Guidance Paper

DESIGN, MONITORING, EVALUATION, AND LEARNING FOR CLIMATE RESILIENCE: A GUIDANCE PAPER FOR THE PHILIPPINES

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PHILIPPINE RISK RESILIENCY AND SUSTAINABILITY PROGRAM (RRSP) MONITORING AND EVALUATION

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List of commonly used acronyms

CCA	Climate Change Adaptation
CCC	Climate Change Commission
DRR	Disaster Risk Reduction
DRRM	Disaster Risk Reduction and Management
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GOP	Government of the Philippines
KM	Knowledge Management
KRAs	Key Results Areas
LGUs	Local Government Units
M&E	Monitoring and Evaluation
NCCAP	National Climate Change Action Plan
NEDA	National Economic and Development Authority
NGAs	National Government Agencies
NGOs	Non-Governmental Organizations
PDP	Philippines Development Plan
PPCR	Pilot Program for Climate Resilience
RBMES	Results-Based Monitoring and Evaluation System
RRSP	Risk Resilience Sustainability Program
STRESS	Strategic Resilience Assessment
TAMD	Tracking Adaptation and Monitoring Development
ToC	Theory of Change

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1 Introduction

Climate change and its negative effects are already being felt strongly around the world, and are projected to increase. The brunt of its effects will be borne by some countries more than others. The Philippines is one such country. The Philippines lies in an exceptionally very hazard-prone region, and is the fourth most disaster-prone country in the world. It is among the top 10 countries in terms of 'highest absolute number of affected people' (UNISDR, 2015); its 100 million inhabitants are vulnerable to volcanic eruptions, earthquakes, typhoons, landslides, droughts, and floods, at a significant financial and human cost. Disasters over the 10 years spanning 2006 - 2016 have accounted for almost 1,600 deaths and $1.7 billion in damages per year (International Disaster Database - EM-DAT, 2016). The last three years alone have cost $13.7 billion (Ibid). Climate change and its attendant effects such as sea level rise and delays in monsoons will only exacerbate these existing vulnerabilities.

This increase in disaster risk due to climate change threatens future development. Climate change projections for the Philippines suggest an increase in mean temperature by 0.9 °C to 1.1 °C by 2020, and 1.8 °C to 2.2 °C by 2050 (relative to the baseline (1971-2000) climate), and an increase in both rainfall variability (e.g. wet season wetter; dry season drier) and intensity (e.g. stronger monsoons) (DOST-PAGASA, 2016). These changes are projected to be accompanied by an increase in the severity of extreme climate events and the frequency of the most intense storms. This will increase strain on ecosystems and compromise ecosystem services like water and food supply, waste management, and public health. Temperature and rainfall changes will be accompanied by increasing sea levels, and in many places sea level rise will be further exacerbated by local land subsidence. For coastal areas, impacts will be severe and are likely to have cross-sectoral effects, impacting agriculture, fisheries, health, water resources, and tourism. These will be layered on top of current impacts due to unsustainable development practices and rapid urbanization, which are contributing to environmental deterioration and already exacerbating climate and disaster risks and vulnerability in the Philippines.

1.1 Objective

In recognition of the potential instability climate change may cause, the Philippines has adopted a series of climate change policies and initiatives with the goal of improving disaster risk management, climate change adaptation (CCA) and mitigation, and, now, climate resilience. In this regard, the Philippines is developing a national Risk Resiliency and Sustainability Program (RRSP) with the support of the World Bank and the Pilot Program for Climate Resilience (PPCR). The RRSP will serve as the flagship framework program for national investment with the goal of building climate resilience. The RRSP sits within a broader process led by the administration to address gaps on how the Philippines manages the exigencies posed by climate change. This process envisions an operational framework to improve response to climate risks through better adapted and more resilient ecosystems, infrastructure, and livelihoods in vulnerable areas across key landscapes. The focus of this paper is on providing guidance for the development and operationalization of a monitoring and evaluation (M&E) framework for the RRSP.

The RRSP presently consists of five building blocks: 1) Developing the business case and knowledge; 2) Designing the scope, content, and approach; 3) Execution processes and modalities; 4) Monitoring,

evaluation, and reporting; and 5) Consultative process. RRSP-funded programs will be categorized within the following four strategic components: 1) Reducing exposure to hazards through ecosystem stability and resilience; 2) Reducing assets vulnerability through protective and resilient infrastructure; 3) Increasing coping capacity through sustainable and resilient livelihoods; and 4) Increasing knowledge, information, and institutional capacities to respond to risks.

Broadly, the objective of the RRSP is to increase investments and their results by: 1) Improving understanding of adaptation and resilience investment needs through identification of climate risks; 2) Increased mobilization of adaptation and resilience investments through risk-informed identification of options, planning, and financing; and 3) Strengthened response to climate risks through efficient and results-oriented execution of adaptation and resilience investments. The RRSP intends to improve processes between National Government Agencies (NGAs), Local Government Units (LGUs), and communities through consensus building and coordination among agencies, cross-sectoral convergence, and complementarity of investments, while providing effective mechanisms for planning, budgeting, execution, M&E, and learning. The M&E mechanisms of the RRSP form the basis of this report.

What is climate resilience?

Climate resilience builds on previous approaches such as disaster risk reduction and the sustainable livelihoods framework. It is differentiated from these approaches by its emphasis on uncertainty and by its focus on assessing the level of future risks in the context of climate-related uncertainties.

Overall, climate resilience can be conceptually understood as a *process.* However in the M&E context, it can be seen as a *set of principles* and a development outcome. There is no template for building "climate resilience". Therefore, it is important to define *who* or *what* needs to be made resilient and against what kind of future change or stressor. As a result, indicators of climate resilience will be specific to the situation, rather than generic.

Source: Villanueva, P. S., Gould, C., Gregorowski, R., Bahadur, A., & Howes, L. (2015). *M&E Guidance Notes: BRACED Programme*. BRACED. Retrieved from https://goo.gl/vWierl

1.2 Study Methodology

The information presented in this document was collected through: (1) desk reviews of international and Philippines climate policies and national M&E frameworks for climate change adaptation, mitigation, and resilience, and (2) semi-structured interviews with staff from key government agencies and offices responsible for developing, overseeing, and implementing climate change policies, programs, activities, and projects. While we had a set of guidance questions (see below), interviews were tailored to different stakeholders and flexible to allow interviewees to guide the discussion based on what they thought was important. The approach to M&E in this report is based on documented international best practices and methodologies for climate adaptation and resilience; it also draws heavily from Kusek and Rist's (2004) general manual on effective M&E systems and frameworks for government agencies.

Interview Guidance Questions

1. Introductions (people and program)
2. What are your CCA and resilience priorities (i.e. what is your mandate)?
3. What types of programs are you running to fulfill these priorities? What are your landscape-level/integrated approaches?
4. How are you monitoring and evaluating these programs?
5. What are the strengths of these M&E systems in measuring national, sub-national and sectoral resilience and CCA priorities? Is there an example?
6. What are the challenges/weaknesses of these M&E systems in measuring national, sub-national and sectoral resilience and CCA priorities? Is there an example?
7. What are national priorities or goals for resilience?
8. How are the results of program/agency-level M&E being fed into national priorities or goals for resilience?
9. What is the "missing link" vis a vis resilience that is not being addressed by existing policy instruments, and/or captured by existing M&E frameworks?
10. How can M&E for resilience complement other M&E systems?
11. There can be a lot of duplication in M&E frameworks/systems. How can we avoid this?
12. Do you have any questions for us? Is there anything you'd like us to know that we've missed?

1.3 Background

The RRSP may be a new vehicle, but the Philippines has an established track record on climate change policies and programs. Indeed, the country was an early adopter of such endeavors, adopting the Philippine Agenda 21 in 1992 following the United Nations Conference of Environment and Development. The Philippine Clean Air Act, which set standards for greenhouse gas emissions, was enacted in 1997, and Executive Order No. 320 designating the Department of Environment and Natural Resources as the National Authority for Clean Development Mechanisms was promulgated in 2004. Shortly thereafter, President Arroyo formed the Philippine Task Force on Climate Change to focus on both mitigation and adaptation.

The Climate Change Act of 2009 set the stage for national climate change policy in the Philippines, and led to the creation of the Climate Change Commission (CCC). The CCC is mandated to coordinate, monitor, and evaluate government programs focused on climate change. Its goal is to mainstream climate change into policy and development through a cross-cutting, cross sector, integrated approach. Mainstreaming CCA across scales has been a key difficulty, largely because, while the CCC is a national governmental entity it is not a line ministry and so does not have sub-national offices. As a result, there is a limited flow of climate information from the national and international levels to the local levels, and equally limited flow of adaptation learning from the local level to the regional and national levels.

The development of the National Climate Change Action Plan (NCCAP) (2011-2028) is an attempt to alleviate some of these issues and introduce a national strategy and associated M&E framework for CCA. In particular, the NCCAP serves as a platform for (1) designing a nationally-driven program focused on integrated CCA and mitigation and developing local programs and (2) developing priority programs to address immediate needs with regards to the adverse effects of climate change. Similarly, the Philippines Development Plans (PDP) 2017-2022, an overarching document setting out

key public policy aims and sectoral targets for the Philippines over successive five year periods, has identified climate resilience, disaster risk reduction (DRR), and CCA as major cross-cutting issues, stressing the importance of mainstreaming these concepts into development planning.

In addition to the progressive policy push on climate change has been the parallel agenda of climate financing reform, specifically the program convergence budgeting (PCB) adopted by the Department of Budget and Management (DBM). This has provided an opportunity to consolidate programs and budgets and scale up climate change actions by National Government Agencies (NGAs). In this vein, the Cabinet Cluster on CC Adaptation and Mitigation (CCAM) formulated the Risk Resiliency Program (RRP) as the framework program to assist the Government of the Philippines (GOP) to deliver the outcomes for Key Results Areas (KRAs)[1], specifically KRA-5 ('Integrity of the environment and CCA and mitigation'). It is particularly tasked with strengthening the resilience of natural ecosystems and the adaptive capacity of vulnerable groups and communities to short and long-term risks using a landscape management approach in the 18 major river basins of the country.

The RRSP represents the next iteration to the RRP and is key for building conceptual clarity and learning around resilience, creating a national strategy for resilience, and focusing resilience investments. The program is also a part of broader efforts of the GOP to leverage climate change as one of the key drivers in its planning, prioritization, and budgeting processes.

In both the NCCAP and the PDP, resilience is broadly and eclectically mentioned. The PDP, for example, explicitly includes resilience in two chapters - 1) Chapter 12: Building Resiliency of Individuals and Families; and 2) Chapter 20: Ensure Ecological Integrity, Clean and Healthy Environment. In other chapters, resilience is applied more broadly, describing a wide variety of contexts including climate and disasters, labour, economics, exports, infrastructure, ecosystems, social protection, urbanization, and banking. For example, the PDP references the resilience of unskilled workers at risk of exploitation. Table 1 (Annex I) shows the level of integration of resilience within the PDP vis-a-vis the number of times and places the term is mentioned. Similarly, the terms "adaptation" and "resilience" in the NCCAP are frequently used interchangeably and/or as subsets of one another. This is problematic, as we discuss below.

The wide range and history of climate change initiatives across the Philippines should be acknowledged and praised. With that work completed the next important step is to consider *to what extent these programs are effective and strategic from a climate change perspective.* This calls for an M&E framework that not only measures the ability of the RRSP to extend funding for strategic resilience priorities, but also its ability to build both rigor and an evidence base for effective policy and praxis.

1.4 Report Structure

In the following sections, we flesh out the concept of resilience and discuss its relation to CCA, discuss the challenges involved in measuring resilience, and describe existing measurement frameworks that address these challenges. We introduce our approach for developing an M&E framework for resilience in the Philippines and analyze key national measurement frameworks to draw out lessons learned and options for measuring resilience. We then discuss our recommendations for developing and operationalizing the M&E framework. Finally, in our conclusions we discuss where

[1] CCA and mitigation was one of five KRAs in President Aquino's Social Contract with the Filipino people, and the Philippines Development Plan 2011-2016 identifies climate risks as one of the major challenges to the country's inclusive growth goals. For more information, see: http://gwhs-stg02.i.gov.ph/~s2isawadgovph/wp-content/uploads/2015/06/ISAWAD-RESULTS-MATRIX-2013-2016.pdf

RRSP investments should focus to ensure that investments contribute to the emerging evidence base for resilience nationally and internationally.

2 Resilience: from cacophony to coherence

2.1 Importance of a resilience-based approach

Given that the RRSP uses 'resilience' as its key conceptual pillar, it is important to comment and reflect on what is meant by adopting a resilience-based approach to development and financing. An oft-mentioned lament is that the terms 'resilience' and 'adaptation' are used uncritically and interchangeably. This is unfortunate, because while they are indeed similar, there are also important conceptual and practical differences. The most important nuance is that resilience explicitly takes a *systems approach* which places climate change itself as the central priority. By contrast, adaptation is applied more broadly. The advantage of a systems approach is that it can help policymakers and practitioners situate resilience-focused strategies within the broader and more complex context of political, social, and ecological networks.

