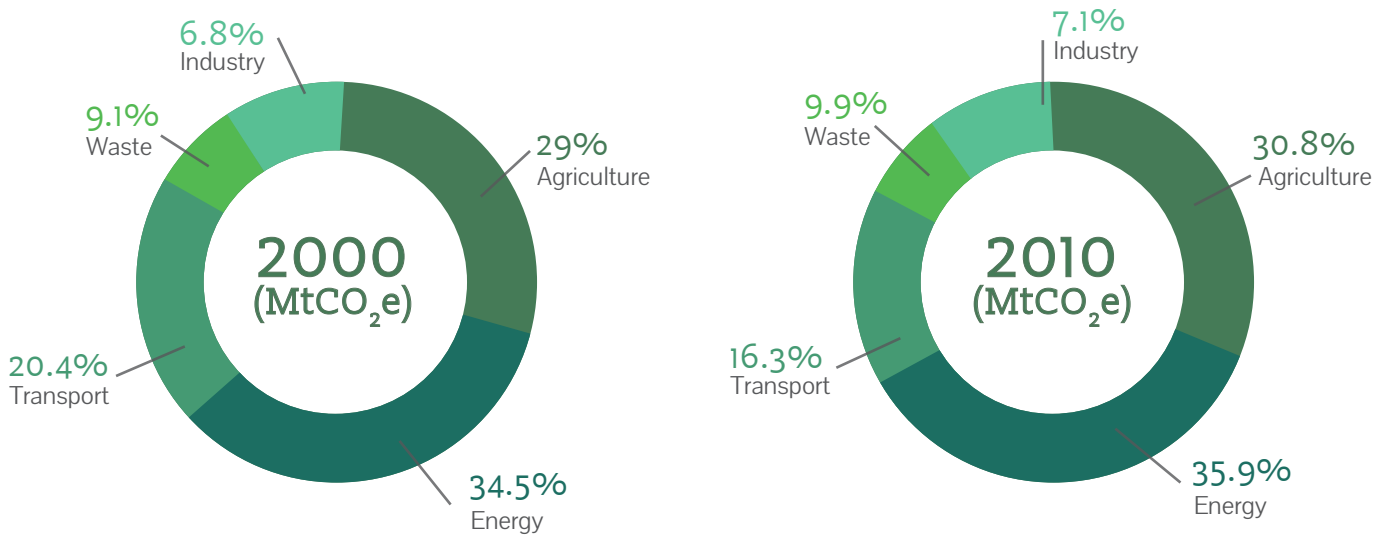
"Despite the Paris Agreement being an imperfect treaty (as it was the product of decades of heavy negotiations), ratifying it still presents the best option for the Philippines."

Emissions Profile

On 2010, the Philippines emitted approximately 155.1 million metric tons of CO_2 equivalent ($MtCO_2e$), but its forests captured some 83.2 $MtCO_2e$ [43] of these emissions, resulting in net emissions of 71.8 $MtCO_2e$. This represented a 230% increase from the country's 2000 emissions, which was at 21.7 $MtCO_2e$ after netting out forest sinks that absorbed 105.1 $MtCO_2e$.[44]

The forestry sector is a net sink of GHG emissions, which means it captures or sequesters more GHGs than it emits. While deforestation, forest degradation, and illegal logging remain a challenge for the Philippines (and other developing countries), projections show that, under the baseline scenario, [45] (a) the deforestation rate is assumed to decrease gradually from 2.86% in 2015 to 0.5% in 2050,[46] (b) emissions from biomass burning, estimated to be minimal at present, are projected to decrease over the years from 0.0749 $MtCO_2e$ in 2010 to 0.0127 MtCO2e in 2050,[47] and (c) biomass carbon stock is estimated to increase over the years. [48] According to forecasts, "the projected gains in biomass carbon exceed the losses in biomass carbon over the study years. Gains ... will be mainly brought about by the growth of trees in forest land and grassland, with some gains ... in agroforestry and perennial cropland. Losses... will be mainly due to timber harvesting, fuelwood gathering, and deforestation."[49] Thus, despite deforestation and other land use issues, the forestry and other land use sector is projected to remain a carbon sink until 2050.[50]

Figures 3a and 3b: Contributions of Non-LULUCF Sectors (2000 and 2010)[51, 52]

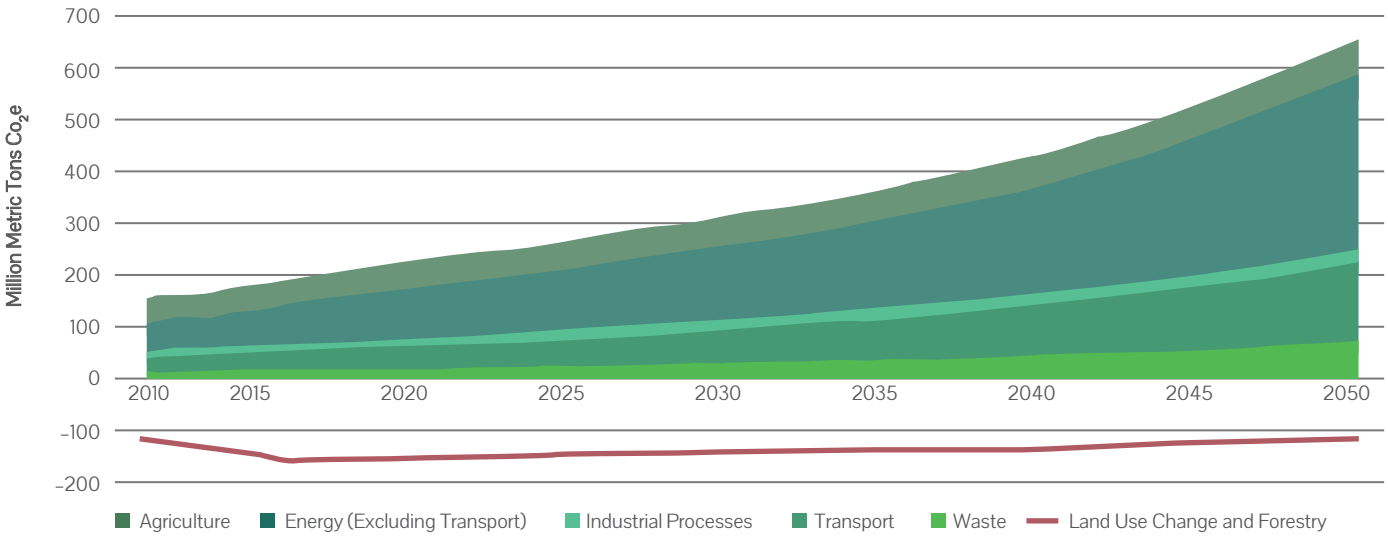


Figures 3a and 3b show the percentage contribution of each non-LULUCF [53] sector in 2000 and 2010, respectively. Just two sectors, energy and transport, accounted for over half of the total national emissions in 2000 (54.9%) and 2010 (52.2%).[54] Figure 3b shows that the largest emissions came from the energy sector, which accounted for 35.9% of the total emissions; followed by agriculture, which constituted 30.8%; then transport, 16.3%; then waste, 9.9%; and, finally, industry, 7.1%.

Emissions Projections

Figure 4 below shows the country's projected emissions under its BAU scenario from 2010 through 2050.[55] The graph demonstrates that emissions are expected to quadruple from 2010 to 2050,[56] with substantial increases from the energy, transport, and waste sectors, and slight increases from the agriculture and industrial processes sectors. Forest sinks are estimated to peak in 2015 capturing 111.4 $MtCO_2e$, then gradually decrease to 102.5 $MtCO_2e$ in 2030 then to 85.4 $MtCO_2e$ in 2050—however, throughout the forecast period, forests are expected to remain as carbon sinks.[57]

Figures 4: 2010-2050 BAU Projection for All Sectors (in $MtCO_2e$)[58]



Based on Figure 4,[59] the estimated emissions in 2030 are about 320 $MtCO_2e$, with forests capturing approximately 102.5 $MtCO_2e$, resulting in net emissions of 217.5 $MtCO_2e$ (about triple the 2010 net emissions of 71.8 $MtCO_2e$).

The Philippine INDC

In October 2015, the Philippines submitted its INDC, where it described how the country intends to contribute to the global climate goals based on its strategic and long-term interests. There, the Philippines recognized its responsibility to contribute its fair share to global climate action and *voluntarily* [60] committed to reduce its emissions by 70% by 2030, compared with its 2000-2030 business-as-usual (BAU) scenario,[61] despite accounting only for 0.37% of global emissions in 2012. [62,63]

The BAU scenario represents the Philippine emissions trajectory if the government does not enact and implement new policies and measures to abate the country's emissions, assuming annual growth averages of 6.5% in gross domestic product (GDP) and 1.85% in population.[64] Through consultations with key stakeholders prior to the INDC formulation, the government identified five main sectors that should contribute to the emissions reduction goal: energy, transport, waste, forestry, and industry.[65] Mitigation options have been identified for each sector and then categorized into (a) priority options, which account for ~40% of the emission reduction target, and (b) additional options, called the "long-list", which account for the balance of the target.[66] Annex 4 lists the Climate Change Commission's (CCC's) compilation of these options and their cumulative mitigation potential by 2030.

In committing to pursue climate actions, the Philippines placed key conditions that make its INDC a no-regrets commitment.

Significantly, the INDC expressly provides that the Philippines' emission reduction goals are conditioned on its receipt of means of implementation such as finance, technology, and capacity. This means that if the country does not receive money, technology, or capacity-building support, it cannot be held accountable if it does not reach its 70% aspirational target. [67] The INDC also states that the Philippines prioritizes adaptation and adopts it as the anchor strategy pursuant to the National Framework Strategy on Climate Change (NFSCC) and the National Climate Change Action Plan (NCCAP), and that the country's pursuit of mitigation actions is as a function of adaptation. [68]

Further, the INDC provides that the fulfillment of its targets is upon the assumptions that (1) loss and damage from climate change and extreme events does not require the substantial diversion of resources for rehabilitation and reconstruction, which would affect development targets as well as mitigation commitments under the INDC, and (2) identified co-benefits for mitigation options such as environmental and socio-economic benefits are realized. In addition, the INDC expects the private sector to be an indispensable partner in fulfilling the abatement targets. The INDC thus makes a 'no-regrets' commitment, because no legal liability can arise from a failure to fulfill it. Yet, any milestone the Philippines reaches will redound not only to the benefit of the Filipinos, but to the world as a whole. Clearly then, the INDC provides the Philippines little risk, but a lot to gain. In addition, the 30-year period chosen for INDC implementation provides sufficient latitude to plan, implement, monitor, and improve on the country's climate policies.