In the Philippines, the Republic Act 10121 (or the Philippine Disaster Risk Reduction and Management (DRRM) Act of 2010) defines resilience as *"the ability of a system, community or society exposed to hazards to resist, absorb, accommodate and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions"*. The elements of resisting and absorbing, accommodating, and recovering parallel the three areas of the conceptualization of resilience outlined in Béné (2013). These attributes are absorptive coping capacity, adaptive capacity, and transformative capacity. In sum, resilience results from trade-offs between these three attributes and three different dynamics — the intensity of shock, cost of impacts, and costs of response.

Resilience is a useful approach for understanding the overall system-wide impacts and outcomes of adaptation activities, and identifying entry points for creating system-wide shifts to better cope with change and uncertainty. These 'entry points' include potential points of failure that could lead to cascading negative effects within and between interdependent systems. For example, a catastrophic harvest failure could lead to an influx of rural poor into urban slums, straining the city's systemic capacities such as water services, waste management, and schooling. Resilience can also perform as an integrative policy narrative, breaking down silos between different agencies or organizations while also acting as an analytical tool for understanding vulnerability (Béné, 2013).

In contrast, CCA is the process of adjusting to existing or expected climate change and its effects by moderating or avoiding harm or exploiting beneficial opportunities[2]. One key distinction between adaptation and resilience is that adaptation is fundamentally actor-centered. It is focused on ensuring that social actors, or those actors within a system, can respond to and absorb changes, while reducing vulnerabilities (Nelson, Adger, & Brown, 2007). Resilience, in contrast, emphasizes whether systems themselves — socioeconomic, political, and ecological — can either absorb changes or leverage that change to configure to a better or more stable state. Further, while adaptation is geared towards acting in the context of specific, predicted impacts, resilience is geared towards acting in the context of uncertainty[3]. It can be argued that adaptation is an outcome; resilience is an ongoing process (Béné, Newsham, Davies, Ulrichs, & Godfrey-Wood, 2014). The resilience process is focused on

[2] In some cases, the two terms are used interchangeably and imprecisely which adds to conceptual confusion.

[3] This is not to say that adaptation does not involve uncertainty at all, especially in the climate change context where there is indeed uncertainty e.g. severity of weather-related events. Rather, it highlights that the two concepts have slightly different epistemological foundations and, most importantly, are *not* oppositional concepts (see Nelson, Adger, & Brown, 2007).

understanding, or ‘learning’, as a means to pursue evidence-based actions and adaptive management. Adaptive management, in particular, is crucial to work in the context of change and uncertainty (Folke, Hahn, Olsson, & Norberg, 2005).

While rooted in theory, the different terms also reflect practical dilemmas and experience. One shortcoming in how adaptation is implemented stems from the overall adaptation approach applied by National Adaptation Programmes of Action and adopted globally by non-governmental organizations (NGOs) and governments alike. The adaptation approach begins with vulnerability assessments, followed by identification of potential adaptation projects, and finally inclusion into climate finance proposals. While this approach is simple and straightforward, the project driven approach has led to an eclectic collection of adaptation initiatives that individually are beneficial but collectively do not aggregate to a strategically sensible portfolio.

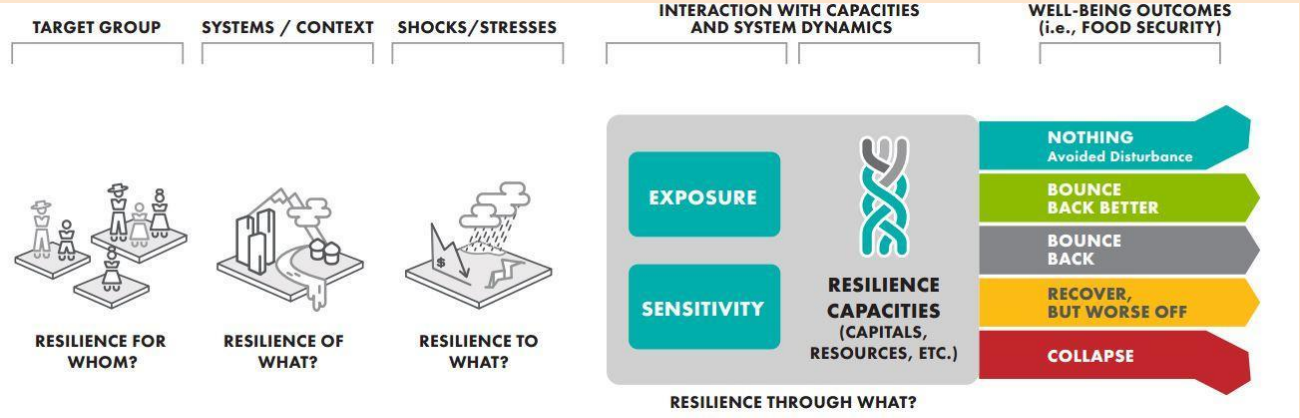
Additionally, while there are many co-benefits between adaptation and sustainable development aims, in reality project selection is frequently driven by non-climate priorities. When priorities shift in this way, climate finance runs the risk of being perceived as a source of general funds rather than one with which to achieve compelling adaptation aims. When emerging theoretical literature on resilience emerged emphasizing a coherent overarching strategy to address the actual or predicted effects of climate change, it was rapidly embraced by practitioners striving to build more coherent portfolios and targeted projects. However, too often the term has been updated without the substance. When the differences are overlooked, adaptation work is simply being relabeled as resilience without any shift in strategy or approach - and thus mistakes are repeated and lessons left unlearned. Properly embracing the resilience approach would solve the problem of selecting adaptation projects that are only mildly or conveniently relevant to climate change.

While climate change will affect all areas of the Philippines, some of the most significant risks will impact the most ecologically sensitive areas, for example coastal areas, mangrove estuaries, and low-lying regions. It will also more directly impact those whose livelihoods depend on natural resources and who are already vulnerable and at risk, such as the poor or marginalized. These two groups often overlap. Meanwhile, urban areas too are at risk because of their dependency on infrastructure such as levees, roads, bridges, and public transportation. To build resilience, the focus must be on three components — the ecological/built environment, people and organizations, and legal and cultural norms — and the exposure of these components to shocks and stresses. The ecological/built environment refers to the combination of natural and human built systems and the services they provide. People and organizations refers to individuals and groups and their capacity to respond to and shape the world around them. Legal and cultural norms refers to the written and unwritten “rules of the game” that guide behavior and dictate how people interact with and obtain services from the ecological and built environment around them. These three components are not isolated silos; they are dynamic and constantly interacting with one another.

The advantages of a resilience-based approach are understood and the concept has continued to gain currency, leading to a proliferation of resilience programs. As a result, practical questions around how to understand and measure resilience have garnered significant attention from researchers, policy makers and practitioners. A recent resilience scan found that out of 16 grey literature publications, nearly half were focused on measuring resilience (Bahadur, Tanner, Lovell, Pichon, & Morsi, 2016). Within this discourse, a number of methodology-related challenges have been brought to the fore.

Box 1. Good practice example of applied resilience framework.

The Mercy Corps Strategic Resilience Assessment (STRESS) is one methodology for capturing knowledge, identifying knowledge gaps, conducting targeted research, and developing a measurable long-term strategy for resilience. This strategy is called a theory of change (ToC) and refers to a pathway that clearly lays out how planned and existing programs build resilience in support of both humanitarian and development goals. The process is based on the following questions: *Resilience of what? Resilience to what? Resilience for whom? Resilience through what?*



Mercycorps Resilience Framework

Source: Urban Resilience Measurement Training Guide, MercyCorps (http://www.mercycorps.org/resilience)

The STRESS process is divided into four phases:

1. **Scope:** The scoping phase brings together diverse stakeholders, builds understanding of the context in question, and establishes the methods by which research will be conducted and the associated logistics. Key to this phase is conducting systems mapping to establish the relationships between people and the complex systems on which they rely.
2. **Inform:** This phase consists of three types of information collection methods – literature review and expert interviews for a baseline understanding of key issues, secondary data collection to collect quantitative data for analysis, and primary data collection (i.e. focus group discussions) to build understanding of differential perceptions of vulnerability. Key to this phase is collecting information across scales (local, regional, and national).
3. **Analyze:** This phase brings together the information collected in the Inform phase to generate knowledge. This involves *deepening* understanding of underlying drivers of vulnerability, shocks and stresses and how these drivers may change or vary across space and time; *evaluating* critical resilience capacities to understand how they can be accessed and used to help people cope with shocks and stresses; and *determining* how to create an enabling environment to build long-term resilience. Key to this phase is bringing stakeholders together for an analysis workshop.

The STRESS methodology is ultimately a process framework with a strong focus on assessing resilience in terms of systems and scales. However, it does not provide a conceptual framework by which resilience is analyzed. Resilience thinking is assumed in this process, and so it is assumed that those who conduct the process will understand whether or not an activity qualifies as resilience or not based on long-term experience. In this respect, the STRESS process cannot be completed by just anyone; those who are new to resilience will likely need considerable training and guidance.

2.2 Methodological challenges of M&E for resilience

Adaptation, and even more so resilience, are *new* terms, and operationalizing them has been a consistent challenge. While there are several approaches for imposing more rigor in adaptation strategy, planning, and project selection, embracing "resilience" has gained considerable international momentum for reasons which are fundamentally practical rather than theoretical. As discussed earlier, resilience is inherently a *systems* approach which insists upon a coherent project strategy with climate change as the focus. Doing so helps 'weed out' development projects which are relevant to climate change but chiefly serve other priorities, which has been a persistent challenge for the climate funds. The resilience approach shares with adaptation a similar set of thorny methodological challenges for M&E (Bours et al., 2014a). While these dilemmas are not unique to either adaptation or resilience, cumulatively they present very real and practical difficulties which should not be underestimated. We now discuss a few here, and their implications for crafting a framework for the RRSP[4].

Scale: The concept and understanding of resilience '*of what, to what*' is directly connected with the scale at which it is being considered. This can pose hurdles for 'measuring resilience' because resilience could be improved at one scale (e.g. community) but be eroded at another (e.g. individual). For example, a flood wall built for a community to reduce flood risk would improve that community's resilience but for those living *outside* of the flood wall but still part of that community, they would be at a higher risk during a future flood event and thus, their resilience would be decreased.

Defining success: Resilience must play a proper role in the project framework itself. If resilience is made a goal, it would form a 'moving target' wtih long time horizons, which poses problems for measuring success in the short term. Moreover, different stakeholders may have divergent viewpoints and priorities (Krause, Schwab, and Birkmann 2015), which need to be respected and navigated. And at the project level, some may struggle to articulate resilience aims or achievements beyond general development ones.

Indicator selection: There are no universal indicators or common measures, metrics, or benchmarks for resilience. Instead, we have a diversity of scales, sectors, and levels of intervention which defy cookie-cutter, standardized measurements. Because resilience focuses particularly on systems, measurement is even more complex because systems have multiple, interconnected components and dimensions. Indicators for individual projects - such as rice yields, water quality, or disaster-related deaths - may be easy and straightforward to measure, but do not necessarily differ from 'business as usual' projects in that sector. Other critical aims, especially those involving 'fuzzy' topics like well-being, adaptive capacity, and sensitive human behavior, are more challenging to measure. As a result, it is best to develop a *suite of indicators* that, together, provide a picture of system-wide resilience. *System resilience indicators* look at the resilience of the main components of the system over time, including the overall wellbeing of people and the system when shocks occur. These indicators might be complemented by *negative resilience indicators* which look at whether people are using strategies to increase their resilience that may have negative impacts in other areas. Meanwhile, *process indicators* consider how the resilience framework is being used in policy making and programming; *output indicators* showcase the results of implementing the resilience framework; and *proxy impact*

[4] For the sake of brevity (as well as to avoid being redundant), a synopsis of methodological challenges is presented here. For more detail, see the Briefing Note prepared by the ISET team.

indicators show the results of resilience-focused programming (Schipper & Langston, 2015).

Determining attribution: Attribution establishes whether there is a causal relationship between an intervention and an outcome. Resilience represents a complex and long-term process that stretches over a time horizon well beyond any normal program cycle. It can be difficult to make defensible claims that resilience has been built or increased as a result of a specific intervention. It is preferable to demonstrate an intervention's *contribution* towards resilience, rather than claiming a level of attribution that cannot be fully justified. Evaluators also face a counterfactual conundrum, as they are trying to determine what would have happened in the absence of the intervention. However, promising methodologies are emerging to help address this challenge (e.g., Dinshaw et al. 2014), offering an opportunity for M&E of resilience in the Philippines.

Identifying baselines, targets, and impacts: Baseline data provide a benchmarks against which to compare program performance. Targets define expectations for outputs, and impacts capture the overall effect of the intervention on larger development aims. Both CCA and resilience present challenges in defining and measuring all of these, in part because the context itself is often changing as well. Moreover, because underlying conditions are also changing, comparisons of pre- and post-intervention data may be less relevant. For example, in the context of increasing drought, it may be unrealistic for a modest intervention to actually *improve* water security; stabilization may be a more appropriate target, especially if funds are modest.

> *"Finally, and perhaps most challenging, is that resilience can only truly be measured in the face of climate shocks and stresses. The uncertainty of frequency and severity of such climate events means that, in many cases, measurement tools will remain untested within the life of a programme, relying instead on assumptions, albeit well-evidenced ones."* (Wilson & Yaron, 2016)

Long time horizons: Climate change unfolds over the long term, and accordingly, so does climate resilience. It is difficult to confidently measure the effect of a short-term and/or localized intervention in response to a long-term, emergent, and complex process. Moreover, some interventions take a long time before their effects can be fully assessed. Examples include ecosystem-based adaptation[5] that requires waiting for trees to grow, or developing and promoting new agricultural techniques and seeds that are more drought-resistant. This is why it is important that M&E be adequately resourced throughout the course of the program, and funding perhaps also extended (Dinshaw et al. 2014).

2.3 Best practices in M&E for resilience

Measurement of adaptation and resilience globally, particularly at the outcome and impact levels, has proven to be a challenge for all of the climate portfolios. Schipper and Langston (2015) demonstrate that "the ability and methods to measure resilience are contested" (p. 9). As has been written at length elsewhere (e.g., Bours, McGinn, & Pringle 2014), early climate portfolios struggled to make sense of the sheer diversity of adaptation programs, and found themselves unable to formulate robust conclusions across sectors and scales. There was some hope that standardized indicators might tame

[5] Ecosystem-based adaptation refers to "the sustainable management, conservation and restoration of ecosystems to provide services that help people adapt to the adverse effects of climate change" (CBD 2009).

the ‘data chaos,’ but none of those efforts neatly solved the problem. As a whole, the field has recognized that while global indicators are important for certain purposes, there is no easy or straightforward way to measure disparate adaptation or resilience initiatives at the global level. Instead, we must choose from various imperfect approaches, each with its strengths and weaknesses.

Analysis by Vandergriff et al. (2016) of donors’ resilience measurement approaches concludes that “it is clear that resilience M&E is still a young field… [and] none of them have fully developed project-level results frameworks or a prescribed set of standardized indicators” (p. 25)[6]. Note that our brief review focuses on examples of frameworks related to climate resilience (albeit not exclusively; see Table 2, Annex I). Broadly, international approaches to resilience/adaptation indicators fall into several areas (which can also be used together):

- ***Use of general development and sector-specific indicators to measure results.*** One disadvantage is that these indicators may not distinguish one initiative from another within the sector, or identify those which are not specific to climate resilience strategies. General water security indicators, at least individually, are not particularly different from climate resilience water security indicators. One common way to partially compensate for this is to also apply “mainstreaming” indicators or indices, which are designed to measure the extent to which climate change information, strategies, etc. are being applied within institutions. The most well-known example of this combined approach is the two-track Tracking Adaptation and Monitoring Development (TAMD) framework developed by the International Institute for Environment and Development (Brooks et al., 2013). TAMD combines Track One (development) with Track Two (mainstreaming) indicators and/or indices which are intended to measure national-level adaptation performance.
- ***An index to capture various dimensions of resilience*** (e.g. ARUP’s City Resilience Framework).
- ***Settling for input or output indicators for adaptation/resilience***, rather than a clearly measureable outcome or impact. In this case, adaptation/resilience may also be classified as an impact or other overarching indicator (“transformation” is one trend) which may not have a specific or operationalized measure.
- ***Impact indicators set for resilience*** e.g. Adaptation Fund - “increased resiliency at the community, national, and regional levels to climate variability and change.” However, the portfolios are struggling to coherently operationalize these and by and large they are not doing so satisfactorily or systematically.
- ***Sidestepping the lack of a metric for adaptation/resilience altogether*** and instead counting *number of people with improved resilience outcomes* (as defined by the context and program at hand). This interesting and potentially influential innovation is being piloted by the UK government’s climate finance streams. To be meaningful, it is essential that this indicator be built on robust and rigorous standards for what constitutes a “resilience outcome.” There are also methodological weaknesses: for example, degree or extent of “improved resilience” is

[6] Readers who are interested in a practical overview of multilateral development banks’ and major bilateral donors’ approaches to resilience measurement are strongly urged to read the review by Vandergriff et al. (2016), as well as Schipper and Langston’s (2015) more conceptual analysis of resilience measurement theory and practice. We also recommend the more comprehensive reviews of adaptation/resilience frameworks by Bours, D., McGinn, C., and Pringle, P., 2014; Leagnavar, P., Bours, D., and McGinn, C., 2015; Brooks & Rowley, 2015; and Peters, Langston, Tanner, & Bahadur, 2016.

not captured. This new approach is being closely watched, but it is too soon to draw conclusions about its effectiveness as a headline indicator.

A review of international trends in climate resilience measurement point to various promising pathways, but no quick fix. While there are multiple interpretations, the most plausible is that there are several, sometimes complementary, trends reflecting different ways of dealing with the methodological challenges surrounding climate resilience measurement. One is to downsize expectations and settle for 'easy' but not compelling indicators at higher (e.g., national or portfolio) levels. This should *not* necessarily be interpreted as inferior or unjustified. Indeed, a compelling case can be made that resilience should not be squashed into standardized indicators that do not fit. One school of thought embraces the diversity and complexity of resilience programming and advocates for M&E approaches which are authentically tailored towards local contexts rather than preoccupied with "artificial" aggregates. Other reasons to downsize expectations reflect legitimate assessments of feasibility, data reliability, and resource priorities. For example, the first (2009) iteration of the PPCR's M&E framework included 30 indicators, "many of which were not specific enough, impractical to measure, and/or lacked relevance" (Roehrer and Kouadio, 2015). The current iteration has been pared down to five core indicators and six optional ones (albeit with sub-indicators). According to Roehrer and Kouadio, the more ambitious earlier frameworks were simply too complex and cumbersome, and most participating countries lacked capacity in their M&E systems to effectively operationalize them. A "less is more" approach to portfolio M&E was embraced, achieving better data quality and allowing resources to be invested elsewhere.

There are also some ambitious trends for resilience M&E. In the absence of either a metric or an evidence base, resilience measurement is ultimately experimental and theory-driven. Some agencies and analysts are breaking new ground in this regard. The International Climate Fund, Department for International Development, and other UK government institutions and partners are often pointed to as thought leaders in this regard. The BRACED program and other initiatives seek to develop robust methodologies to measure climate resilience. Interested readers are also invited to join the resilience measurement community of practice financed by the Rockefeller Foundation[7]. However, these approaches remain expensive and experimental. While it might be tempting to delve into this rich, emerging body of research, we do not think that it is useful to do so here. Our stakeholder consultations in the Philippines confirm a strong commitment to policies and programs to build climate resilience, and M&E is an important component of that. However, it is clear that the resilience priorities of the GOP are very firmly planted in designing and implementing effective on-the-ground strategies. Voices invariably call for practical tools which quickly and directly translate into practice in the near term, rather than in groundbreaking M&E research. Whilst it is important to acknowledge this body of work, it is also clear that RRSP and the GOP demand is expectedly and justifiably for an M&E system which *reflects* good international practice, but it is not prepared to invest considerable resources into actually *advancing* it.

[7] See http://resiliencemeasurementcop.groupsite.com/main/summary

Drawing from international experience and practice are key takeaway learnings for the RRSP, including:

- There is not 'bottom line' in the form of standard, universal indicators that neatly measure or summarize resilience progress or performance. Indicators also are not the best vehicle to distinguish resilience initiatives from development 'business as usual.' That work must be driven by underlying strategy, which in turn will facilitate selection of appropriate indicators.
- The RRSP M&E system will work best if it is grounded in a strong, coherent theory of change (ToC) and/or other tools which introduce rigor into the strategy and design of its investments, and ensure *fidelity to resilience as a priority* — not simply as a convenient co-benefit. This will help RRSP avoid becoming a 'slush fund' for projects which may be very valuable but do not have resilience as their focal point.
- M&E of climate resilience is inherently challenging, more resource-intensive than some expect, and requires considerable capacity building and analytical skills. Be prepared for this! Ticking boxes will not be sufficient.
- It is helpful to think of M&E for climate resilience in terms of an entire system which spans design, monitoring, evaluation, and learning. While many think of "M&E" in simple monitoring terms and therefore focus on specific indicators, it is essential to invest across these pillars and particularly at the 'bookends' (i.e., design/selection of investments, and learning from them). This is important because without a 'bottom line' in the form of a standardized metric, best practice is to ensure that resilience perspectives are fully applied across design, monitoring, evaluation, and learning stages.
- *Monitoring* of investments tends to focus on accountability, such as whether targets are being met, funds spent efficiently, and so forth. While essential, it does not say very much about outcome or impact specifically in terms of climate resilience. This requires a specialized and targeted effort. For this reason, it is important to invest in learning-oriented evaluations and knowledge management (KM) which specifically explore and build evidence in regards to *climate resilience,* as distinguished from both adaptation and general development aims.
- M&E for climate resilience should be better harnessed to inform policy and praxis. Too often, reports are left to collect dust, literally or on one of the internet's many virtual cobwebs. Key findings should be identified and disseminated in useful, readable, and action-oriented briefs and other knowledge products to build an evidence base and influence others. This requires a pro-active approach to knowledge management.

3 Developing a National-Level M&E of Resilience within the RRSP

3.1 Overall Framework

3.1.1 Building the Strategy

Because climate resilience is 'fuzzy', multidimensional, and emerging, it is essential to ground policy and practice within a coherent strategy. If this groundwork is not carefully laid, it will be difficult to assess the effectiveness of the RRSP, or harness it to advance learning. Further, without a strong

strategy, the portfolio may also run the risk of becoming a 'slush fund' for miscellaneous development projects which do not systematically improve resilience, however useful they may be otherwise.

The strategic design and priorities of the RRSP are still being developed, but to date four strategic components have been identified[8]:

1. **Reducing exposure to hazards through ecosystem stability and resilience**. Core investment areas should focus on key landscapes and include: (a) Forest development and rehabilitation (e.g., agroforestry, orchard development); (b) Watershed protection, rehabilitation, and effective management (e.g., wetland rehabilitation, soil and water quality management, water reservoir); (c) Coastal ecosystem management and rehabilitation (e.g., reef rehabilitation, mangrove plantation, buffer zones, marine protected areas); and (d) Critical habitats and protected areas in tourism development areas.

2. **Reducing vulnerability of assets through protective and resilient infrastructure.** Core investment areas include: (a) Soil and water impounding structures preventing erosion, landslide and floods; (b) Protective structures including embankments and coastal protection measures; (c) Quality of housing and public buildings (e.g., schools, health centers, community centers) through hazard-resilience standards; (d) Rural connectivity through resilient transport facilities; (e) Resilient service supply (e.g., water, sanitation, sewage, power); (f) Improved preparedness including early warning systems, evacuation roads, and shelters; and (g) Resilient post disaster recovery and reconstruction.

3. **Increasing coping capacity through sustainable and resilient livelihoods.** Core investment areas should focus on demand driven activities that augment community resilience and include: (a) Enhancing productivity of existing income activities through improved techniques (e.g., improved crop harvesting, climate resilient farming, sustainable aquaculture intensification); (b) New income activities including cash-for-work programs and/or micro-enterprises based on timber plantations, harvesting non-timber forest products, nature based tourism, etc.; and (c) Social safety nets for the poorest communities.

4. **Increasing knowledge, information, and institutional capacities to respond to risks.** Core investment areas include: (a) Data systems including a collection of climate data; (b) Analytical tools (e.g., vulnerability assessments, climate and ecosystem modelling, risk screening and measurement, economic valuation of risks, and costing of risk reducing options); (c) Climate information services; (d) Trainings and programs for risk-informed planning (including training for the revision, updates of legislations regarding infrastructure and housing standards, floodplain management, integrated coastal zone management, and risk informed land use planning); (e) Risk-informed development plans and strategies; and (f) Improved planning, budgeting, execution, and M&E of resilient investments.

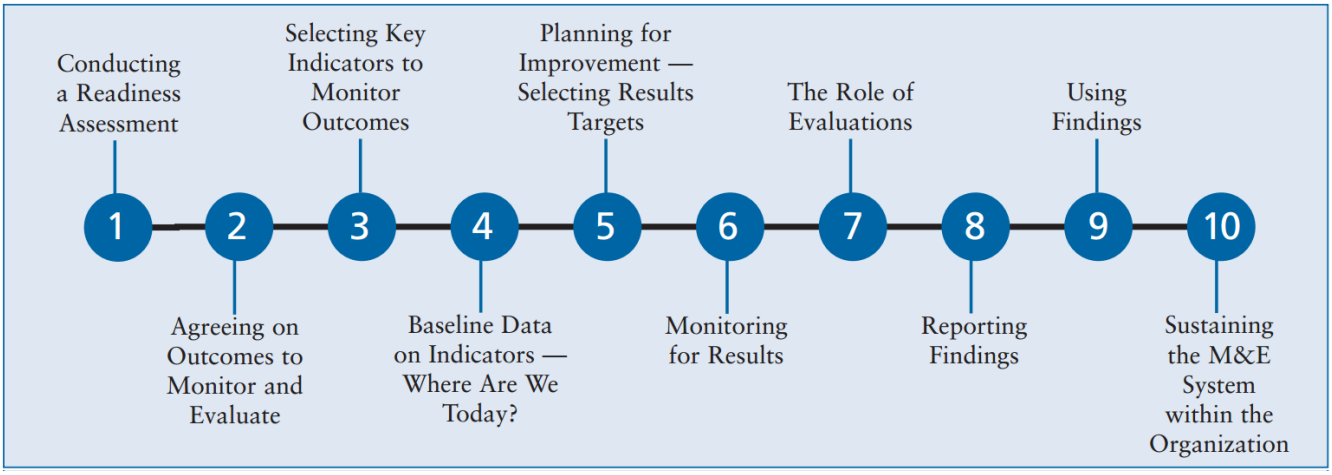
[8] Note: the RRSP's strategic components are not yet finalized. However, we do not expect the finalized strategic components to be significantly different from their current iteration.