Box 4: INDC Challenges: Choice of BAU Scenario

The INDC initially used 2010 as the starting year for the baseline, simulating mitigation actions to be implemented from 2010 (for forestry) and 2015 (other sectors) until 2030 and 2050.[69] Stakeholder consultations revealed an expected target of 10% unconditional emissions reduction by 2030. However, the previous administration wished to demonstrate leadership in international climate actions and, so, it aspired for the highest possible ambition for the country. This resulted in increasing the emissions reduction target first to 40%, and then to the 70% target that was ultimately reflected in the official INDC submission.[70] The 70% target was unqualifiedly expressed as conditional (*i.e.*, it did not indicate any portion, say 10%, as unconditional or committed even without financial, technological, or capacity-building support and a portion, say 60%, conditioned on receipt of such support), and the baseline was adjusted to 2000-2030 (from 2010-2030).

Since then, government has been grappling with the issue of whether to use 2000 or 2010 as the starting year for the baseline. This choice of the baseline is critical because many laws, including the Renewable Energy Act (RE Act), were enacted between 2000 and 2010. Using a 2010-2030 baseline will make these laws part of the BAU, making it more difficult to achieve a 70% reduction from that BAU. Conversely, using a 2000-2030 baseline will allow the Philippines to already credit the enactment of these laws as part of its fulfillment of the 70% reduction commitment.

Box 4: INDC Challenges: Choice of BAU Scenario (continued)

2000–2030 BAU	2010–2030 BAU
Easier to meet targets because RE Act and other laws passed in 2000-2009 can be reported as successes	More difficult to meet targets because RE Act and other laws passed before 2010 are part of baseline
Less data available, reports will be less reliable	More data available, reports will be more reliable
BAU scenario assumes higher beginning emissions – can report greater % reductions for the same actions	BAU scenario assumes lower beginning emissions – the same actions result in lower % reductions

Time constraints during the final discussions prior to the INDC submission resulted in data gaps on the bases for the sharply increased targets. The government is now in the process of revisiting the figures supporting the INDC targets and considering how the Philippines can move towards an NDC. In this Revisiting, Reconstructing, and Reporting process, the CCC has requested government agencies to revisit their data and assumptions, baselines, targets, and the measures needed to reach these targets. This employs a bottom-up approach, where each agency is reviewing its available data and determining feasible mitigation actions it can pursue within its sector. Following receipt of the sectoral data, the CCC will then consolidate the available information, reconstruct the INDC, and create a roadmap towards the first Philippine NDC, which will then be reported to the UNFCCC Secretariat. The goal is to have an NDC roadmap by 2017.[71]

The outputs of this process will certainly help clarify a wide range of issues on Philippine climate policy. It is presumed that at the conclusion of this process, the following will have been clear to all stakeholders:

- the BAU scenario to be used moving forward, and its underlying assumptions
- whether or not there should be new targets
- how each sector is to contribute to the national emissions reduction goal (*e.g.*, sectoral targets and priorities)
- the mitigation potentials for each sector, and for each option
- the emissions level under the BAU scenario
- timeframe for the implementation of each mitigation option
- the emissions level in a scenario where mitigation options are implemented successfully

Responses to these questions would facilitate the Philippines' compliance with the duty under the Paris Agreement to ensure transparency, accuracy, comparability, and consistency in its NDC, should it decide to ratify the agreement.[72]

Still, as the Philippines moves to ratify the Paris Agreement, it can yet supplant its INDC and submit an NDC with new baselines, assumptions, and targets.

The Decision adopting the Paris Agreement provides that a party's INDC submission will be considered its NDC upon its ratification of the Paris Agreement, unless the party signifies otherwise.[73] Thus, despite the submission of the INDC, recalibrating the emission reduction target remains an option until the Philippines ratifies the Paris Agreement. The government can still determine whether it would be best to (1) leave the INDC target as is and adjust the baselines and assumptions to ensure it is feasible; (2) keep the 70% target but distinguish between the percentage that is unconditional and the percentage that requires support mechanisms; or (3) change the percent target completely. The first option has the least political and diplomatic implications, because it would not change the numerical commitment the Philippines made in its INDC, but simply clarify it. However, serious questions may remain as to its feasibility despite the adjustments. The second option also has minimal diplomatic implications, while making it clear that the Philippines expects international cooperation for it to achieve its abatement targets. The third option, which will result in a lower numerical commitment, may raise issues of being perceived as backsliding; however, it would certainly provide a more credible number. Experience in international climate negotiations shows

that any resulting political implications from pursuing the third scenario will be short-lived, because the international community quickly moves on to deal with supervening critical issues.

Therefore, there is really no need to adhere to the INDC targets if these are found unworkable. What must instead be done is to focus on the data that is available and the options that are feasible. Since the energy sector emits the most GHGs, this means the Philippines must seriously consider its energy mix by, among others, confronting the energy trilemma of providing energy security, minimizing prices, and ensuring environmental sustainability. The government must also have clear data about the level and nature of support it needs (such as by creating a database like on the table 3 below), then vigorously work on obtaining such required support. In addition to the threshold items to be clarified (*See page* 15), the government must weigh these considerations and firmly decide on a baseline so that the roadmap for a clear and coherent NDC implementation can begin as soon as possible.

Key Recommendations: Roadmap towards Institutionalizing and Implementing the NDC

Assuming the Philippines decides to ratify the Paris Agreement, below are some key recommendations in moving towards implementing it domestically. Full implementation requires the creation of an NDC roadmap as its foundation. The recommendations below are categorized into five key pillars:

Data

create a robust database to form the backbone of the MRV system

Institutions

strengthen institutions to enable them to implement the PGHGIMRS

People

create sufficient capacity among people tasked to implement climate actions

Financing

construct a clear finance roadmap to track financing needs and fund use

Private Sector

enhance private sector participation in pursuing climate actions

All these can be summed up into one: institutionalizing the implementation of the NDC through a credible MRV mechanism. The recommendations proposed here may be included in the Implementing Rules and Regulations (IRR) of Executive Order 174 **(EO 174)**, [74] which are currently being drafted and which should be passed in the soonest possible time. Thereafter, the law must be fully implemented in order to achieve its objectives.

Create a robust database to form the backbone of the Measurement, Reporting, and Verification (MRV) system.

Develop and implement a clear, complete, accurate, reliable, and easily understandable MRV mechanism at all levels of government. The decision adopting the Paris Agreement urges Parties to participate in the existing MRV processes under the Cancun Agreements, to demonstrate progress made in the implementation of mitigation pledges.[75]

The Philippines has had an MRV system in place since 2014 through EO 174, which institutionalized the Philippine Greenhouse Gas Inventory Management and Reporting System (PGHGIMRS). This extant mechanism is intended to be the basis for the country's MRV system.

The CCC is the overall lead agency for the PGHGIMRS. As such, it is responsible for directing the emissions accounting and reporting by other key agencies, monitoring and evaluating GHG inventories, and facilitating consistent and continuous capacity building initiatives at all levels of government to ensure that methodologies are up to date. An effective MRV mechanism, built on these existing systems, must have as its foundation robust baseline data, and the collection of actual data must be regular and continuous. A complete reporting template that can be universally used by all agencies at all levels of government must be developed to facilitate data collection. A reliable way of validating the data collected is also necessary component of the MRV system. It is vital that all levels of government (from national to local) be engaged in the MRV process.

Also, the NDC Roadmap should be incorporated into the Philippine Development Plan, the Public Investment Program, the Philippine Energy Plan, the National Climate Change Adaptation Plan, and local counterpart plans in every region of the country.[76] The mainstreaming of climate change initiatives into the country's overall development programs will facilitate the Philippines' compliance with the cycles of improvement mandated by the Paris Agreement.

Fill data gaps. There are currently numerous gaps in the data sources, which has led modelers to use proxy data, often international numbers that do not accurately reflect the realities on the ground. For example, there are gaping holes in waste emissions data from the wastewater subsector, especially outside of Metro Manila. Only a few local water utility associations were able to provide any data related to wastewater, much less measured emissions, in the areas they service. Consequently, a lot of extrapolations had to be made in order to estimate the subsector's emissions. This problem is replicated in other sectors and subsectors as well. All these reveal a need to enhance data-gathering skills so that the Philippines can create reliable baseline data, and then continue taking measurements over time in order to create a robust database that can be used to measure successes in policies.

Provide clear definitions and reporting standards. Interviews with government agencies reveal a lack of understanding about the information to be collected and the scope of the GHG inventory within each sector. This is shown acutely in the inventory and baselining process for the industry sector, where the DENR's Environmental Management Bureau (EMB) is working on an assumed unofficial directive from the CCC concerning the definition of "Industry." A specific and agreed-upon definition of "Industry" is critical in broadening or limiting the scope of the GHG inventory, its subsectors, and in turn the options that may be pursued to lower and limit the GHG emissions from the sector. This issue is also present in other sectors, and must be addressed.

Include the agricultural sector in the database, seriously study its mitigation potential, and pursue actions where strategic and appropriate. The agriculture sector was not included in the INDC, pursuant to a decision to prioritize the country's food security requirements. Climate actions in the agriculture sector thus far have largely focused on adaptation, and there is yet no policy directive for mitigation to be considered with equal importance. As such, the mitigation options from the agriculture sector and their potential will require lengthier discussion and vetting, more so than the mitigation options from the other sectors that are currently under review. In any case, sectoral data must be regularly updated, validated and collated in a database to enable a comprehensive assessment of the agriculture sector's contributions to the national emissions profile. This will help identify practical options through which agriculture may, in the future, be able to contribute to mitigation actions that can be implemented in the long term without compromising food security.

Strengthen institutions to enable them to implement the NDC roadmap.