3.1.2 Ten Steps to Results-Based Management

As outlined above, it is helpful to think in terms of a system rather than tasks. The building blocks of an M&E system span strategy, monitoring, evaluation, and knowledge management. Taking into all of these into consideration is especially important for complex, multidimensional development challenges like climate change. Frequently, busy professionals focus on program implementation, and when it comes to M&E zero in on the most immediate task at hand — almost invariably *monitoring* tasks like selecting indicators or preparing a quarterly report. In the absence of either a metric or an evidence base, however, improving climate resilience is fundamentally a question of strategy and learning. Monitoring is necessary, but not sufficient. We find that the World Bank manual *Ten Steps to Results-Based Management* (Kusek & Rist 2004) provides a useful, practical, and readable framework which shifts thinking toward M&E *systems* rather than tasks. Although somewhat dated (it lacks, for example, discussion of theories of change), the document remains especially applicable to GOP as it was written specifically for a government audience and assumes complex operational portfolios.

Kusek and Rist emphasize that M&E should not be thought of in terms well beyond design of logframes and selection of indicators, but rather in terms of a spectrum of systems for quality reporting, analysis, learning, and long-term sustainability of the framework itself (Figure 1). It may be helpful to remember the difference between M&E. Monitoring represents the day-to-day (or, more usually monthly report-to-monthly report) gathering of critical, tangible information, together with a snapshot analysis, usually of immediate and practical matters at hand. It confirms that a project and finances are on track (or not). It also represents an opportunity to flag both internal and external issues and problems that may be influencing smooth implementation, and highlight where changes in strategy, targets, or personnel may be necessary. On the other hand, evaluation tackles the broader questions of outcomes, effectiveness, and strategy. Evaluation is applied, learning-oriented research with the goal of influencing decision-making.

Figure 1. Ten Steps to Designing, Building, and Sustaining a Results-Based Monitoring and Evaluation System.



Source: Kusek & Rist (2004)

A full analysis of the strengths, gaps, and capacities of M&E systems in the Philippines is well outside the scope of this paper. Our mandate is more focused and targeted, and so in this report, we will largely be focusing on Steps 2 and 3. However, it is useful to point to some preliminary recommendations to help the administrators of the RRSP with making the appropriate investments and decisions to operationalize the other steps in the process, and ultimately, the M&E framework as a whole.

3.1.3 Selecting Outcomes and Indicators

Higher-order indicators for climate resilience can be conceptualized as a suite which includes:

1. ***Impact Indicators.*** These might include general development indicators that are especially relevant or sensitive to climate resilience. Examples include rural to urban migration rates, measures of household food security, and annual disaster loss and damage. Such indicators would enable analysts to paint a portrait of climate resilience and assess progress over time. However, these indicators have multiple drivers, and it would be difficult to confidently attribute changes to a specific policy intervention. Instead, they can be used to frame analysis of the resilience context. Impact indicators can also be explicitly resilience-focused; however operationalizing these in a robust and rigorous way requires investment of considerable expertise and resources.

2. ***Results Indicators.*** Results indicators would be selected from the most important performance outcome indicators for resilience investments, strategies, and policies (e.g., the PDP and NCCAP). Such indicators might include increased livelihood options, educational achievement, and better access to services such as electricity, roads, and potable water. These indicators would enable policymakers to track progress of their own identified priorities, and measure changes in outcomes that could more confidently be attributed to the Philippines' own policy instruments.

3. ***Process Indicators.*** Climate change is an emerging phenomenon that will manifest over the long term. The time horizons stretch far beyond a normal policy or program cycle. While we cannot assess the impact of an intervention on the future per se, we can identify processes that lead us along a promising pathway and measure benchmarks along the way. Measures relevant to climate resilience might include how effectively institutions themselves are mainstreaming climate concerns into policy making, planning, and programming.

The selected outcomes and indicators that we present here are informed by both the RBMES and the draft PDP 2017-2022 results matrices to ensure that the RRSP's M&E framework is neither replicated nor conflicting, but rather aligned and linked with existing and related programs. We reviewed both the RBMES and the PDP results matrices and the extent to which resilience (as defined by the RRSP strategic components in the program's most recent iteration) is integrated in both M&E frameworks.

The contents of the matrices were scanned and categorized according to the RRSP component to

which they related. Areas within the RBMES and the PDP results matrices irrelevant to the aims of the RRSP were excluded. These results were consolidated into tables for each thematic area (as applicable for the RRSP component; see Annex I for full RBMES matrices). Ultimately, the selected outcomes and indicators are a combination of higher-order outcomes from the RBMES and PDP results matrices that fall under the scope the RRSP. We also suggest further outcomes and indicators to fill gaps where the two M&E frameworks do not align.

3.2 Aligning RRSP with Existent Systems

3.2.1 PDP Results Matrices

The PDP for the next cycle (2017 - 2022) is currently under development with some, but not all, sections available online in draft form (13 out of 22 chapters) (NEDA, 2017)[9]. The two sections most relevant to resilience are Chapters 12 ('Building Resiliency of Individuals and Families') and 20 ('Ensure Ecological Integrity, Clean and Healthy Environment'). The draft indicators from these chapters are presented in Table 3 (Annex I)[10]. Significant changes are being made to M&E systems and reporting into the upcoming PDP results matrix, including that the National Economic and Development Authority (NEDA) is shifting from an output-based monitoring system to one focusing on *outcomes*. It is expected that this shift will facilitate determining whether wider strategic goals and targets have been met. While this advances analysis, learning, and building an evidence base, reporting processes will likely be more complex, which is resource-intensive and may pose challenges to quality, capacity, and uptake.

Chapter 12 ('Building Socioeconomic Resiliency of Individuals and Families') is not specific to climate resilience, but is relevant insofar as climate resilience does includes social protection and safety nets. Notably, there is already 100% coverage for three indicators: 1) Percent (%) of population covered by social health insurance; 2) Percent (%) of poor families covered by PhilHealth as identified under the Listahanan and LGU Sponsored Program; and 3) Proportion of poor senior citizens covered by social pension. This is an outstanding achievement. Yet, it may be useful to introduce additional indicators with a lower baseline to track *progress* of advancement. We also note an oddly flat rate (65%) for the indicator 'Proportion of individuals affected by natural and manmade calamities provided relief assistance.' Frequency and severity of disasters tend to fluctuate considerably. The stability of this indicator suggests that data is not being updated annually. These observations highlight opportunities to update indicators and targets, as well as to improve data quality and accuracy.

The discussion on outcome 3: 'Increased adaptive capacities and resilience of communities and ecosystems' in the chapter on ecological integrity is the section that most specifically addresses climate resilience. The objectives focus on disaster risk reduction and management (DRRM); ecosystems themselves are included in another outcome. The PDP explicitly calls for interventions across scales and down to the local level; interagency coordination; developing and integrating

[9] Note: at the time of writing this paper, the PDP is in its final stages of development with the public consultation period having closed on January 15, 2017 and a note on the website stating that the PDP 2017-2022 will be uploaded soon. Therefore, the review will be limited to the sections that are available and applicable (notably still in their draft forms).
[10] Note that this table includes "resilience" indicators broadly, not just *climate* resilience.

geospatial and risking information; and mainstreaming climate change and DRRM including into both national and local development plans and policies.

A key challenge for NEDA is not simply in designing a new PDP results matrix, but in operationalizing and using it. Our stakeholder interviews suggested that reporting against 2011-2016 was fragmentary. This was largely attributed to a lack of resources and poor capacity, especially at the sub-national level. At the time of writing, stakeholders are clearly - and sensibly! - focused on designing the PDP results matrices and selecting indicators. However, our fieldwork strongly suggests that in the Philippines, gaps tend to lie in *implementation and operationalization,* and harnessing M&E to inform policy and practice. It is important to have a sound design, but that is only the beginning of the process. We recommend that stakeholders explore ways to improve the quality and completeness of data collection and reporting, and invest in knowledge management capacities and processes.

What does the RRSP contribute to indicator selection for the PDP? At present, the CCC coordinates an inter-agency M&E system to measure progress towards climate change aims, which encompass both mitigation and adaptation/resilience. We discuss this in detail in the following section. We recommend that the RRSP *not* engage in a duplicative process to feed directly into the PDP beyond those which capture its own programming pillars. Instead, we encourage the RRSP to *inform* the CCC's inter-agency recommendations and input in regards to national-level M&E. While adaptation and resilience are not identical nor interchangeable, the differences do not play out in the realm of individual indicators and it is best to reinforce and support existing systems and frameworks. The CCC is the designated inter-agency lead, and the RRSP can be an active participant rather than initiate a parallel process. The RRSP might, however,*additionally* finalize its own strategy and outcomes, and ensure that its outcome indicators are also included in the PDP results matrix *as well as* in the CCC's own M&E framework, the RBMES. If time and resources permit, the RRSP might also review how complete and sound the climate resilience strategy within the PDP is, and ensure that selected indicators match. In the absence of a climate resilience metric, there is no quick and easy 'bottom line' to be captured by standardized indicators. It is therefore essential that the underlying strategy is strong, and that selected indicators measure progress of how that strategy is being implemented. Skipping ahead to reviewing indicators in lieu of reviewing the strategy itself is *not* recommended.

3.2.2 Results-Based Monitoring and Evaluation System (RBMES)

The RBMES was developed to identify and monitor results that could be linked to interventions stemming from the implementation of the NCCAP 2011-2028. In principle, various climate change initiatives across the Philippines report back to this framework, which in turn feeds into the PDP's own results matrix.The RBMES has been under development for quite some time by the CCC with technical support from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). It has been applying an excellent, globally-recognized manual (Spearman & McGray 2011), which utilizes participatory and iterative processes to set measurement and evaluation priorities, build advanced ToCs, select indicators, and determine stakeholder capacity to report on indicators and analyze results.

The RBMES framework is very well developed, but stakeholders indicated significant challenges in

operationalization and KM. While this is a common issue across the Philippines, it may be exaggerated in this instance because the CCC is a coordinating body rather than an implementing agency like a line ministry, and as such has a different institutional 'status' compared to other government institutions. A comprehensive review of the operational challenges of the RBMES is outside the scope of this paper (or the evidence that we have gathered), but there were several themes that echoed across stakeholder interviews, including: that the Philippines has excellent M&E frameworks but they are under-utilized; that M&E functions as a reporting requirement rather than a vehicle for learning; and that inter-agency coordination is weak in part because it often falls outside line agency priorities. Within the NCCAP, KM and capacity development are identified as priority areas, but a lead agency or anchor program for it has yet to be identified. However, the NCCAP does suggest that it be the CCC.

The RBMES was created by the NCCAP to serve as a national M&E framework for measuring both mitigation and adaptation. Given that adaptation and resilience have considerable common ground, resilience can fall neatly under this umbrella. To identify key gaps, we reviewed the various results matrices within the RBMES that relate to resilience (Table 4, Annex I). We found that resilience is integrated at the outcome level in areas of water sufficiency (ultimate outcome), environment and ecological stability (intermediate outcome), food security (ultimate outcome), and human security (ultimate outcome). However, gaps were also identified for each thematic area. The NCCAP, for example, is more focused on access to critical infrastructural services such as transport, power, and water; the RRSP complements that with more focus on protective infrastructure. In addition, the NCCAP is more focused on water governance, with a particular focus on rivers, whereas the RRSP aims to address a broader array of water-based ecosystems like wetlands, reefs, mangroves, and coasts. We also noted that while the NCCAP encompasses both rural and urban areas, the RRSP is almost exclusively rural or peri-urban. Livelihood-related programs, for example, are largely focused on diversifying and financing rural livelihoods like agriculture and fishing and rural-based livelihoods like eco-tourism. There is no mention of investing in areas to improve the sustainability and resilience of livelihoods in urban areas, for example, factory/labour workers and migrants. Overall, there are gaps in the RBMES that can be expanded to include the RRSP's priority outcomes and indicators. (See Annex I for full RBMES resilience-related indicator matrices.)

3.2.3 PPCR Core Indicators

At time of writing, PPCR had funded the first phase of RRSP, but future funding is uncertain at best and it may not be required to report against its core indicators going forward. Nevertheless, it may be useful to take a closer look at how one portfolio approaches headline indicators. PPCR-funded countries follow the reporting requirements outlined in the 2016 *PPCR Monitoring and Reporting Toolkit* (Climate Investment Funds, 2016). Under these guidelines, funded countries report annually against five core indicators (Table 1)[11], with other indicators being optional. The full details of the requirements, processes, and methodology are laid out in the full toolkit document referenced above.