Create a *plantilla* position for a climate change officer in each government agency and LGU. To ensure that there is an officer familiar with both sectoral nuances and climate-related mechanisms, it is recommended that at least one *plantilla* position be created in each government agency and LGU, to act as a focal person for all climate change work relating to the sector. This would prevent the practice of agencies sending out any available staff to attend climate-related meetings despite a lack of familiarity with the climate processes, while also guaranteeing increased and sustained inter-agency coordination, communication, and monitoring among these focal persons working in different sectors. If budget permits, it would be ideal for a department or office to have a full complement of trained working staff devoted exclusively to the oversight and execution of the applicable projects and strategies in relation to the NDC's implementation, together with other programs and issues related to climate action.

Promote inclusiveness in the consultation process and ensure sustained interagency coordination. During interviews and roundtable discussions with government agencies concerning the determination of the Philippines' INDC, officials expressed difficulties encountered due to a lack of inter-agency coordination. For example, there was a disconnect between the targets identified by coordinating agencies as part of the 70% emission reduction goal and what implementing agencies actually considered as feasible for their sectors. To illustrate, coordinating agencies set the energy sector's contribution at 30.43%, whereas the DOE said the maximum they could commit to was only 23%. In the waste sector, the target was set at 8.9%, whereas the EMB estimates they can only commit to about 3%.

In another instance, the DENR raised concerns about the 'consultation' process for the mitigation targets, particularly for the industry sector, saying that targets were established after consultations with industry stakeholders, but not with DENR. DENR officials said they were 'consulted' only after the mitigation options were already determined. Consequently, the present mitigation options lack critical input from DENR, which is, at present, the agency charged with conducting the implementation of mitigation options for the sector. In fact, there are ongoing EMB projects with the potential to be included as mitigation options, but which were not incorporated because of EMB's absence during conceptualization. For example, the DENR's Philippine Ozone Desk has existing and on-going projects which may be considered as additional mitigation options under the Industry Sector, and which could benefit from further funding through the Paris Agreement mechanisms.

This lack of communication and organization has led to serious challenges, particularly regarding the feasibility of the INDC, leading to the need to revisit and review it. Thus it is vital to focus on the strengthening of inter-agency coordination through the institutionalization of an organizational structure among agencies together with a system of monitoring, communication, and data-sharing. It is imperative to establish how information will flow from one agency to another, and how responsibilities will be allocated among agencies to avoid redundancy in efforts. Meeting the abatement goals requires greater inter-agency coordination horizontally (across different sectors) and vertically (across different levels, national to local), and alignment on overall targets and measures required to achieve identified targets. It also requires the nationwide use of CCET in development planning.[77]

Provide clarification on the scope of authority of implementing agencies. EO 174 mandates the CCC to lead government agencies [78] in creating and managing a database for the PGHGIMRS from identified source sectors and in determining how this information can be translated into the Philippine NDC. EO 174 requires these agencies to (a) conduct, document, archive, and monitor sector-specific GHG inventories; (b) report sector-specific GHGs to the CCC based on an agreed reporting scheme; and (c) perform other functions necessary for the effective implementation of the EO.[79]

However, upon completion of the initial work on the PGHGIMRS, it is uncertain if implementation of the NDC for the relevant key sectors would devolve to the same government agencies that led the particular inventory. According to EMB, this lack of clarity on the proper implementing agency is one of the main reasons why it has yet to initiate programs to implement mitigations options for the Industry Sector. For the waste sector, the EMB questions whether it is the proper agency to implement mitigation actions, stating that these measures are outside its jurisdiction but within the jurisdiction of the LGUs and/or the DPWH.

Furthermore, the agencies tasked to enforce mitigation actions have raised concerns that they lack jurisdiction over the persons and activities they are supposed to regulate. This is because many mitigation options are cross-sectoral by nature, which raises questions on the proper government agency to implement them. For example, the mitigation option for Biomass Energy in Cement Manufacturing has components under the Energy, Waste, and Industry Sectors.

Therefore, it is recommended that an official order be promulgated at the soonest possible time, (a) assigning the government agency or agencies responsible for each sector's implementation of mitigation and adaptation actions and (b) clearly defining and delineating each agency's powers, functions, and responsibilities with regard to climate actions. Presently, while the Climate Change Act of 2009 and its IRR delineate the roles of government agencies[80] in the implementation of the framework strategy and program on climate change, their functions have yet to be fleshed out. The government, in particular the CCC, may consider revisiting and revising the IRR to clarify the government agencies' scope of authority and responsibilities.

Create sufficient capacity among people tasked to implement climate actions.

Ensure government readiness. It is critical that all public officials understand the level and nature of their departments' commitments and understand clearly what they need to do to fulfill these targets. Interviews show that, currently, there is a lack of understanding of each sector's targets, and officials charged with implementing projects are unsure which ones they are supposed to prioritize. Also, there should be sustained efforts to amend laws that need to be amended, and regulations that need to be issued, to align the local regulatory landscape with the Paris Agreement.[81]

Enhance the capacity to implement climate actions horizontally (across all NGAs) and vertically (across all levels of LGUs). The task of bringing to fruition the planned activities under the Philippines' NDC should not only be the duty of government agencies across the different sectors, but should involve the local government units across all levels, to ensure that all actions are localized and far-reaching. It is suggested that the Philippines adopt a hybrid model of the top-down and bottom-up approach "wherein the national government and its agencies provide the enabling frameworks but give local governments a certain amount of discretion to tailor local initiatives." [82] This approach is especially suited for our country's network of LGUs - from regions to provinces, cities, municipalities, and barangays.

As observed, "To avoid a patchwork of uncoordinated targets, goals, and programmes, national governments can and should take the lead" in designing and implementing cross-cutting measures.[83] However, close collaboration between national and local government to build capacity for climate action will improve the chances that local officials will exploit the maximum potential for cost-effective climate actions.[84]

The Philippines could also utilize its plethora of LGUs to good use by selecting pilot sites for experimental programs on adaptation or mitigation measures, which when successful, could be implemented on a national scale. Thus, to ensure collaborative success, it is important that the national government provide LGUs with the necessary legal frameworks, and programs

as well as financial resources that direct and support local initiatives. The government must increase the overall capacity to implement climate actions, increase its roster of qualified staff and provide sustained high-quality training programs. In addition, it must ensure that both the public and private sector use the best available and least polluting technology to prevent locking investments in high-emission infrastructure and assets.

Engage academic institutions to scale up research and training. It has been observed that there is a dearth in the growth and capacity of our country in terms of research and training, both in the public and private sector. To address this, different sectors should collaborate to leverage different capabilities and avoid duplication of effort. In particular, the government can best address this need for access to research and training through the establishment of long-term partnerships with the academic institutions, both local and foreign. Moreover, tapping local academic institutions in various regions across the country can provide the government with access to valuable insights and recommendations on local challenges and solutions.

Construct a clear finance roadmap to track financing needs and fund use.

One of the primary advantages of ratification would be access to financial, technological, and capacity-building support to ensure implementation of mitigation and adaptation actions. However, at present, there is a lack of clarity on the exact level and type of support the Philippines needs to fully implement identified climate actions. Just in the area of finance, for example, there are no disaggregated data on which mitigation actions have been *programmed* versus those that are *new* and additional, which are *funded* and *unfunded*, and which actions are *voluntary* and *mandatory*. Further, there is yet no clear definition of the term "climate finance".

Define "climate finance". To facilitate access to the support mechanisms under the Paris Agreement, it is recommended that the government define what it will count as "climate finance" (*e.g.*, new and additional, grant-based, not loans or ODA, excluding fees paid for technology and for international consultant services).

Disaggregate data into a clear, easily accessible form. Create a detailed database of funding requirements and fund use for policies and programs, categorized into the following:

- *programmed* vs. *new and additional* – Activities already required by law and those which the government intends to implement regardless of external support mechanisms should be differentiated from new and additional activities that are contingent on the receipt of financial support. For the latter, the level of support required should be identified, and the government should determine whether there is a need for enabling legislation.

- *funded* vs. *unfunded* – Fully funded projects should be distinguished from those still requiring funding. In the latter case, there should be information on whether funding should be provided by government sources (if so, whether the budget should come from national government agencies, government-owned or -controlled corporations, or local government units (LGUs)), the private sector (if so, if international or local), or international sources (further, if these are expected from foreign governments, UN agencies, multilateral development banks, international civil society organizations, financial mechanisms of the UNFCCC, etc.).[85]

- *voluntary* vs. *mandatory* – The government should also determine whether activities should be required through regulation or remain voluntary. For example, there are several mitigation options, especially in the IPPU sector, that some industry players are already implementing, even without regulation.[86] The government should consider

either providing incentives to enhance participation by more members of the private sector, or even requiring these activities via regulation. Regulation could be a useful tool to guarantee the use of the best available and least polluting technologies with the added effect of incentivizing innovation.

A database of disaggregated data similar to Table 4 may help track projects from planning to completion.

Table 4. Sample Database of Disaggregated Data to Track Climate Action

	Programmed	New/ Additional	Fully funded	Unfunded (% requiring funding)	Mandatory	Voluntary	Public
Option 1	■		■		■		■
Option 2	■			■ 50%	■		■
Option 3		■		■ 100%		■	

Disaggregating data is critical because it will clarify the policies and programs the Philippines can implement without need of external aid, and identify the level of resources the Philippines still needs to access through the Paris mechanisms to ensure it fulfills its abatement targets. It can also provide potential funders and investors a quick menu of options where they can infuse financial, technological, and capacity-building support. A similar table should also be created for technological and capacity-building resources and needs. These should be integrated into the Climate Change Expenditure Tagging (CCET) initiative that the CCC is pursuing following its mandate under EO 174. Moreover, the scope of the CCET should be expanded to include not just government-funded projects, but also tag those that are funded by non-government and international sources.

Moreover, this data must be made publicly available, since it can be considered as a suite of options for the private sector to choose from, should they be interested in investing in the low-carbon economy. Presenting a table like that above could make resource needs and climate investments more transparent and predictable, because the table would provide an easily understandable measurable, reportable, and verifiable snapshot on what activities need funding, technology, and/or capacity building support, what activities already have the required resources, and so on. This would also make it easier for government and private sector partners to enter into partnerships, consequently lessening the burden on public sources of funding.

Enhance private sector participation in pursuing climate actions.

Establish a Voluntary Emissions Reduction (VER) mechanism for the private sector. It is critical for the policy environment to enable private sector participation to optimize mitigation opportunities and reduce business risks towards a climate-smart development.[87] Currently, the members of the private sector who are so inclined can voluntarily measure their own emissions and set voluntary targets. During a roundtable discussion with stakeholders, representatives of the CCC indicated that, while the short-term goal is to implement GHG reporting mechanisms across different levels of the public sector, the medium-to long-term objectives include private sector participation in the MRV system. This is a positive step that should be pursued to fruition.

Further, technical consultants of the CCC said that, while they realize that many companies have begun using the GHG Protocol developed jointly by the World Business Council for Sustainable Development (WBCSD) and the World Resources

Institute (WRI) (**the GHG Protocol**),[88] CCC intends to create its own reporting template, combining aspects of the GHG Protocol and other reporting methods. While it may be laudable to envision a customized MRV mechanism tailored specifically for the Philippine circumstances, the effort may be inefficient at this time and may just cause confusion. Further, the Paris Agreement encourages parties to take into account existing methods and guidance under the UNFCCC,[89] rather than come up with new ones that will make it harder for interested parties to understand, comply with, and compare inventories. Thus, the plan to create a new template should be reconsidered in greater detail. Instead, efforts may be better directed at scaling up the understanding and use of the existing GHG Protocol.

Nevertheless, the inclusion of the private sector in the MRV is crucial as "MRV systems work best when a range of data is captured – this information can help fill information gaps from any new data collection processes."[90] In particular, there are certain sectors, for example, the Industry Sector wherein the necessary data is lodged with the private sector.

The EMB observed that most industry stakeholders defer furnishing information that they deem confidential in nature. For example, cement companies do not want to disclose the composition of their cement mixes as it is considered as classified data. Hence, most industry stakeholders prefer to provide requested information as collated by their self-regulating associations to protect their anonymity. However, this raises two issues: (i) not all industry stakeholders are members of these associations; thus, data may be incomplete and possibly inaccurate; and (ii) the information is biased in favor of the association and its members, thereby compromising the integrity of the data.

However, these legitimate concerns may be managed and should be addressed by the government. For example, data provided for the MRV system can be aggregated to such a degree that individual private sector actors are not identifiable.[91] A decentralized approach can also assist with allaying possible concerns about privacy, as private sector actors may feel more comfortable providing data to an agency that they routinely deal with and have established relationships (*e.g.*, an industry department for cement sector data) rather than to another third party department (*e.g.*, an environment department).[92]

Improve ease of doing business, and ensure the business environment is supportive of the NDC. Since the energy and transport sectors make up more than 50% of the country's emissions profile, the mitigation actions with largest impacts are likely to come from reducing emissions from these sectors. The country's shift to a cleaner electricity generation mix, one with lower carbon emissions, is a critical element of any transformative policy change. Because the private sector is a key player in both the electricity generation and transport industries, private sector participation is crucial to the success of this shift.

However, while the Philippines' legal framework provides for private sector participation, specifically under Republic Act No. 9136, otherwise known as the Electric Power Industry Reform Act (**EPIRA**) and Republic Act No. 9513 or the RE Act, in the energy sector, proper implementation of these laws has been found lacking.

The private sector faces a number of barriers including complicated permitting processes, inadequate grid infrastructure, difficulty procuring long-term financing at competitive rates, and long delays in securing regulatory approvals for offtake agreements.

Hence, it is recommended that the government, in particular, the Department of Energy (**DOE**), take immediate corrective action by providing a friendlier and a more stable environment to incentivize and keep private sector investment. DOE should form long-term plans and a stable (not flip-flopping) regulatory environment that steers private sector participation towards the optimal energy mix it envisions. This involves diversifying the country's generation mix and reducing reliance on just one or two major energy sources. Diversification may be encouraged by (1) disincentivizing highly polluting technologies and imposing stricter environmental standards, and (2) encouraging the full range of renewable energies (*i.e.*, both conventional—geothermal and large hydro—and intermittent RE—solar, wind, biomass, run-of-river hydro, etc.) and fully implementing incentives like the Renewable Portfolio Standards and the Net-Metering Scheme for renewable energy projects. Once their technologies and prices reach commercially scalability, the Philippines should invest in battery storage and CCS.

The collective synchronized efforts of government, both horizontally (across all NGAs) and vertically (across all levels of LGUs) and the private sector, can best assure the realization of our country's NDC. Along with efforts to streamline our NDC, the Philippines must now take decisive steps to decouple its industrialization from carbon emissions. Low-hanging fruits include harnessing the power of the private sector.

Having a robust NDC framework and roadmap can lay the foundation for a better business climate and a clear, steady regulatory environment that avoids flip-flopping, one that provides the private sector the confidence it needs to invest substantial capital and resources in low-carbon development. Having streamlined policies on the energy mix and on private sector investment incentivization will help the Philippines transition and transform into a 21st century economy.

Getting Our Act Together Action Steps

Policy Recommendation	Policy Instrument
Create and maintain a robust database to form the backbone of the MRV system Ensure sustained inter-agency coordination to implement the PGHGIMRS more easily Regularly conduct training of personnel charged with implementing climate actions Provide a clear definition of "climate finance" and its scope Maintain a clear finance roadmap to track financing needs and fund use (from local and foreign, government and non-government sources) in each NGA's and LGU's annual budget and financial report Establish a Voluntary Emission Reduction (VER) for the private sector Reduce red tape to speed up climate investments	**Climate Change Act IRR of EO 174, as mandated under Section 7 of EO 174** Ensure all these recommendations are included as mandatory requirements in the draft IRR of EO 174; approve the IRR as soon as possible; and implement it immediately.
Create plantilla positions for CC officers in all NGAs and LGUs Assign specific government agency or agencies responsible for each sector's implementation of mitigation and adaptation actions Clearly define and delineate each agency's powers, functions, and responsibilities with regard to climate actions	Revise the Climate Change Act IRR to clarify the government agencies' scope of authority and responsibilities.

Annex

Annex 1. Government Concerns and International Climate Agreement Provisions

Key Concern	UNFCCC and Paris Agreement Provisions
Climate change must be addressed in a fair and equitable manner.	Addressing climate change in accordance with the common but differentiated responsibilities and respective capabilities of the Parties is a guiding principle of the UNFCCC (UNFCCC, Preamble, ¶6, Art. 3(1)). In addressing climate change, the Paris Agreement is also guided by the principles of equity and common but differentiated responsibilities and respective capabilities,[93] and respect for the different national circumstances of Parties. (Paris Agreement, Preamble, ¶3 and Art. 2(2)).
Developed countries that have contributed the most to historical and current GHG emissions must take the lead in addressing climate change.	The UNFCCC recognizes that (1) the largest share of historical and current GHG emissions originated in developed countries, (2) per capita emissions in developing countries are still relatively low, and (3) the share of emissions originating in developing countries will grow to meet their social and development needs (UNFCCC, Preamble, ¶3). The Paris Agreement reiterates this by providing that developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets, while developing country Parties should continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances (Paris Agreement, Art. 4(4)).
Addressing climate change must not stymie national development.	The UNFCCC takes full account of the needs of developing countries for sustained economic growth and poverty eradication (UNFCCC, Preamble, ¶21). It clearly recognizes the right of Parties to seek and promote sustainable development, and as such, provides that climate change policies and measures should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, acknowledging that economic development is essential for adopting measures to address climate change (UNFCCC, Art. 3(4)). Even as Parties take climate change considerations into account in their relevant social, economic and environmental policies and actions, they also commit to minimizing the adverse effects that climate change projects or may have on the economy, on public health and on the quality of the environment (UNFCCC, Art. 4(1)(f)). The Paris Agreement recognizes the needs of developing country Parties as well. As the Agreement aims to strengthen the global response to climate change, it also recognizes that this should be done within the context of sustainable development and efforts to eradicate poverty (Paris Agreement, Art. 2(1)).

Annex 1. Government Concerns and International Climate Agreement Provisions (continued)

Key Concern	UNFCCC and Paris Agreement Provisions
Developed countries must provide developing countries (like the Philippines) with adequate support, including financial resources, technology, and capacities, to implement climate actions.	The UNFCCC provides that developed country Parties shall assist developing country Parties in meeting costs of adaptation to the adverse effects of climate change (UNFCCC, Art. 4(4)). In addition, developed country Parties shall also promote, facilitate and finance access and transfer of environmentally sound technologies that developing countries need to address climate change and meet their commitments under the Convention (UNFCCC, Art. 4(5)). The UNFCCC recognizes that the extent to which developing country Parties can effectively implement their commitments depends on the financial resources and technology they receive from developed country Parties. This acknowledges that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties (UNFCCC, Art. 4(7)). The Paris Agreement affirms this need to support developing country Parties for its effective implementation (Paris Agreement, Art. 3). Support must be provided for developing countries to meet their mitigation ambitions (Paris Agreement, Art. 4(5)) and adaptation needs (Paris Agreement, Art. 7(7)(d)). Developing countries shall provide financial resources (Paris Agreement, Art. 9(1)), support for the development and transfer of technology (Paris Agreement, Art. 10(6)) and support for capacity building actions (Paris Agreement, Art. 11(3)) in developing country Parties, and must provide information on the support that they provide (Paris Agreement, Art. 13(9)).

Annex 2. Excerpts from Limaye and Zhu (2012) and UNIDO (n.d.) on financing sources

Limaye, D. and Zhu, X., 2012. *Accessing International Financing for Climate Change Mitigation – A Guidebook for Developing Countries*. Technical University of Denmark (DTU) Building 142 DTU Risø Campus Frederiksborgvej 399 P.O. Box: 49 4000 Roskilde Denmark: UNEP Risø Centre on Energy, Climate and Sustainable Development Department of Management Engineering. The full text (143 pages) is available at: http://orbit.dtu.dk/files/10542038/Accessing_international_financing.pdf.

UNIDO, n.d. Financing options for renewable energy and energy efficiency. The full text (74 pages) is available at: https://www.unido.org/fileadmin/media/documents/pdf/EEU_Training_Package/Module19.pdf.

Excerpts from Limaye and Zhu (2012) and UNIDO (n.d.)