Table 1. PPCR core indicators overview. Source: Climate Investment Funds (2016)

[11] Spreadsheet tool for PPCR toolkit available here: https://www-cif.climateinvestmentfunds.org/knowledge-documents/ppcr-core-indicator-monitoring-and-reporting-tools

PPCR core indicator	Data source	Methodology
Degree of integration of climate change in national, including sector, planning.	● Climate Change Policies/Plans ● Climate Resilience Strategies ● Official Planning documents e.g. PDP 2017 - 2022 ● Relevant and related legislation e.g. Climate Change Act ● Meeting documents; workshop/budget reports; policy papers	Qualitative assessment focuses on looking at changes vis-a-vis integration of climate change priorities in national planning Note: to be completed at the national level
Evidence of strengthened government capacity and coordination mechanism to mainstream climate resilience.	National policies, incentives and legislative measures taken to mainstream climate resilience (e.g. for Philippines, the establishment of CCC)	Qualitative assessment, focusing on a) Seeking evidence of availability of information, studies, and assessments on climate variability and change; b) Evidence of functionality of mechanisms to mainstream climate resilience e.g. non-governmental stakeholder involvement, availability of climate resilience information to general public Note: to be completed at the national level
Quality and extent to which climate responsive instruments/investment models are developed and tested.	Existing project/program/PPCR investment plan documents and reports from civil society and PPCR stakeholder community Collected at the project/program level	Answer the following questions: 1. Which climate responsive instruments/investment models have been developed and tested? 2. Has it been implemented to scale proposed? 3. Has it incorporated both female and male users? 4. Has it incorporated needs of vulnerable populations? Questions scored from 0-10 (0 = no; 5 = halfway; 10 = yes, completely)
Extent to which vulnerable households, communities, businesses, and public sector services use improved PPCR supported tools, instruments, strategies, and activities to respond to climate variability or climate change.	Existing project/program/PPCR investment plan documents and reports from civil society and PPCR stakeholder community Collected at the project/program level	Answers to be provided to the following questions: 1. Which climate responsive tools, strategies or activities have the PPCR improved and supported? 2. How many households, businesses, communities, and public sector services were targeted in the plans? 3. How many have used the tool(s) during the reporting period? 4. How have they used the tool(s)?
Number of people supported by the PPCR to cope with the effects of climate change.	Data from national systems e.g. population/census data; project/program specific surveys including baseline surveys Household size and gender ratio need to be disaggregated (data is expressed as number of people) Collected at the project/program level	Answers to be provided to the following questions: 1. How many people have been supported in the last 12-month reporting period? 2. How many of those supported are below the national poverty line? 3. How many of those supported are female?

Indicators 1 and 2 are national level, whereas the remainder are meant to present aggregated data

from PPCR projects and programs. Each indicator is distilled into a country-specific scorecard or table. In other words, each PPCR country operationalizes each indicator by developing detailed criteria for measurement according to definitions which are tailored to the country context. While the toolkit provides some guidance in defining, for example, “degree of integration of climate change in national, including sector, planning,” it is up to each country team to set not only definitions for scoring criteria, but also the methodology for participatory consultation with stakeholders. The data is meant to be visually presented in the form of a spider chart, and accompanied by a narrative which presents evidence to justify the score.

3.3 Overview and analysis of existing national M&E frameworks in the Philippines

The overview of existing national M&E frameworks highlights several gaps and opportunities for the RRSP. Firstly, congratulations is due to the Philippines for having already developed the RBMES. While resources did not permit an in-depth analysis of the RBMES in this paper, our brief analysis suggests that the RBMES is an outstanding wheel that does not need to be reinvented. The CCC’s iterative, more than year-long development process has allowed for the creation of an M&E framework to measure adaptation and mitigation that is aligned with both national policy and cross-scalar needs. There are ample opportunities for the RRSP to complement and support the RBMES. The RBMES also feeds directly into the Philippines’ overarching M&E systems, including the PDP results matrix. Among the chief messages from stakeholders is that M&E frameworks are in place, but not always effectively coordinated, harmonized, and used. Reporting is often considered an onerous requirement, quality of reporting may be weak or fragmentary, and little is done with the information that is gathered. As such, it is essential that the RRSP does *not* initiate a parallel or duplicative process for national-level climate resilience M&E. Instead, the RRSP should develop an M&E framework for its own investments in accordance with its own internal requirements and procedures, while ensuring that the program’s framework is aligned with the RBMES, and in turn, the PDP. As logframes are designed for individual projects, during finalization it is inevitable that gaps in the RBMES will be identified. The RBMES includes a wide array of indicators, but as we demonstrate in our ‘mapping’ of the RRSP aims to the RBMES, some areas are stronger and/or more complete than others. The RRSP and NCAP can set up a mechanism to formally expand the RBMES to include indicators which reflect RRSP investments.

Below we have presented an overview of the high-level outcomes across the key national policies and programs (RRSP, RBMES and the PDP) (Table 2). RBMES and PDP outcomes have been roughly grouped respective to the four RRSP components.

Table 2. Mapping high-level outcomes from the RBMES and PDP 2017 - 2022 onto the RRSP.

RRSP	RBMES	PDP 2017 - 2022
Component 1: Reducing Exposure to Hazards through Ecosystem Stability and Resilience	**Ecosystem & Environmental Stability | Human Security** Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built	● Safety and security against natural and man-made disasters, especially for the poor, improved ● Ecological integrity ensured and socio-economic conditions of resource-based communities improved

	environment to climate change	
Component 2: Reducing Assets Vulnerability through Protective and Resilient Infrastructure	**Water sufficiency** Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change	• Citizen-centered, innovative, clean, efficient, effective, and inclusive delivery of public goods and services • Consumer welfare improved; market efficiency improved
Component 3: Increasing Coping Capacity through Sustainable and Resilient Livelihoods	**Climate-Smart Industries and Services | Sustainable Energy** Successful transition towards climate-smart development **Food security** Enhanced CC resilience of agriculture and fisheries production and distribution systems Enhanced resilience of agricultural and fishing communities from climate change	• Expand economic opportunities in agriculture, forestry, and fisheries • Increase access to economic opportunities by small farmers and fisherfolk • Nutrition and health for all improved; lifelong learning opportunities for all ensured; income-earning ability increased • Promote Philippine culture and values • Building socioeconomic resiliency of individuals, families, and communities • Vulnerability of individuals, families, and communities reduced
Component 4: Increasing Knowledge, Information and Institutional Capacities to Respond to Risks	**Knowledge and Capacity Development** Successful transition towards climate-smart development (ultimate outcome) Enhanced knowledge on and capacity to address climate change (intermediate outcome) Knowledge on the science of CC enhanced; Capacity of CC adaptation and mitigation at the national and local levels enhanced; CC KM established and accessible to all sectors at the national and local level (immediate outcome)	• Promoted and accelerated technology adoption; Stimulated innovation • Supportive and strategic fiscal sector achieved • Resilient monetary and financial sector achieved • External trade policies which provide opportunities for growth and linkage to global value chains implemented

We see considerable alignment of the RRSP components to the RBMES and the PDP results matrices, although there are also some gaps that the RRSP can contribute to filling. For example, the RBMES is largely focused on river-basin ecosystems, while the RRSP includes a more diverse set of ecosystems for resilience investments, including mangroves, coasts, and reefs. In addition, the RRSP includes some disaster preparedness needs (i.e. evacuation roads, shelters and early warning systems) which do not have indicators in the RBMES. In this regard, the RRSP adds clear value to national-level climate change initiatives in the Philippines and an explicit resilience perspective.

Key gaps in national climate change-related M&E frameworks are in operationalization, data analysis, and KM. Operationalization is challenging partly due to a lack of resources and capacity at the sub-

national level to monitor and report results. In terms of KM, there seems to be limited communication or knowledge-sharing between national-level agencies that are working on similar or related programs, activities and projects, nor is there a systematic mechanism to harness reports for reflection or action. One reason for this is that national-level agencies seek to achieve their own sectoral targets, set both by the PDP and internally. Globally, we have seen that the focus on achieving sectoral targets incentivizes working within silos at the expense of inter-agency collaboration. The RRSP has an opportunity to set a national example for how to best operationalize M&E, and establish and maintain a KM system. Overall, it is in these areas that the RRSP can bring to the table technical assistance, political will and influence, and capacity building to contribute to the emerging knowledge base on resilience. In line with this, one of the RRSP's pillars is "Increasing Knowledge, Information and Institutional Capacities to Respond to Risks." One possible area for technical assistance is in facilitating strategic decisions in design and selection of investments, paired with evaluations to explore 'big picture' questions about climate resilience in the Philippines.

In this regard, there may be value to expand the scope of the RRSP strategic components to more broadly encompass resilience. First, the RRSP is largely focused on peri-urban and rural areas. However, increasing climate risk is expected to affect millions in urban areas, both through hazards like flooding as well as adaptive responses such as rural to urban migration.[12] Second, the RRSP is an ideal platform for more explicitly combining or linking disparate programs, activities, and projects together as a means of understanding the system-wide implication of the spectrum of efforts. To date, linking these efforts under a cohesive systems-based strategy has been challenging in the adaptation and DRM realms, and the resilience frame has been touted as a solution. Third, the RRSP could incorporate how to best complement the development and implementation of disaster recovery systems in the Philippines. Disaster recovery is an increasingly critical avenue for reducing vulnerability and building resilience, especially in the context of increasing climate risk. Note that these considerations may change outcomes and/or require additional indicators.

3.4 Implications for sector-focused and sub-national investments

In the absence of a standard metric for sectoral or sub-national investments, how can the RRSP best measure its sectoral and sub-national investments? There is no magic bullet, but we can recommend a strategic approach which is intended to meet RRSP's reporting requirements, satisfy other government agencies' priorities and M&E frameworks, build agency capacity in regards to climate resilience, and develop an evidence base for resilience investments in the Philippines. As we elaborate elsewhere in this paper, M&E for complex, multi-dimensional topics like resilience is most effective when approached across the spectrum of program design, monitoring, evaluation, and learning, with significant investment in the 'bookends' of that spectrum. A second important consideration is whether and how individual investments distinguish from standard projects within that sector. Resilience fundamentally adopts a *systems approach*, but this is primarily evident at the portfolio strategy level. It is thus imperative to have a clear vision, criteria, and standards to ensure that the investment strategy is coherent, and systems are in place to ensure that individual investments are aligned with that.

[12] Although there are other programs focusing on resilience in urban areas, the important thing will be to determine how this area will be addressed within the RRSP, if at all, or perhaps how parallel efforts within the urban context can be complemented.

The RRSP has identified four programming pillars to date. The RRSP should articulate a clear theory of change (or other strategic 'roadmap') and develop guidelines for what is fundable under each pillar. This might include a list or 'menu' of investment options, but should also explain - in simple, plain language - core terms and concepts so that common mistakes are avoided (e.g., conflating climate resilience with mitigation or general environmental aims). Loose or vague criteria is likely to manifest in projects that are useful from a sustainable development standpoint, but do not particularly advance resilience per se. It is best if individual investment proposals also include clear statements which articulate how the proposed project explicitly addresses climate / risk vulnerability and contributes towards adaptation aims per se. They should also be expected to explain how the proposed investment distinguishes from similar 'sister' initiatives which are not climate-specific -- for example, how a given agriculture initiative is specifically 'climate-smart.' In some cases, investments may not necessarily differ from development 'business as usual' in content per se, but reflect changed priorities. For example, wetter weather is associated with higher prevalence of some parasitic diseases, including dengue fever. Climate change itself has no bearing on actual dengue fever prevention or treatment *techniques*. It might, however, inspire greater priority for dengue fever control, and/or influence the locations where dengue fever is prevalent. Climate change thus affects epidemiological patterns and public health priorities, but not the *content* of health promotion or medical management of the disease per se.

The flip side of this coin is to also respect that other stakeholders, including sectoral experts and those embedded in local governments, do have their own priorities and strategies. Climate change is, after all a long-term problem and local governments in particular tend to be very focused on the here and now. Counterparts in line ministries or sub-national governments may understand the threats posed by climate change and who is most vulnerable, but they are unlikely to have a sophisticated grasp of resilience strategies. Moreover, they will have their own priorities, interests, and strategic plan. The high level of co-benefits between resilience and development presents many 'win-win' opportunities. It is important that funding criteria be broad enough to allow for investments at the local or sectoral level that also match their own priorities. RRSP should ensure that their funds are consistent with other government agency interests, which often include mitigating natural disaster impacts but rarely include a sophisticated, strategic approach to climate resilience. If investments are too prescriptive, the smaller the overlap in priorities will be. This can generate frustration or disinterest: top-down, donor-driven endeavors are rarely effective or sustained. RRSP must thus strike a balance between ensuring that its investments are justified from a resilience perspective, while also generating real enthusiasm amongst implementing partners.

What then, are the M&E implications from this? Sectoral or sub-national investments should thus:

- Align clearly with RRSP strategies, programming pillars, and outcome indicators.
- Articulate a clear statement which justifies the investment *from a resilience standpoint*. (In the GIZ manual used by RBMES, this is called "the adaptation hypothesis.") This statement should clearly identify how the intervention addresses climate risk and resilience. While resilience happily overlaps with many sustainable development aims, there are important distinguishing features. As Spearman and McGray (2011) asserted, "Not all development is adaptation and not all adaptation leads to development" (p. 11); this is also true for resilience. We do not argue with or dispute the co-benefits of adaptation and broader development:

indeed, co-benefits pave the pathway towards adaptation aims. Nevertheless, it is helpful to articulate the resilience outcome itself, separately from general development. This is because too often, resilience itself gets 'lost' amidst other (and often more pressing) core development aims. One result of this is that it is may difficult to evaluate a program's contributions towards resilience, because they were not clearly defined from the outset.

- Identify one or more measurable outcome indicators *for that project-specific resilience outcome*. Once again, standardized indicators are a poor methodological fit for resilience so a tailored approach is more useful.
- Investments would *additionally* follow parallel processes to align the investment within the sectoral or sub-national government strategies and M&E frameworks.

This process would help ensure fidelity to resilience aims by encouraging clear thinking and articulation of resilience aims, outcomes, and strategies, all of which would in turn be drawn from analysis of climate risk and vulnerability within a sector or location. It is also generally consistent with the steps outlined in the GIZ manual *Making Adaptation Count* (Spearman and McGray, 2011), which has been formally adopted by the CCC for the RBMES. Indeed, we strongly encourage RRSP to liaise directly with them on this matter, especially as the may have already developed templates, guidelines, etc for use in the Philippines. While we have strongly argued in this paper that the distinctions between climate resilience and adaptation are indeed very important, they have limited bearing on the *steps* for defining outcomes and indicators per se. Any CCC guidelines adapted for this manual should be reviewed and adjusted to suit the specificities of the RRSP and resilience, however.

The RRSP should also consider an approach to measuring *mainstreaming of climate resilience* (or similar process indicators) within implementing partner agencies. This is also a standard component of adaptation/resilience M&E. Climate change stretches over long time horizons, and it may be impossible to measure the impact of a single intervention on climate resilience over the near term. As a result, suites of climate change indicators often include a generous proportion of process indicators like this. The TAMD framework for M&E of climate change adaptation, for example, pairs 'track one' development indicators with 'track two' mainstreaming ones (Brooks et al. 2013). Mainstreaming indicators are often measured via a scorecard. If RRSP-funded investments include capacity building as a matter of course, then introducing mainstreaming and/or institutional capacity scorecards would be advisable. The TAMD framework is probably the most well-known globally. Care should be taken to avoid certain methodological pitfalls that have compromised data quality for both TAMD and PPCR, however - including around convening 'scoring workshops' (McGinn & Spearman 2015).

The Philippines government has demonstrated keen interest in using scorecards as a shorthand measure to summarize progress towards its aims. Scorecards can be a useful tool to summarize and communicate critical information. However, care must be taken to not use them as a substitute for seasoned analysis. This is especially true for complicated, multidimensional topics like climate resilience, resilience, youth empowerment, or conflict transformation for which there is no straightforward metric to reliably serve as a 'bottom line.' In Section 3.1.3 we outlined three types of higher-order indicators for resilience: impact indicators (i.e., general development ones which are particularly relevant to resilience); results indicators (which measure outcomes of specific resilience-related policy priorities); and process indicators (which measure institutional capacity or

mainstreaming in regards to climate resilience). Government agencies - including ministries and sub-national governments - might judiciously select or develop a handful of indicators from each category which can be presented in a summary scorecard.

Climate change represents an immensely complex public policy challenge. It is useful here to further 'unpack' monitoring and evaluation and explore the implications for assessing investments, including those at sectoral and sub-national levels. Pringle (2011) suggests approaching M&E with two overarching questions:

1. Are we doing things right? (e.g., meeting targets, accounting for money, effective program management etc etc.)
2. Are we doing the right things? (e.g., is our strategy strong and sound?)

IFRC (2011) defines monitoring as: "the routine collection and analysis of information to track programs against set plans and check compliance to established standards" (p. 11). Monitoring represents the day-to-day (or, more usually monthly report-to-monthly report) gathering of reporting of critical information, together with a snapshot analysis, usually of immediate and practical matters at hand. Much of monitoring consists of updates about key, tangible information: money spent, meters of irrigation canal laid, number of wells dug. It confirms that a project is (or is not) on track, its finances are in order (or not). It also represents an opportunity to flag issues or problems – whether internal or external – that may be influencing smooth implementation, or highlight that changes in strategy, targets, or personnel may be necessary. Monitoring answers Pringle's 'are we doing things right' question.

Evaluations, by contrast, more fully address Pringle's second question. Evaluation refers to "an assessment, as systematic and objective as possible, of an ongoing to completed project, program or policy, its design, implementation and results. The aim is to determine the relevance and fulfilment of objectives, developmental efficiency, effectiveness, impact and sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision-making process of both recipients and donors" (IFRC 2011: 13). Although many automatically lump M&E into a single unit, evaluation actually serves a very distinct purpose. It is an opportunity to take a step back from day-to-day nuts-and-bolts program management, and review larger questions of strategy, efficiency, and effectiveness. Evaluations are often – but not always – are conducted or led by someone external/independent, and are conducted less frequently but with more resources – although still very often on a shoestring budget. Although it serves a critical purpose to generate evidence, knowledge, and learning, evaluation research is too often underfunded and underutilized. Evaluations can tread on sensitive information (including HR matters) so are often kept internal, and when budgets are tight evaluation research can easily be downgraded to a glorified monitoring report rather than fully harnessed to promote learning.

There are many different kinds of evaluations, which serve different purposes and require different levels of resources and expertise. It is very important to understand that not *every* project or program would ever be expected to go through a complex, in-depth evaluation. Because climate resilience is complex and lacks both a metric and and an evidence base, we recommend that RRSP consider commissioning a series of different kinds of evaluations to explore the effectiveness of its investments.

These would not be structured around key learning questions and aimed at exploring 'big-picture' questions and building an evidence base. 'Lessons learned' briefing papers can present findings of interest to a broad audience (and exclude sensitive internal details which are not). Too much focus on individual indicators or scorecards are no substitute for incisive applied research.

4 Recommendations

The recommendations provided below follow the structure and content of the World Bank's '10 Steps to Designing, Building, and Sustaining a Results-Based Monitoring and Evaluation System' (Figure 1) from Kusek & Rist (2004). In the spirit of this paper, they are intended to guide the parties supporting the development and implementation of the RRSP by the Philippines government and respective agencies/commission; civil society organizations/NGOs; and the World Bank. Given the developing nature of the program, these recommendations have been designed as advisory rather than prescriptive. It should be noted that the steps represent a spectrum across M&E systems, but are not strictly sequential. One of the reasons we recommend this manual over a more current one is that it was specifically written for government agencies, and does *not* assume that one is building an M&E framework from a blank slate. It is written for an audience where policy, program, and M&E systems are in place but not always working optimally. Kusek and Rist guide readers in thinking through various elements of an M&E system for complex and ambitious portfolios, breaking down and explaining components into practical and straightforward tasks. In our experience, policymakers and practitioners tend to think of M&E in narrow terms, usually around logframes, indicators, and monitoring reports that they loathe writing. Kusek and Rist help reframe thinking across the M&E spectrum, contextualizing the more familiar elements across a more comprehensive framework and helping readers diagnose the strengths and weaknesses of the one they are operating within.

Step 1: Conducting a Readiness Assessment

Conduct an institutional mapping activity to understand necessary collaborations and needed capacity-building. Institutional mapping is a useful exercise to help identify necessary collaborations and capacity-building before reporting on the RRSP M&E framework begins. This involves identifying the different sectors and sub-national government offices involved in meeting resilience targets and goals and evaluating their capacities to report on M&E indicators. This also involves formally connecting with other M&E frameworks that are collecting the same or similar data to what is needed for resilience M&E, in particular the RBMES. The mapping activity would also institutional bottlenecks, areas for capacity building, and opportunities for knowledge management and learning.

Set up or strengthen existing platforms for collaboration, reporting, and analysis before operationalizing the M&E framework. Resilience is cross-sectoral and cross-scalar. Therefore, reporting on resilience targets will require involvement from several ministries and scales of

government. In addition, the RRSP has significant overlap with adaptation goals and efforts throughout the Philippines, measured nationally by the RBMES. In this regard, before rolling out the indicators, the RRSP should ensure that platforms for collaboration, reporting, and analysis have been set up. This will identify ways to capitalize on the strengths of various stakeholders and address the gaps in measurement frameworks and processes. This will also allow for more effective implementation, something repeatedly recognized as a challenge.

Suggested actions:

1. *Designate an RRSP* liaison *to identify, meet with and build partnerships with key national stakeholders coordinating and working on PAPs related to resilience.*
2. *Set up a multi-stakeholder workshop to produce an institutional map highlighting key government agencies and sub-national government offices that are likely to be involved with RRSP, particularly those that will be responsible for RRSP outcomes and indicators. Highlight how these different agencies and offices are linked (Are there existing platforms for collaboration? How can sub-national government offices be reached?), and identify any institutional bottlenecks. The CCC could possibly coordinate the workshop and convene various national and sub-national actors.*
3. *Designate roles and responsibilities for operationalization of M&E framework; analyze capacity of agencies for conducting designated roles and responsibilities. Note that the CCC has done some of this groundwork already for the RBMES, so it would be worthwhile to engage them.*
4. *Set up a multi-stakeholder workshop or meeting to train on the M&E framework, delegate roles and responsibilities, and strategize on operationalization of M&E framework.* This should be inclusive and involve actors at the sub-national level as well.
5. Review knowledge management capacities and opportunities, and develop a strategy to strengthen it.

Step 2: Identify outcomes to monitor and evaluate

Ensure that the RRSP, RBMES, and PDP are aligned not only conceptually, but practically. This requires regular data collection, analysis, and reporting in and across departments, and mechanism to transform findings into learning. At the moment, the RRSP is still being formulated and the PDP is still being drafted. While the RBMES is aligned to the previous PDP 2011-2016, it is not yet aligned to the PDP 2017-2022.

Clearly define resilience aims and outcomes - not only for the RRSP itself, but for its individual investments. It is important that investments be clearly framed explicitly in terms of resilience - not simply as valuable development project which are somehow relevant to climate change. It may be helpful to ensure that funding proposal (or other) templates specify this and clear guidance is provided. Investments may be stronger if they are justified with use of climate data (identified or projected), clearly linked to the national resilience strategy and aims, and demonstrate how they are different from development 'business-as-usual' in terms of content or priority.

Dinshaw and McGinn (2016) suggest the following steps to develop project-level adaptation outcomes, which can be reframed (as we have done here) for resilience:

1. Describe the development context within which resilience benefits will be delivered.
2. Create a development statement of benefits the project intends to support.
3. Describe the impacts of climate change that will negatively impact the development statement of benefits that the project intends to support.
4. Create a resilience statement of benefit the project intends to achieve.
5. Describe the resilience intervention
6. Describe the M&E purpose of the resilience project.
7. Create a list of potential resilience outcomes from the project.
8. Create a plan to achieve the outcome(s).

Use an iterative process to update outcomes and strategies over time. Resilience needs and priorities will evolve over time because it is an ongoing, uncertain, and profoundly contextual process, and the evidence base is developing rapidly. New needs will be recognized as new knowledge becomes available, national planning priorities change, the risk landscapes shifts, and urbanization and economic development continue. As a result, the strategy, outcomes, and rest of the M&E framework needs to be flexible and regularly re-visited to ensure that it is grounded in resilience priorities set nationally by the NCCAP and the PDP as well as by stakeholders at different scales. The RRSP can utilize an iterative, consultative process similar to that used by the CCC and GIZ to develop the RBMES. This process should focus on the systems and investments of the various departments and agencies involved with the RRSP. The RRSP is also poised to support the CCC in developing conceptual clarity about climate resilience and defining practical strategies.

Suggested actions:

1. *Ensure that the RRSP has a well-articulated strategy and theory of change that is grounded in a climate resilience perspective.*
2. *Assume a leadership role in providing conceptual clarity about resilience within the Philippines.*
3. *Liaise with RBMES to ensure that resilience outcomes are integrated into NCCAP and, ultimately, PDP results matrices.*
4. *Ensure that all funded investments have clearly articulated outcomes and aims from a resilience perspective, supported by use of theories of change, aligned with national resilience aims/strategies, grounded in use of climate information, and distinguished from development 'business as usual.' This can be achieved with templates; practical and easy-to-follow written guidance and with clear explanation of core concepts; capacity building; and mentoring and leadership at both inter-agency and project-specific levels.*

Step 3: Selecting key indicators to monitor and evaluate

Choose indicators that measure the chosen outcomes. The indicators for each outcome should measure contributions to an overall resilience strategy, and will probably include several indicators. One advantage of using RBMES outcomes and indicators is that they are already a part of collaboratively produced ToC. While the PDP indicators have not been selected through a ToC process, relevant indicators should be included to link the RRSP and PDP (see Table 1). As the RRSP develops its own programs and investments, it should, if possible, use indicators within the RBMES whenever they are a 'good fit'.