International and Regional Multilateral Finance

Multilateral financing sources include multilateral development banks (MDBs), such as the World Bank; agencies of the United Nations, such as UNDP and UNEP; and special international agencies created by these MDBs (such as the Global Environment Facility) in collaboration with various national governments, and multilateral funds.[94]

Multilateral financing institutions (MFIs) have multiple governing members, including those from borrowing developing countries and [lending developed] countries. MFIs raise funds from a variety of sources, including capitalisation from governments and borrowing programmes, as well as income from loans. MFIs provide financial support and technical assistance for economic and social development activities in developing countries.[95]

Excerpts from Limaye and Zhu (2012) and UNIDO (n.d.) (continued)

This type of formal funding in general is only accessible for governments and not for private developers and most often consists of loans at an interest rate or payback periods below commercial averages, and sometimes grants are applied. The large development banks also offer guarantees to mitigate the risk of the project and facilitate other forms of financing (such as loans from commercial sources). Examples include the International Bank for Reconstruction and Development (IBRD) and the International Finance Corporation (IFC).[96] [However, the private sector may also gain access to this assistance, as elaborated in the table below.]

Bilateral Financing Institutions

Bilateral financing institutions (BFIs) are created and directed by a national government for the purpose of giving aid or investing in targeted development projects and programs in developing countries and emerging markets.[97] *BFIs carry out the mandates given to them by the national governments, which are based on the strategic objectives of the governments and their focus on specific geographic areas and technologies.*[98]

Government Finance

This funding is usually provided in the form of loans or grants, and is combined with financing from multilateral and bilateral organizations.[99]

Private Sector Finance

Private financing sources, which are increasingly involved in financing climate change mitigation actions, include a wide range of local and international banks and financial institutions, venture capital and private equity funds, pension funds and some special funds created to address climate change mitigation.[100] Private financing sources also include carbon finance companies.[101] Many of the public (multilateral and bilateral) financing sources seek to leverage increased financing from private sources.[102] To accomplish this, public-private partnerships have been established.[103]

A developer of a climate change mitigation project can seek two types of private financing: debt and equity.[104] *Debt financing is generally provided by banks or financial institutions (FIs).*[104] *Equity financing, which may be in return for an ownership stake in the project or in the company implementing the project, may be provided by private investors (there may also be some equity investment available from banks/FIs and from public sector funds).*[107]

Commercial Banks. Provided that a proper business plan, acceptable risks and returns on investment can be presented, commercial sources can be interested in financing RE and EE projects through loans and equity investment.[106] Commercial financing organizations apply market conditions in terms of pay-back periods and interest rates, thus making it harder for project developers to secure the financing, but, on the other hand, this form of financing is still usually more flexible than funds from multi and bilateral organizations.[108]

Microfinance Banks. Local communities, both in urban and rural areas, are emerging actors in the financing of clean energy, especially for the low-scale application of RE products and technologies.[109] This trend takes the form of microfinance or community-based "green funds" as mechanisms of consumer financing.[110]

Annex 3. Financing Sources

Entity	Description	More information
International and Regional Multilateral Funding		
Global Environment Facility (**GEF**)	The GEF is an international partnership of countries, international institutions, civil society organizations, and private sector to address global environmental issues.	https://www.thegef.org/gef/NGI.

Annex 3. Financing Sources (continued)

Entity	Description	More information
Global Environment Facility (**GEF**)	Private sector engagement is a priority in the current funding cycle and is being mainstreamed across GEF focal area strategies. For instance, the GEF has established Public-Private Partnership (PPP) programs which deploy financial tools, such as risk guarantee funds, revolving loans, and equity investments. In addition, a new Non-Grant Pilot Program will support innovative financing models. The financial terms of this program for private sector include: ● Flexible concessional interest rate; ● Minimum level of concessionality to avoid displacing other finance; ● First-loss position if justified; ● Maximum maturity of 20 years; ● Flexible exit date for equity investments. Eligible GEF Partner Agencies can submit project proposals on behalf of private and public sector recipients to the GEF. Currently, the ADB is a Partner Agency.	https://www.thegef.org/gef/NGI.
Green Climate Fund (**GCF**)	The Green Climate Fund (GCF) was adopted as a financial mechanism of the UN Framework Convention on Climate Change (UNFCCC) at the end of 2011. Over time it is expected to become the main multilateral financing mechanism to support climate action in developing countries. One of the most innovative features of the Green Climate Fund is its Private Sector Facility ("PSF"). The PSF aims to mobilize private funding flows from local, regional, and international commercial banks and institutional investor towards green projects including renewable energy and energy efficiency. The Green Climate Fund disburses fund through a wide range of accredited entities. Private sector entities can also apply to become accredited as implementing entities through the GCF Accreditation process. Entities that are not accredited by the Fund may still submit funding proposals through an AE to obtain resources for climate change projects and programmes. In the Philippines, these include ADB, World Bank (IBRD), Deutsche Bank, HSBC, IFC, UNDP, UNEP, WFP. There are currently no accredited Filipino entities, but Development Bank of the Philippines, Landbank, and EDC are in the process of applying.	Private Sector Facility: http://www.greenclimate.fund/ventures/private-sector Accreditation: http://www.greenclimate.fund/ventures/accreditation
International Finance Corporation (**IFC**)	IFC is the private sector arm of the World Bank. With support from the GEF and GCF, the IFC's Sustainable Energy Financing Program (SEF) provides several advisory services to local private banks (BDO and BPI) who may not be familiar in the RE space. Services include tech assistance, due diligence, capacity training on the benefits of RE and EE, and a risk-sharing facility.	www.ifc.org

Annex 3. Financing Sources (continued)

Entity	Description	More information
Green Infrastructure investment coalition	Launched at COP21, the aim of the Green Infrastructure Investment Coalition (GIIC) is to provide a platform of investors, multilateral development banks (MDBs) and analysts available for countries seeking to finance their green infrastructure investments needs. The work of the Coalition allows governments and project developers to present their pipeline of projects five years into the future (min. $100 million deal size) and access new sources of funding from international investors. This will provide investors with early visibility of future deal-flow and give the opportunity to provide feedback on the structuring of financing instruments. Low-carbon and climate resilient infrastructure includes clean energy; lowcarbon transport, such as railways, urban metros and electric vehicles; low-emission buildings, both new and retrofitted; and water infrastructure. While there are no specific workstreams focused on the Philippines yet, the GIIC is rapidly expanding in developing countries and has pledged support to the International Solar Alliance, which aims to accelerate investment in solar and of which Philippines is a prospective member.[111]	http://www.giicoalition.org/what-we-do/
Clean Technology Fund	The Clean Technology Fund (CTF), one of two multi-donor Trust Funds within the Climate Investment Funds (CIFs), promotes scaled-up financing for demonstration, deployment and transfer of low-carbon technologies with significant potential for long-term greenhouse gas emissions savings. The funds are channelled through the African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, Inter-American Development Bank, and World Bank Group. Eligible Projects ● Renewable energy: concentrating solar power, solar photovoltaic, geothermal, wind, small hydro ● Sustainable transport: bus rapid transit, public transportation, high-efficiency vehicles, modal shifts ● Energy efficiency: industry, building, district heating, municipal, lighting, appliances Private sector proposals are submitted in the form of either individual large-scale projects (“Projects”); or Aggregation of several small and medium sized projects having a shared focus and objective (“Programs”).	http://www-cif.climateinvestmentfunds.org http://shapingsustainablemarkets.iied.org/clean-technology-fund-ctf

Annex 3. Financing Sources (continued)

Entity	Description	More information
Clean Technology Fund	Proposals should explain how the Projects and Programs are expected to contribute towards the objective of achieving transformational outcomes in a sector, sub-sector, country, sub-national region, sub-region, or region while demonstrating that these outcomes would not be possible without support from the CTF. The Philippines is a CTF recipient country.	http://www-cif.climateinvestmentfunds.org http://shapingsustainablemarkets.iied.org/clean-technology-fund-ctf
Global Energy Efficiency and Renewable Energy Fund (GEEREF)	The Global Energy Efficiency and Renewable Energy Fund (GEEREF) is a Public-Private Partnership (PPP) managed by the European Investment Bank. GEEREF is structured as a fund of funds, specializing in financing small and medium-sized project developers and enterprises (SMEs) to implement energy efficiency and renewable energy projects in developing countries and economies in transition. Fund management companies, financial institutions, project developers or individuals that intend to develop a clean energy investment fund can seek finance. Developers of clean energy projects can also submit proposals for investment funds. Proposals are expected to: ● Present a sustainable business plan generating a fair return for investors and a realistic pipeline ● Specify environmental and socio-economic impacts. ● Focus on small and medium sized clean energy projects (< 30MW) and companies. ● Require long-term patient investment capital. ● Have a locally grounded, professional fund management team	http://geeref.com
NAMAs	Nationally Appropriate Mitigation Actions (NAMA) mechanisms aim to help developing countries reduce GHG emissions are public sector interventions to mobilize private participation in low-carbon development and specifically in the expanded use of RE sources. NAMAs can also be used indirectly to increase the scale of financial incentives. NAMA-related actions need to be approved by the government but can be started by domestic or international actors (e.g., private sector). A private entity can steer the NAMA development under the auspices of the host country government. The only formal requirement for a NAMA is compliance with national development plans and achievement of GHG reductions that could be measured, reported and verified (UNFCCC, 2007).	http://www.nama-facility.org/start.html

Annex 3. Financing Sources (continued)

Entity	Description	More information
German International Climate Initiative (IKI)	The International Climate Initiative (ICI) finances climate projects in developing and newly industrialized countries. Activities supported by the ICI include measures to reduce emissions, including energy efficiency and renewable energies projects. Projects proposals should be innovative in character, integrated into national strategies, and contribute to national economic and social development. The effects of a project must also be sustainable. Project proposals can be submitted by entities including private-sector companies by sending an informative project outlines in German or English electronically to the Programme Office.	https://www.international-climate-initiative.com/en/project-promotion/selection-procedure/ https://www.international-climate-initiative.com/en/
Asian Development Bank (ADB)	The Project Develop Facility (PDF) under ADB's E4All program incubates energy access business models and aims to increase private sector participation in energy access. It offers services to investors such as investment referrals, credit enhancement, risk sharing facility, and investor matching. In collaboration with PDF, the Renewable Energy Mini-grid Fund and Distributed Power Generation Program will deploy USD 30 million of investment capital to scale-up mini-grid investment in India, Indonesia and Philippine. Investment component includes senior debt, subordinated debt, guarantees and equity investments along ADB investment. A technical assistance advisory program will also support it. The program is currently evaluating approximately 30 prospective mini-grid and distributed power companies and impact funds with a positive track record. Private institutions must go through the Private Sector Operations Department (PSOD) in order to gain access to ADB's resources.	http://www.adb.org/sectors/energy/programs/energy-for-all-initiative
Bilateral Financing Institutions		
Japan International Cooperation Agency (JICA) [112]	Japan has been one of the largest bilateral financing sources for several decades. The Japan International Cooperation Agency (JICA) was among the main organisations providing Japanese aid. In 2008, Japan brought together all of its international development operations to form one 'new JICA', merging the former operations of the Japan Bank of International Cooperation (which provided overseas development assistance or ODA loans), the Ministry of Foreign Affairs (which provided grant aid), and the old JICA (which provided technical assistance). The Ministry of Foreign Affairs still plays a role in governing ODA loans. JICA has focused on low-carbon development as a cornerstone of its climate change mitigation strategy. JICA's programs related to climate change	http://www.jica.go.jp/english/

Annex 3. Financing Sources (continued)

Entity	Description	More information
Japan International Cooperation Agency (JICA) [112]	mitigation include technical cooperation, grants and development loans. JICA has also developed a Climate Finance Impact Tool (Climate-FIT) for mitigation to help the estimation of GHG emission reduction from mitigation actions.	http://www.jica.go.jp/english/
KfW, Germany [113]	KfW has become a leading environmental and climate finance institution. It is continuously expanding its activities on behalf of the German Government. In 2010, KfW made new financing commitments of €4.5 billion, of which €2.6 billion was committed for environmental and climate-relevant programs and projects. The financing mechanisms used by KfW include grants, development loans, promotional loans, and credit lines. KfW is increasingly developing public private partnerships, and engaging in project financing, including both debt and equity. Both of these mechanisms are designed to leverage private financing.	https://www.kfw-entwicklungsbank.de/International-financing/KfW-Entwicklungsbank/
AfD, France [114]	The AfD works on behalf of the French government to finance development in accordance with French overseas development assistance policies. AfD directs 50% of its financing commitments to non-sovereign entities, such as local governments and authorities, businesses and non-governmental organizations. In 2009, AfD committed over €6.2 billion to more than 60 developing countries in Africa, Asia, the Mediterranean Basin, the Middle East, South America, and the French Overseas Territories. The financing mechanisms used by AfD include loans, subsidies, guarantees, and financing of debt reduction development contracts. AfD also provides equity investments through its subsidiary PROPARCO which works with the private sector.	http://www.afd.fr/lang/en/home
Philippine Government Finance		
Government Financial Assistance Program	Under the DOE's Financial Assistance Program, government financial institutions such as the Development Bank of the Philippines (DBP), Land Bank of the Philippines (LBP) are required to provide preferential financial packages for the development, utilization and commercialization of RE projects endorsed by the DOE. Examples of projects include wind, solar, and hydropower projects.	

Annex 3. Financing Sources (continued)

Entity	Description	More information
Land Bank	The Land Bank is mandated under the Renewable Energy Act to fund renewable energy projects. It is open to residential, commercial, industrial, and recreational renewable energy-driven projects, and projects of all sizes and amounts. Eligible Borrowers Corporation (at least 60% Filipino owned) Cooperatives Local Government Units Government Owned and Controlled Corporations	https://www.landbank.com/cleecp-program
Development Bank of the Philippines (DBP)	DBP provides financing as well as technical assistance to projects that are environmentally sound. Priority projects include: power generation, power transmission and distribution, energy efficiency, and alternative fuels. Eligible borrowers Private corporations (at least 70% Filipino owned) Local Government Units Electric Cooperatives Private Financial Institutions Government-owned-and- controlled corporations	https://www.devbnkphl.com/devbanking.php?cat=193
Philippine Commercial Banks		
BPI and BDO	BPI and BDO are partnering with IFC to boost private sector investments in renewable energy and energy efficiency. These banks offer the following SEF financing options: Capital Expenditure Financing (e.g. for construction or acquisition of machinery); Working Capital Financing (e.g. for purchase of raw materials) and leasing (e.g. to finance the use of an asset or equipment over a specified period of time). Interested projects can contact a BPI or BDO Relationship Manager or the Sustainable Energy Finance Team for more details. The following are examples of businesses which can benefit from SEF: Industrial/ Manufacturing Companies, Ceramic/Glass, Equipment Vendors/ Integrators, Agri-businesses, and developers of sustainable energy projects such as Wind, Hydro, Solar, Biomass, Biogas.	https://www.bpiexpressonline.com/p/1/203/business-loans-sustainable-energy-finance
Other Entities		
LGUGC	The LGU Guarantee Corporation is a private entity which provides credit guarantees to commercial banks in the Philippines that extend loans to electric cooperatives, often for RE.	www.lgugc.com

Annex 3. Financing Sources (continued)

Entity	Description	More information
Nationally Determined Contribution Investment Accelerator (NDC IA)	Allotrope Partners, in partnership with the World Resources Institute and the National Renewable Energy Laboratory, announced the launch of the Nationally Determined Contribution Investment Accelerator (NDC IA). This innovative public, private partnership will accelerate deployment of renewable energy in developing countries by addressing key policy and financing gaps. It provides unique value by linking together policy technical assistance, project pipeline development support, and a network of investors and power purchasers, including some of the largest corporations in the world, that are seeking to reach 100% renewable energy. Currently the Governments of Mexico, Vietnam, Indonesia and Kenya have all requested to serve as pilot countries for the NDCIA. Additional countries may be added as funding resources and commitments make possible.	http://www.allotropepartners.com/wp-content/uploads/2016/07/NDCIAConceptNote_Feb3_FINAL.pdf

Annex 4.Mitigation Options and Cumulative Mitigation Potential (in $MTCO_2e$) [115]

Table 1. Energy Sector

Energy	
Mitigation Action 40%	Cumulative Mitigation Potential ($MTCO_2e$)
Home Lighting Improvements	2.03
Home Appliance Standards	10.07
Efficient LED Lighting Street Lighting Technology	4.82
National Renewable Energy Program (NREP)	
Biomass	3.69
Solar	5.44
Wind	24.11
Ocean	3.40
Large Hydro	57.26
Small Hydro	10.15
Geothermal	77.75
Natural Gas fo Coal (Substitution)	24.11
Biodiesel Target	20.07

Table 2. Transport Sector

Transport	
Mitigation Action 40%	Cumulative Mitigation Potential ($MTCO_2e$)
Motor Vehicle Inspection System	11.40
Jeepney Modernization	22.36
Congestion Charging	4.18
Driver Training	9.31
Biofuels	84.03
Enhanced Bus Services Including BRT	6.87
Rail (Mass Transit)	2.69

Table 3. Waste Sector

Waste	
Mitigation Action 40%	Cumulative Mitigation Potential ($MTCO_2e$)
Municipal Solid Waste Digestion	7.57
Methane Recovery from Sanitary Landfills	9.26
Methane Flaring	10.75
Compositing	10.56
Eco-Efficient Cover	12.90

Table 4. Industry Sector

Industry	
Mitigation Action 40%	Cumulative Mitigation Potential ($MTCO_2e$)
Increase Glass Cullet Use	0.08
Cement Clinker Reduction	31.18
Cement Waste Heat Recovery	4.06
Biomass in Cement	38.11
Biomass Co-firing	28.85

Table 5. Forestry Sector

Forestry	
Mitigation Action 40%	Cumulative Mitigation Potential ($MTCO_2e$)
Forest Protection	163.06
Forest Restoration and Reforestation	218.96

Long-List

Sector	Mitigation Options	Cumulative Mitigation Potential ($MTCO_2e$)
Transport	Compressed Natural Gas Buses	0.14
Transport	Electric Light Duty Vehicle	0.18
Transport	Vehicle Efficiency	1.19
Transport	Road Maintenance	2.5
Energy	Renewable Portfolio Standards (2016)	4.14
Energy	System Loss Reduction (from 13.5% to 8.5%)	3.11
Energy	Shift to Clean Cookstoves (2 million House Holds)	4.0
Waste	Reduction in GHG Emissions from Waste	4.81
Industry	Shift to Natural Refirgerants (Including ACs)	15.4
Industry	Replacement of Chillers (375 chillers)	0.09
Energy	Heat Rate Improvements in Power Plants	4.54
Energy	50% of SPUG Generation to RE	0.29
Transport	Euro 4 Standards	1.57
Transport	Euro 6 Standards	1.57
Energy	10% Savings from Energy Efficiency and Co..	6.22
Forestry	Biochar Technology	10.58

References and Endnotes

1 *Stephen Hawking and Carl Sagan offer stark warnings when talking about Climate Change and its effects.* 2012. [video] In: RTCC, 2012. Stephen Hawking: climate disaster within 1000 years. [online] Available at: http://www.climatechangenews.com/2012/01/06/stephen-hawking-warns-of-climate-disaster-ahead-of-70th-birthday/.

2 With the current state of technology, high economic growth has been directly correlated with high energy demand/consumption and high carbon emissions.

3 Paris Agreement, art. 5, §2.

4 Paris Agreement, art. 7 §9(e)

5 Macas, T., 2016. Duterte's economic team reveals 10-point socioeconomic agenda. GMA Network, [online] 20 June. Available at: http://www.gmanetwork.com/news/story/570703/money/economy/duterte-s-economic-team-reveals-10-point-socioeconomic-agenda#sthash.PxFZ5SDg.dpuf [accessed 18 September 2016]. The full 10-point agenda is as follows:

1. Continue and maintain current macroeconomic policies, including fiscal, monetary, and trade policies.
2. Institute progressive tax reform and more effective tax collection, indexing taxes to inflation.
3. Increase competitiveness and the ease of doing business.
4. Accelerate annual infrastructure spending to account for 5% of GDP, with Public-Private Partnerships playing a key role.
5. Promote rural and value chain development toward increasing agricultural and rural enterprise productivity and rural tourism.
6. Ensure security of land tenure to encourage investments, and address bottlenecks in land management and titling agencies.
7. Invest in human capital development, including health and education systems, and match skills and training.
8. Promote science, technology, and the creative arts to enhance innovation and creative capacity.
9. Improve social protection programs, including the government's Conditional Cash Transfer program.
10. Strengthen implementation of the Responsible Parenthood and Reproductive Health Law. (Id.)