In the event that a 'good fit' indicator is not available, identify one or more which fits the particular investment. As mentioned above, the RRSP is likely to evolve, as are the programs, activities, and projects. As a result, the indicators we suggest may not fit specific future investments. There needs to be flexibility so that indicators can be added into the framework as needed. The RRSP should also engage with the CCC to periodically include new RRSP indicators into the RBMES itself. The RBMES is designed to be an *iterative and participatory* process, and should welcome the inclusion of new indicators. One suggestion is for the RRSP and CCC to agree to a regular, biannual process to formally incorporate 'new' indicators generated by the RRSP in the RBMES. Doing so will not only improve the RBMES, but also ensure that RRSP is fully aligned with national systems and will enable easy reporting across departments and systems.

→ *Suggested actions:*

1. *Set up biannual consultative meetings with key government agencies and sub-national offices to receive feedback on the M&E framework and select, modify, and update outcomes and indicators as needed.*
2. *As investments are made, ensure that there are indicators to track and monitor those investments. And, equally important, that they are both feasible and appropriate.*
3. *Task the RRSP representatives responsible for liaising with NEDA (with regards to the PDP results matrix) and CCC (with regards to the RBMES) with (a) attending M&E workshops and meetings organized by both agencies and (b) setting up regular meetings (e.g. every quarter) to ensure alignment of the RRSP with the PDP results matrix and the RBMES.*

Step 4: Baseline data on indicators

Pilot indicators. Some indicators may need to be piloted before they are implemented - for example, new composite indices. This involves thorough testing of data sources, data collection and analysis, and data reporting to understand what works and what does not, if the indicator needs to be changed, or if the method by which the indicator is implemented needs to be changed.

Collect baseline information for indicators. Collecting historical data on indicators provides an evidence base with which to set targets, and also provides a baseline over which comparisons can be made. Without this base for comparison it will be difficult to determine whether or not RRSP investments contributed to or resulted in successes. In some cases, indicators might be modified or replaced with proxies to accommodate data availability constraints. Alternatively, if quantitative information is not readily available, qualitative approaches might be superior. It may also be useful to develop counterfactual scenarios to assess what would happen in the absence of the project, program, or policy, based on past experiences of similar shocks or stressors. This data can be triangulated with data describing climate variability, extremes, and long-term trends, in the form of climatic or meteorological indicators or indices that capture aspects of climate change, variability, and extremes. Given the robust nature of climate change research in the Philippines (e.g. DOST-PAGASA), data could be obtained from national meteorological services or regional or international research organizations (e.g. World Meteorological Organization). Which agencies should be engaged with depends on the indicator in question.

Box 2 - Questions for establishing a baseline include (but are not limited to):

- What is the operating environment around the programme?
- How might factors such as history, geography, politics, social and economic conditions, or competing organisations affect implementation of the RRSP strategy, its outputs or outcomes?
- What is the policy and political environment in which the RRSP operates? How might current and emerging policies influence outputs and outcomes?
- How does the RRSP collaborate and coordinate with other initiatives and those of other organisations/agencies/departments?
- Is baseline data complemented by data on climate trends and the incidence of climate extremes and disasters, such that results can be interpreted in a climate risk context? This will help to partly counteract the confounding factor of shifting baselines. Generally speaking, if the implementation period is short (i.e. less than five years), projects/programmes are unlikely to be affected by shifting baselines (Villanueva et al., 2015).

Suggested actions:

1. *Establish standard for collection and analysis of qualitative and quantitative data.*
2. *Dedicate the appropriate resources (human and financial capital) needed to conduct the field testing as well as gathering baseline information for indicators. This could be a coordinated fund as part of the RRSP program that is contributed to by national and sub-national government agencies (the exact specifics will have to be determined internally within the GOP).*
3. *Conduct field tests or other review of indicators to ensure that they are valid, reliable, and feasible. A number of 'teams' can be organized for the field tests, with areas selected determined by factors such as vulnerability, risk and capacity, as an example. Another example is statistical analysis to assess how robust an indicator is.*
4. *Assign responsibility collecting baseline data on each of the indicators. The questions in Box 2*

provide a template of questions to guide data analysis.

5. *Source baseline data from CCC and NEDA for common indicators to avoid redundant data collection. This might be embedded within an inter-agency effort to improve knowledge management through access to and sharing of data and information.*

Step 5: Planning for improvements

Establish results targets. Results targets are what can be achieved in a particular timeframe to reach an outcome. Identifying program results requires the selection of performance targets - this is one part of an overall performance framework. Targets are based on outcomes, indicators, and baselines.

Factors to consider when selecting results targets include:

- **Clear baseline starting point** - previous results/outcomes should be taken into account in developing targets, such as how the policy has performed in previous years;
- **Expected funding and resource levels** - this includes existing capacity, personnel, funding resources, as well as both internal and external sources of funding (e.g. bilateral and multilateral donors). Targets should be developed in the context of available resources;
- **Keeping it realistic** - targets ideally should be set quarterly or yearly; setting them three, four or five years forward is more complicated because there are many unknown factors and risks in terms of resources, inputs, and political landscape; and
- **Using interim targets for longer term goals** - climate resilience occurs on longer time scales than a normal program cycle. Resources and inputs cannot be predicted in the long term. Setting sequential, interim targets (e.g. target 1 every two years; target 2 every four years) over shorter periods (i.e. three to four years) is advisable. A very clear example of this is the Millennium Development Goals (MDGs), which consist of interim goals with an overall time period of 15 years.

Suggested actions:

1. *Using the baseline data gathered/collated and through meetings with agencies responsible for achieving outcomes and reporting on indicators, set interim and end targets for outcomes.*
2. *Determine the types of investments and funding needed to achieve targets.*
3. *Confirm during a consultative meeting with national agencies and sub-national offices that the targets set are tangible and achievable.*
4. *Confirm with CCC and NEDA that the targets for common outcomes are aligned with the RBMES and PDP, respectively.*
5. *Encourage inter-agency knowledge management efforts to establish a central clearinghouse or other platform to share data.*

Step 6: Monitoring for results

Align M&E system with RRSP annual plans and other work plans. Results-based M&E needs to be aligned with activities-based management systems. An activity-based management system is focused on whether particular activities are achieved. In other words, it is focused on the more administrative aspects of the program. If these activities are not aligned to the outcomes defined in the results-based M&E, it is difficult to understand how successful implementation of activities results in improved performance and/or achieving outcomes.

Invest in building capacity of sub-national and national staff to monitor the RRSP. A common challenge experienced by M&E offices nationally is the lack of sub-national capacity to monitor and report on findings. The RRSP should allocate adequate funding for capacity-building activities to ensure that implementation of the M&E framework is effective and efficient.

Use this phase as an opportunity to flag issues. The monitoring phase provides an opportunity to diagnose and flag external and internal problems that may be influencing smooth implementation, or to highlight necessary changes in strategy, targets, or personnel. In this regard, M&E should *facilitate* quality programming, not burden it. Tight and targeted monitoring/reporting systems tend to work best, in no small part because complex ones tend to alienate field staff and distract them from other work.

Suggested actions:

1. *Ensure that RRSP annual plans and work plans include a section on how the plans help achieve M&E outcomes and how they account for M&E implementation needs.*
2. *Use the capacity analysis conducted in Step 1 to determine where capacity needs to be built to monitor and report into the RRSP.*
3. *Develop a formal mechanism by which those reporting into the RRSP can provide feedback. This could include regular evaluation reports, or a communication mechanism (e.g. an online portal/platform) by which people can connect with RRSP as issues arise.*

Step 7: The role of evaluations.

Commission in-depth evaluations as needed. Evaluation research serves a critical purpose to generate evidence, knowledge, and learning, yet it is too often underfunded and underutilized. There are many different kinds of evaluations, which serve different purposes and require different levels of resources and expertise. Evaluations can help (1) Make resource allocation decisions; (2) Identify emerging problems; (3) Support decision making on competing or best alternatives; (4) Support public sector reform and/or innovation; and (5) Build consensus on the causes of a problem and how to respond.

It is very important to understand that not *every* project or program would be expected to go through a complex, in-depth evaluation. However, occasionally commissioning evaluations can be immensely useful. There are a variety of ways to do this. Some agencies randomly select a handful of interventions for outcome (or even impact) evaluations on a regular basis. Another option, whether

stand-alone or complementary, is to periodically commission an evaluation of a body of work, such as one or more country programs. There are many good resources online; for example the International Program for Development Evaluation Training provides evaluation guidance at: http://www.worldbank.org/oed/ipdet/ (World Bank 2001a).

Watch for unexpected results. Dinshaw and McGinn (2016) argue that evaluators should be attuned to the possibility of *unexpected* results, whether positive or negative. It is especially important to be on the lookout for signs of *maladaptation*, i.e., interventions meant to address climate risk or resilience but which inadvertently cause harm to people or the environment. Screening for maladaptation can help identify emerging problems requiring attention. However, it is difficult to systematically do so, precisely because unexpected results are, well, unexpected. Unexpected results may also be positive. Remember that resilience is an emerging field with a limited evidence base, and an iterative, questioning approach is in order. Qualitative research may provide the most insight about the unexpected.

Communicate and discuss lessons with decision makers and stakeholders. Evaluations may identify problems that require government attention and strategizing. Therefore, evaluation lessons should be incorporated into decision-making processes. Beyond high-level decision making, these lessons need to be communicated to and discussed with stakeholders across sectors and scales to contribute to collective knowledge and evidence-based action and planning.

Suggested actions:

1. *Develop an evaluation plan for the entire portfolio that goes beyond monitoring reports and accountability (i.e., 'are we doing things right') and invest in evaluations that explore effectiveness and strategy (i.e., 'are we doing the right things'). What are the most pressing 'big picture' questions? Effectiveness? Cost-benefit analysis? Equity and social inclusion? Governance? Design mechanisms to select individual or collections of projects for more in-depth evaluations from a resilience perspective. Resource them accordingly, including for dissemination of lessons learned to a broad audience of policymakers and practitioners.*
2. *Commission qualified individuals and agencies to conduct independent evaluations.*
3. *Invest in knowledge management to translate findings into learning which influences planning, decisionmaking, and implementation.*

Step 8: Reporting findings

Have a clear idea on how reports will be used. Sometimes, M&E reports are produced with little thought as to how they will be used. For instance, they are often used to show accountability to the public, and their value in exploring and investigating to see what works and what does not remains untapped. To make the most of M&E reports, it will be important for the GOP to have smooth templates, databases, and reporting systems that "talk to" each other. Once again, knowledge management is critical for effectively harnessing M&E to build an evidence base that informs action.

Articulate and develop a comprehensive communications strategy. Since M&E, and thus, reporting, is an ongoing process, it is crucial that all stakeholders are regularly informed of overall

progress. As part of developing a communications strategy, it will be important to reflect on questions such as who will receive what information? In what format? When? Who will prepare the information, and who will deliver it? Moreover, both formal (e.g. reports, briefs) and informal (e.g. phone, email) communications should be part of the overall strategy. Most importantly, funding should be adequately allocated for this important step.

Bad news should be included. An effective M&E system should be able to report on both good and bad news, because it is only by reporting problems that evaluators will be able to differentiate between successes and failures. This is particularly important given the possibility of maladaptation in the context of CCA. The GOP should establish a culture which encourages staff to present and discuss problems, instead of being punished for them. This way, M&E can serve as a kind of early warning system for the RRSP as it moves forwards.

Commissioning "interesting" evaluation research provides material to fuel learning and debate. Let's face it: many monitoring reports are dry as dust and primarily serve an accountability purpose. Including exploratory research questions and 'big picture' evaluation research is more likely to produce findings of broader interest and advance learning. Monitoring is necessary, but not sufficient, to engage stakeholders and inform policy and praxis.

Suggested actions:

1. *Create a reporting system to manage RRSP reports. Utilize templates, databases, and reporting systems that the GoP already uses, or align with existing GoP systems.*
2. *Create an internal "failure report" which allows various national and sub-national agencies/departments to be able to give feedback on how/why certain aspects of RRSP implementation/M&E did not go as expected, the challenges they faced, and what could be done better going forward.*
3. *Use multi-stakeholder meetings and other platforms to inform stakeholders of RRSP progress.*

Step 9: Using findings

Apply what has been learned. One of the objectives of the M&E system is to ensure that the information gets to those who can used it to support and/or improve climate resilience, reduce risk, and increase sustainability. This involves an important, but often overlooked mechanism: knowledge management (KM). There are two aspects of KM. One is institutionalizing KM within the RRSP and the GOP, which requires cultivating an environment and culture of feedback, knowledge, and learning. The second is appointing a knowledge manager (individual or team) for the RRSP to act as a broker between government agencies and departments[13]. Such a broker could, for example, be housed within the CCC. Investing in KM (and a knowledge manager) and harnessing monitoring data and

[13] As an illustrative example, see how BRACED has established a role of knowledge manager: http://www.braced.org/about/about-the-knowledge-manager/

evaluation research to inform policy and programming will be critically important in determining the success of the RRSP.