6 Geronimo, J., 2016. Addressing global warming is top priority. *Rappler*, [online] 25 July. Available at: http://www.rappler.com/nation/140866-sona-2016-philippines-global-warming [Accessed 18 September 2016]; Romero, A., 2016. Duterte: Climate change efforts should not stunt industrialization. *Philstar.com*, [online] 25 July. Available at: http://www.philstar.com/headlines/2016/07/26/1606613/duterte-climate-change-efforts-should-not-stunt-industrialization [Accessed 18 September 2016]; Hegina, A.J., 2016. Climate change priority but must not hinder growth—Duterte. *Inquirer.net*, [online] 25 July. Available at: http://newsinfo.inquirer.net/799129/climate-change-a-priority-but-must-not-hinder-economic-growth-duterte [Accessed 18 September 2016].

7 *Annex 1* cross-references the key concerns with specific provisions of the UNFCCC and the Paris Agreement.

8 UNFCCC, Preamble ¶6 and art. 3.1; Paris Agreement, Preamble ¶3 and art. 2.2.

9 UNFCCC, Preamble ¶3; Paris Agreement, art. 4.4.

10 UNFCCC, Preamble ¶21, art. 3.4, and art. 4.1(f); Paris Agreement, art. 2.1.

11 UNFCCC, arts. 4.4, 4.5 and 4.7; Paris Agreement, arts. 3, 4.5, 4.7.7(d), 9.1, 10.6, 11.3, and 13.9.

12 Honkonen, T., 2016. CBDR and Climate Change. In: Farber, D. and Peeters, M., 2016. Elgar Encyclopedia of Environmental Law: Climate Change Law. UK: Cheltenham. Ch. I.12.

13 United Nations Population Fund (UNFPA), 2016. World population trends. UNFPA, [online] Available at: http://www.unfpa.org/world-population-trends [Accessed 18 September 2016].

14 *Id.*

15 Pernia, E., 2016. The Philippine Economy Status quo et status ad quem. [pdf] NEDA Archives.

16 *Id.*

17 Department of Energy (DOE), 2010. *Philippine Energy Situationer.* Taguig: Department of Energy Policy Formulation and Research Division.

18 UK Met Office, 2015. http://www.metoffice.gov.uk/news/release/archive/2015/one-degree. See note from same site on the reference period. Note also that this finding was based on data from the first three quarters of 2015, with a recognition that natural climate variability can shift the global mean temperature up and down. However, the trends indicate that 1°C above preindustrial levels will become more common and might eventually become the norm. (*Id.*)

19 Lavelle, M., 2014. Scientists: Global Warming Likely to Surpass 2°C Target. National Geographic. [online] February 28. Available at: http://news.nationalgeographic.com/news/energy/2014/02/1402277-global-warming-2-degree-target/ [accessed 26 July 2016].

20 IPCC, 2014. Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Barros, V.R. et al. Cambridge, UK and New York, USA: Cambridge University Press. pp. 688 et seq.
See also Murphy, C., n.d. Observed and projected climate change in the Philippines, Honduras, Kenya, Malawi and Ethiopia. [pdf] Available at: https://www.trocaire.org/sites/ trocaire/files/resources/policy/trocaire-maynooth-university-climate-change-report.pdf [Accessed 6 October 2016]. Ch. 2. For more information on climate change impacts on the Philippines, see report in full.

21 *Id.*

22 World Bank, 2014. Philippine Economic Update: Pursuing Inclusive Growth through Sustainable Reconstruction and Job Creation. [pdf] Available at: http://www.worldbank.org/content/dam/Worldbank/document/EAP/Philippines/Philippine%20Economic%20Update%20March%202014.pdf [Accessed 7 October 2016]. Report No. 83315-PH.

23 Paris Agreement, art. 4.

24 *See, for example*, Inman, M., 2008. Carbon is Forever. *Nature Reports:* Climate Change.

25 COP21/CMP11, 'Record: 177 Parties Signed the Paris Agreement' http://www.cop21.gouv.fr/en/a-record-over-160-countries-expected-to-sign-the-paris-agreement-in-new-york-on-22-april-2016/

26 The UNFCCC was adopted in 1992. Its parties include all 193 UN Member States, plus the European Union, Niue, Cook Islands, and the State of Palestine (UNFCCC, 'Status of Ratification of the Convention' (2014) http://unfccc.int/essential_background/convention/status_of_ratification/items/2631.php).

27 UNFCCC (adopted 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107, art. 2.

28 Paris Agreement, art. 2.

29 UNFCCC, Art. 4(4).

30 UNFCCC Decision 1/CP.20. See also UNFCCC, 2014. Intended Nationally Determined Contributions (INDCs). [online] Available at: http://unfccc.int/focus/indc_portal/items/8766.php [Accessed 18 September 2016].

31 Philippine Constitution, art. VII, §21.

32 Magallona, M., 1997. A Primer in International Law in Relation to Philippine Law 49

[33] Paris Agreement, art. 21.1.

[34] UNFCCC, 2016. Landmark Climate Change Agreement to enter into Force. UNFCCC, [online] Available at: http://newsroom.unfccc.int/unfccc-newsroom/landmark-climate-change-agreement-to-enter-into-force/ [Accessed 7 October 2016]; United Nations Treaty Collection, 2016. Chapter XXVII: Environment, 7.d: Paris Agreement. UNTS, [online] Available at: https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&clang=_en [Accessed 7 October 2016]; World Resources Institute, 2016. Paris Agreement Tracker. WRI, [online] Available at: https://cait.wri.org/source/ratification/#?lang=en&ratified=AL,AG,AR,AT,BD,BB,BY,BZ,BO,BR,BN,CM,CA,CN,CK,DM,EU,FM,FJ,FR,DE,GH,GD,GN,GY,HN,HU,IS,IN,KI,LA,MG,MV,ML,MT,MH,MU,MX,MN,MA,NA,NR,NP,NZ,NE,KP,NO,PW,PS,PA,PG,PE,PT,RW,KN,LC,VC,WS,SN,SC,SG,SK,SB,SO,LK,SZ,TH,BS,TO,TV,UG,UA,AE,US,VU [Accessed 7 October 2016].

[35] UNFCCC, 2016. Landmark Climate Change Agreement to enter into Force. UNFCCC, [online] Available at: http://newsroom.unfccc.int/unfccc-newsroom/landmark-climate-change-agreement-to-enter-into-force/ [Accessed 7 October 2016].

[36] *Id.*

[37] La Vina, A., 2016. President Duterte and the Paris Agreement. The Standard, [online] 23 July. Available at: http://thestandard.com.ph/opinion/columns/eagle-eyes-by-tony-la-vina/211379/president-duterte-and-the-paris-agreement.html [accessed 28 July 2016].

[38] This, because even if the UNFCCC will remain in force, parties to the Paris Agreement may choose to prioritize the provision of support to other parties (rather than non-parties) to the Paris Agreement. This is important because the support available may be limited.

[39] UNFCCC Decision 1/CP.21, ¶53.

[40] *See, for example,* Robert Fowler, 2016. Paris Agreement. In: ADB (Asian Development Bank), Implementation of NDCs and Legal and Regulatory Assessments, Manila, Philippines. 19 August 2016. Manila: ADB.

[41] UNFCCC, Art. 8. *Cf.* Some experts opine that if a State does not ratify the Paris Agreement, it may still access support mechanisms under the UNFCCC, which will remain in force despite the eventual entry into force of the Paris Agreement. Even so, parties to the Paris Agreement may choose to provide support only to other parties to the Paris Agreement.

[42] Paris Agreement, art. 6.2.

[43] For the 2000 inventory, the Philippines used the definition of forests under its domestic law, while for the 2010 inventory, it adopted the United Nations (UN) Food and Agriculture Organization (FAO) definition. Thus, the Philippines' total forest cover changed because, among others, of the change in definition. (see FAO, Global Forest Resources Assessment 2010, Philippines Country Report)
While a decline in forest cover was also reported, it noted that although there was an apparent decrease in GHG emissions from 2000 when compared to the data from 1994, this large difference could be attributed to the "change in definition of forests and availability of data (29)." To accurately reflect the performance of the LUCF sector as a carbon sink, the SNC recommended a recalculation of the data in the INC, with due consideration for assumptions on "(1) millions of hectares of upland farms, tree plantations and grasslands (2) calculating forest and grassland conversion; and (3) biomass density for grassland (33)." However, it did not discount that part of the difference could be attributed to an improvement in forestry policy, including the imposition of a total log ban (33).
For the Third National Communication, it is expected that the Philippines will continue using the FAO definition of forests, classifying these according to closed, open and mangrove forests consistent with the latest forest survey data from 2010. It is likely that these definitions will also be adopted in the National Forest Monitoring System that is currently being developed by the DENR-FMB, which is envisioned to be useful beyond MRV for REDD-Plus activities. With these developments, it is likely that the INDCs will be able to use baselines that can be comparable to the 2000 GHG inventory, and as such, will be able to calculate and monitor the changes in the sequestration potential of the forestry sector.

[44] United States Agency for International Development (USAID), 2016. Building Low Emission Alternatives to Develop Economic Resilience and Sustainability Project (B-LEADERS): Philippines Mitigation Cost-Benefit Analysis Integrated Report 2016. [pdf] Available at: CCC Archives. [Hereinafter: CBA Report].

[45] The baseline scenario refers to the business-as-usual pathway, where no policy or regulatory changes are implemented.

[46] USAID, 2016. CBA Report, p.361.

[47] *Id., at* p.362.

[48] *Id., at* p.363.

[49] *Id., at* p.361.

[50] *Id., at* p.363.

[51] *Id.*

[52] In its Second National Communication to the UNFCCC, the Philippines reported the following sectoral contributions for the year 2000 (in Gg CO2): Agriculture: 37,002.69; Energy (including transport): 69,667.24; Industry: 8,609.78; Waste: 11,599.07; and Forestry: -105,111.37. This resulted in net emissions of 21,767 Gg CO2. Together, the energy and transport sector contributed 55% of the national emissions. (note that 1 Gg = 1,000 t).

[53] Land use, land use change, and forestry; also, forestry and other land use.

[54] Under the 2006 IPCC Guidelines on the GHG Inventory, transport emissions are included in the energy emissions.

[55] *See* USAID B-LEADERS CBA Report 2016, p. 10, which explains, "the baseline excludes some of the existing policies that contribute to GHG mitigation, even though these policies have already been passed into law and are being implemented in the Philippines [e.g., the National Renewable Energy Program (NREP) for the energy sector and the National Greening Program (NGP) under Executive Order 26 of 2011 and the moratorium on the cutting and harvesting of timber in the natural and residual forests and creation of the Anti-Illegal Logging Task Force under Executive Order 23 of 2011 for the forestry sector]. Instead, these policies and measures are analyzed as the sector-specific mitigation options."

[56] *C.f.* USAID B-LEADERS CBA Report 2016, p. 10, which states that emissions are expected to triple. However, the report does not state the BAU figures as of 2030 and 2050. The visual illustration in the graph seems to show a quadrupling of the emissions from 155 MtCO2e in 2010 to about 660 MtCO2e in 2050, and a tripling if the period is reckoned from 2015, which shows emissions at close to 200 MtCO2e.

[57] USAID, 2016. CBA Report, p.363.

[58] USAID, 2016. CBA Report, p. 11. As discussed below, the initial projections were based on a start year of 2010.

[59] The CBA Report does not expressly state the forecasted emission levels in 2030 under the BAU scenario. The research team is still awaiting official figures from CCC on the data as of 2010, as of 2015, and the target level for the 70% emission reduction goal. Although Figure 2 indicates a target emissions level of 96 MtCO2e if the 70% goal is achieved v. 2010-2050 baseline (~224 MtCO2e of 2030 BAU emissions are avoided), the change in baseline from 2010-2050 to 2000-2030 affects the target levels and target reductions.

[60] The INDC mechanism represents a shift away from the previous top-down approach under the Kyoto Protocol, where emission reduction targets were imposed on developed countries, towards a bottom-up approach, where each (developed and developing) party evaluates its own national circumstances and determines the nature and extent of mitigation and adaptation actions it is willing and able to commit. In other words, through this self-differentiation approach, each country voluntarily offers its own program of action (the INDC) based on its strategic and long-term interests (Rajamani, L., 2016. The United Nations Framework Convention on Climate Change: a framework approach to climate change. In: Farber, D. and Peeters, M., 2016. Elgar Encyclopedia of Environmental Law: Climate Change Law. UK: Cheltenham. Ch. I.17).

[61] Philippine INDC Submission to the UNFCCC, 1 October 2015.

[62] Friedrich, J., Ge, M., and Damassa, T., 2015. Infographic: What do your country's emissions look like? World Resources Institute. [online] Available at: http://www.wri.org/blog/2015/06/infographic-what-do-your-countrys-emissions-look [Accessed 18 September 2016].

[63] According to the Global Carbon Atlas, the Philippines ranked #41 in terms of total emissions, and #153 in terms of per capita emissions, in 2014. See: http://www.globalcarbonatlas.org/?q=en/emissions [Accessed 18 September 2016].

[64] Philippine INDC Submission to the UNFCCC, 1 October 2015.
[65] *Id.* Although agriculture contributes a substantial (30.8% in 2010) portion of the national emissions, this sector was excluded from the INDC because of issues concerning food security. Also, the country pursues mitigation actions as a function of adaptation.
[66] Although options in the long-list were initially shelved, because of last-minute changes to the INDC discussed below, the options in the long-list were put back on the table as mitigation actions to be implemented.
[67] *See, for example,* UNFCCC, Art. 4(7); Art. 4(8). *See also* Honkonen, T., 2016. CBDR and Climate Change. In: Farber, D. and Peeters, M., 2016. *Elgar Encyclopedia of Environmental Law: Climate Change Law.* UK: Cheltenham. Ch. I.12.
[68] Philippine INDC Submission to the UNFCCC, 1 October 2015.
[69] Interviews with government officials from different agencies and civil society organizations involved or consulted during the INDC process. See also Monsod, C., 2016. Interview on Rappler Talk: The Philippines Signed the Paris Deal. What's Next? Interviewed by Voltaire Tupaz. [online video] Rappler, 13 July. Available at: http://www.rappler.com/brandrap/climateactionph/139019-christian-monsod-climate-change [Accessed 9 August 2012], where Mr. Monsod said that during a meeting in September, the proposal was 30% unconditional, which was later changed to 70% conditional, but he is not sure where the 70% figure came from or whether it is supported by sufficient basis.
[70] Presentation given by former CCC Commissioner Lucille Sering on the INDC.
[71] CCC, 2016. Interview.
[72] Paris Agreement, art. 4.13.
[73] UNFCCC Decision 1/CP.21, ¶22.
[74] Institutionalizing the Philippine Greenhouse Gas Inventory Management and Reporting System (PGHGIMRS), Executive Order 174, s. 2014.
[75] UNFCCC Decision 1/CP.21 ¶105(e).
[76] La Viña, A., Guiao, T., Puno, R., and Tan, J., 2016. The Paris Agreement and Ways Forward for the Philippines.
[77] It is recognized that, at present, the ratio between mitigation and adaptation actions is 11%:89% and that measures like road rehabilitation and flood control enhancement have been counted as climate actions. Although these activities may be considered climate actions, the government should also actively identify new and additional measures that could increase the mitigation measures while recognizing that there are co-benefits between mitigation and adaptation.
[78] Section 3 of E.O. 174 identifies the following as lead agencies for the GHG inventories:
a.) Department of Agriculture and the Philippine Statistics Authority (PSA) – lead agencies for the agriculture sector;
b. Department of Energy – lead agency for the energy sector;
c) Department of Environment and Natural Resources – lead agency for the waste, industrial processes and the land-use and forestry sectors; and
d) Department of Transportation and Communications – lead agency for the transport sector.
[79] Executive Order No. 174, Office of the President of the Philippines. (2014). [Executive Order]. Manila : Malacañang Records Office.
[80] Section 15. Role of Government Agencies. – To ensure the effective implementation of the framework strategy and program on climate change, concerned agencies shall perform the following functions:

(a) The Department of Education (DepED) shall integrate climate change into the primary and secondary education curricula and/or subjects, such as, but not limited to, science, biology, sibika, history, including textbooks, primers and other educational materials, basic climate change principles and concepts;

(b) The Department of the Interior and Local Government (DILG) and Local Government Academy shall facilitate the development and provision of a training program for LGUs in climate change. The training program shall include socioeconomic, geophysical, policy, and other content necessary to address the prevailing and forecasted conditions and risks of particular LGUs. It shall likewise focus on women and children, especially in the rural areas, since they are the most vulnerable;

(c) The Department of Environment and Natural Resources (DENR) shall oversee the establishment and maintenance of a climate change information management system and network, including on climate change risks, activities and investments, in collaboration with other concerned national government agencies, institutions and LGUs;

(d) The Department of Foreign Affairs (DFA) shall review international agreements related to climate change and make the necessary recommendation for ratification and compliance by the government on matters pertaining thereto;

(e) The Philippine Information Agency (PIA) shall disseminate information on climate change, local vulnerabilities and risk, relevant laws and protocols and adaptation and mitigation measures; and

(f) Government financial institutions, shall, any provision in their respective charters to the contrary notwithstanding, provide preferential financial packages for climate change- related projects. In consultation with the Bangko Sentral ng Pilipinas (BSP), they shall, within thirty (30) days from the effectivity of this Act, issue and promulgate the implementing guidelines therefor.

The Commission shall evaluate, recommend the approval of loans and monitor the use of said funds of LGUs.
[81] *See* Ateneo School of Government – USAID BLEADERS Report on the laws and regulations that need to be amended to align with the Paris Agreement.
[82] Corfee-Morlot, J., Kamal-Chaoui, L., Donovan, M., Cochran, I., Robert, A., and Teasdale, P., 2009. Cities, Climate Change and Multilevel Governance. OECD Environmental Working Papers N° 14. OECD. [pdf] Available at: http://www.oecd.org/env/cc/44242293.pdf [Accessed 20 September 2016].
[83] *Id.*
[84] *Id.*
[85] Annex 3 provides more information on possible financing options.
[86] Interviews showed that the government has been reporting activities undertaken by the private sector voluntarily. This brings to fore questions of whether government can legitimately report these activities, considering the companies can stop implementing them any time and for any cause, and whether these are truly reportable as country actions.
[87] Republic of the Philippines, 2015. Intended Nationally Determined Contribution. Submitted to the UNFCCC on 1 October 2015.
[88] WBCSD and WRI, 2004. The GHG Protocol: A Corporate Accounting and Reporting Standard, revised ed.
[89] UNFCCC, art. 4.14, should the Philippines decide to ratify the Paris Agreement.
[90] George, C., n.d. Measurement, Reporting and Verification (MRV) Technical Paper. Low Emission Capacity Building Programme. [pdf] Available at: http://www.lowemissiondevelopment.org/lecbp/docs/resources/LECB_MRV_Technical_Paper_r6.pdf [Accessed 20 September 2016].
[91] *Id.*
[92] *Id.*

[93] The CBDR principle was defined in the 1992 Rio Declaration, viz.:

> Principle 7. xxx The developed countries acknowledge the responsibility that they bear in international pursuit to sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command.

(United Nations Declaration on Environment and Development, Rio de Janeiro, 14 June 1992, A/CONF.151/5/Rev.1 (1992)).

[94] Limaye and Zhu, 2012. p. xvi.
[95] *Id.* at p. 11.
[96] UNIDO, n.d., p. 19.39.
[97] Limaye and Zhu, 2012. p. xvi.
[98] *Id.*
[99] UNIDO, n.d., p. 19.40.
[100] Limaye and Zhu, 2012. p. xvi.
[101] *Id.*
[102] *Id.*
[103] *Id.*
[104] *Id.* at p. 56.
[105] *Id.* at p. 56-57.
[106] *Id.* at p. 57.
[107] UNIDO, n.d., p. 19.40.
[108] *Id.*
[109] *Id.* at p. 19.41.
[110] *Id.*
[111] http://planningtank.com/environment/international-solar-alliance
[112] The description is from the work of Limaye and Zhu, 2012. p. 36. Full text citation and link is in Annex 2.
[113] The description is from the work of Limaye and Zhu, 2012. p. 37. Full text citation and link is in Annex 2.
[114] The description is from the work of Limaye and Zhu, 2012. p. 38. Full text citation and link is in Annex 2.
[115] CCC, 2016. Revisiting the INDC and Preparing for the NDC. In: Roundtable Discussion on the Nationally Determined Contribution (NDC) on Energy. Quezon City, Philippines, 20 July. Quezon City: Aksyon Klima.

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