Suggested actions:

1. *Appoint a knowledge manager for the RRSP who can act as a broker between government agencies and departments. House the manager within an existing government agency or office to ensure uptake of knowledge generated in the RRSP. This could be the same person who conducts one-on-one meetings with key decision-makers and stakeholders to discuss how RRSP results and findings can inform decision-making and planning (in Step 7)*
2. *Create a knowledge management system for sharing, using, and managing the knowledge coming out of the RRSP (or adapt one that already exists for the purposes of the RRSP). Make this widely accessible and available (e.g. an online portal).*
3. *Develop a feedback system to track how knowledge is being used in policy and programming across the GOP, specifically related to the RRSP outcomes.*
4. *Scope out other existing knowledge management systems the RRSP could contribute to. In addition, incorporate existing KM systems into knowledge management for the RRSP. The CCC, for example, has developed the National Integrated Climate Change Database and Information Exchange System (NICCDIES) as a knowledge management platform to integrate information on climate change.*
5. *Promote KM at higher levels of the government in the Philippines.*

Step 10: Sustaining M&E within the organization

The challenges of developing an M&E system for the RRSP are similar to other efforts in M&E. We find it instructive to review the lessons learned through the design and implementation of the global PPCR monitoring and reporting system (Roehrer & Kouadio, 2015), which are distilled below:

Leadership at the national level is paramount for effective implementation. On the one hand, building capacity of the GOP for country-level monitoring and reporting will be important. On the other, reducing the complexity of application and implementation of the framework will be equally critical so that it can be implemented in varied contexts and at both national and sub-national scales of government. Related to this, it will be essential to clarify the roles and responsibilities of all those involved in the M&E system. Lastly, it will be important to invest in capacity and resources, clarify political will, and ensure that those responsible for M&E have the necessary skills, authority, and funding to achieve identified aims.

There should be a clear link between an agreed-upon M&E framework and the design of climate resilience investment plans and projects. The M&E framework should always inform climate resilience investments otherwise extra resources and effort will be needed to retrofit core indicators into existing investment plans and projects. The RRSP indicators can complement and feed into already-developed M&E frameworks and extend technical assistance to ensure they are operationalized, particularly through enhancing capacity at the sub-national scale.

Flexibility, adaptability, and customization should be embraced, not shunned. While having a broadly applicable core set of indicators at the national level is useful, it should be recognized that climate resilience and development is generally context specific. Thus, we encourage the GOP to develop indicators relevant to project and investment-plan levels in addition to using its own methodologies, assumptions, and criteria in implementing the framework, taking care to have such an endeavor well documented to promote transparency and accountability and build institutional knowledge.

Evidence-based learning and iteration should be built-in to framework development. Monitoring and reporting are important (and compulsory in many cases), yet the two do not speak to *why* and *how* certain approaches and implementation of specific investments work (or don't work). Nor are they sufficient to answer central questions centered around core objectives, such as building resilient livelihoods. Therefore, it will be important to learn from the experience and insights gained from developing the RRSP and apply that learning via adjustments to ongoing implementation and new actions. In other words, the GOP must go beyond merely what is 'required' and cultivate a culture of learning and iterative development, including developing dedicated funding.

Suggested Actions

1. *Ensure that M&E is conceptualized across the full spectrum of Kusek and Rist's (2004) ten steps.*
2. *Establish quality standards for M&E, including data collection, reporting, and analysis.*
3. *Ensure that those who are tasked with responsibility for M&E have the resources, authority, and capacity to do so. M&E is too often relegated to junior staff and under-funded.*
4. *Invest in capacity building for M&E itself, including at the sub-national level. Such capacity building should go beyond 'how to write reports' but instead be a vehicle for participatory engagement, reflection, and learning.*

5 Conclusions

The Philippines are well advanced in formulating relevant, critical climate policy at the national level and developing associated frameworks for measurement. The NCCAP and its M&E framework, the RBMES, and the PDP results matrix are clear examples of this strength. The chief challenge for the GOP may not be formulating policies and programs, but actually implementing them. Adding more policies, frameworks, and M&E systems will not solve challenges surrounding results measurement (especially at the sub-national level); coordinating and sharing knowledge across sectors and scales; and translating findings into evidence-based action. To this end, the RRSP should link to, integrate, and strengthen existing systems, particularly the RBMES and the PDP.

Recognizing that there are good systems in place, RRSP should invest in improving their use. This includes: (1) Capacity building for design, M&E, and education on disaster risk reduction, CCA, and resilience; (2) Monitoring programs it funds with logframes; (3) Applied research to build the evidence base for systems-level resilience in the Philippines; (4) KM at all scales in order to inform policy and practice; and (5) Rigorous processes to ensure that investments are actually about climate resilience.

To ensure the RRSP's fidelity to climate resilience as a priority, significant efforts must be made to clarify conceptual confusion and define practical bounds for resilience, adaptation, and disaster risk reduction. These concepts overlap and therefore their measurement frameworks will also overlap, but the value that each of these concepts brings to handling climate impacts must also be recognized, understood and indeed, used in tandem. As a result, the RRSP strategic goals need to be expanded to account for the cross-sectoral and cross-scalar aspects of resilience, urban climate resilience, and building resilience in the context of change and uncertainty. Ultimately, the RRSP needs to push forth a strategy that seeks to build resilience at a systems-level. This will raise the bar on resilience as a strategy across the Government of the Philippines.

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Annex I

Resilience integration in the PDP (2017 – 2022)

Table 1. Integration of resilience in PDP 2017 - 2022 as indicated by instances of the term ‘resilience’, or ‘resilient’.

Instance	Reference
“Strengthen resilience to climate and disaster risks.” (one of the cross-cutting themes as part of the environmental and governance strategy)	Chapter 8, p. 15
“Despite the resilience of these low-skilled jobs and being a steady source of employment for many Filipinos, OFs [overseas Filipinos] employed in these kinds of jobs remain vulnerable to abuse and exploitation.”	Chapter 11, p. 12
“An archipelagic country such as the Philippines is distinctively challenged to build economic resilience given its high environmental risk exposure and vulnerability from natural calamities.”	Chapter 12, p. 10
“These challenges include addressing agglomeration economies, managing the urban sprawl, improving mobility and connectivity, and building disaster resilience, among others.”	Chapter 12, p. 24
“Meanwhile, services exports continue 223 to show resilience amid global slowdown and are anticipated to reach USD 50.75 billion by 2022.” “Meanwhile, the current account balance showed resilience from 2011 to 2015 amidst uncertainties in the global economic environment as receipts from trade-in-services and remittances from overseas Filipinos (OFs) remained robust during the period.”	Chapter 15, p. 6
“The BSP will continue to use the full range of macroprudential measures available to enhance the economy’s resilience against systemic shocks and deter the build-up of aggregate risks.” “On banking regulation and supervision, the BSP will sustain the reform momentum with a view to toughen its resilience against shocks as well as to boost its role as a catalyst for durable long-term economic growth.”	Chapter 15, p. 13 - 14
“Infrastructure investment, sustainability, safety, and resilience are parts of an integrated response to improved performance of the infrastructure sector. The Government will continue to strengthen its role in coordinating infrastructure management and place a greater emphasis on sustainability, safety and resilience.” “Incorporate/adopt disaster resilience measures. Considering that the Philippines is particularly vulnerable to natural disasters and effects of climate variability, operational life of infrastructures shall be secured.”	Chapter 16, p. 43 Chapter 16, p.44
“Increased adaptive capacities and resilience of ecosystems” “Subsector Outcome: 3 Increased adaptive capacities and resilience of communities and ecosystems”	Figure 2. Chapter 20, p. 8, 17 Chapter 20, p. 17
“New irrigation systems and facilities should be climate-resilient and compliant with construction standards.”	Chapter 8, p. 10
“Specifically, SDNs [Service Delivery Networks] will provide gatekeeping and continuum of patient friendly services from primary care level up until the specialty centers. These services will be compliant to clinical standards, client centered, and culturally sensitive. These will be located close to and felt by the people; available and adequately prepared, responsive and resilient in times of emergency and disasters.”	Chapter 11, p. 20
“The focus shall be on reducing vulnerability by providing a universal and transformative social protection program for all Filipinos; improving financial inclusion and income diversification, and expanding access to affordable, adequate, safe and secure shelter in	Chapter 12, p. 1

order to create resilient, vibrant, inclusive and sustainable communities."	
"Hence, the urgent need for a sustainable urbanization framework that is forward-looking and responsive to the challenges confronting Philippine cities and settlements especially in ensuring that land use and settlements planning are geared towards ensuring safe, resilient and decent living conditions with adequate access to basic services and economic opportunities."	Chapter 12, p. 24
"A resilient, diversified and globally competitive external trade sector with strong backward and forward linkages will enable MSMEs to successfully compete in global markets and will provide high-quality jobs for Filipinos."	Chapter 15, p. 1.
"For 2017 – 2022, indicators have been identified and targets have been set to monitor the attainment of the sub-sector outcomes of strategic, and supportive fiscal sector, resilient and inclusive monetary and financial sectors and external trade policies which provides opportunities for growth and linkage to global value chains." "Subsector outcome B: Resilient monetary and financial sector achieved."	Chapter 15, p. 8 Chapter 15, p. 9
"The strategies under the three subsectors of achieving a supportive and strategic fiscal sector, achieving a resilient and inclusive monetary and financial sector, and implementing external trade policies which provide opportunities for growth and linkage to global value chains that are enunciated herein all point towards achieving the goal of a stable, sound and supportive macroeconomic environment." "Domestic capital markets will be deepened to complement a resilient banking system." "The Philippines should maximize opportunities in the Asian region, as it remains to be a resilient region in terms of consumption and economic output." "The establishment of state-of-the art climate resilient technologies on product development, processing, packaging and support facilities shall be considered."	Chapter 15, p. 10 Chapter 15, p. 14 Chapter 15, p. 16 Chapter 15, p. 17
"The Design Guidelines, Criteria and Standards (DGCS) 2015, which incorporates resilient design, will be maximized to address the consequences of climate change to all transport infrastructure."	Chapter 19, p. 30
"The government must ensure the provision of adequate, resilient and efficient ICT infrastructure that is able to meet the fast-growing demand in ICT service…"	Chapter 19, p. 38
"Disaster Risk Reduction Management (DRRM) strategies will be considered to ensure that infrastructure facilities are climate resilient. For instance, disaster-resilient safety network of feeder ports that will safeguard secured and smooth logistics in times of disaster will be established on top of its rehabilitation and improvement."	Chapter 19, p. 44
"Notwithstanding some achievements in improving the country's state of natural resources and environment, more strategic interventions need to be implemented to safeguard biodiversity and ensure well functioning and resilient ecosystems that will help sustain growth and development not only during this Plan period but also beyond." "Complementary strategies are also still wanting to further improve the quality of the environment and facilitate CC adaptation and mitigation as well as DRRM initiatives to promote healthy and resilient communities." "Foundation for Inclusive Growth, a High-Trust Society, Globally Competitive Knowledge and Climate-resilient Economy"	Chapter 20, p. 5 Chapter 20, p. 8 (Figure 2)
"Promote climate-resilient structures and designs following established measures and standards by DPWH, HLURB, DILG, DSWD and other government agencies."	Chapter 20, p. 19

Overview of select best practices in M&E for resilience

Table 2. Review of Best Practices in M&E for resilience.

Organization/Fund	Indicator/Framework/ Program	Overview	References
International Climate Fund (ICF)	Key Performance Indicator (KPI) 4 - outcome indicator: *number of people with improved resilience as a result of ICF support*	• One of the more ambitious and advanced indicators while also being the most widely-adopted e.g. IIED/TAMD; DFID • Indicator is robust; however, methodology is complex and difficult to apply 'on the ground' • Indicator measure does not address *how much* resilience has increased or, for that matter, from what starting point • Is an 'expensive indicator' as it requires significant data collection and analysis i.e. time and resources • Few projects actually reporting on this indicator given the resources required to report on it	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/328254/BRACED-KPI4-methodology-June2014.pdf
UK Department for International Development	Building Resilience and Adaptation to Climate Extremes and Disasters framework (BRACED)	• Designed and intended to directly benefit up to 5 million vulnerable people in South and Southeast Asia and in the African Sahel by helping them become more resilient to climate extremes	Villanueva, P. S., & Gould, C. (2016). Routes to resilience: lessons from monitoring BRACED. ITAD. Retrieved from http://www.itad.com/wp-content/uploads/2016/12/Routes-to-resilience-ME-REFLECTIONS-WEB-2.pdf
ARUP & Rockefeller Foundation	City Resilience Framework	• Index is based on three years of research, case studies and pilot schemes conducted in 27 cities around the world. • Consists of four dimensions important for overall city resilience (health and well-being; economy and society; infrastructure and environment, and leadership and strategy), 12 goals (three per dimension), and 52 indicators (assessed based on responses to 156 questions) • Has been piloted in 5 cities: Shimla, India, Concepcion, Chile, Arusha, Tanzania, Hong Kong, China and Liverpool, UK.	da Silva, J. (2015). City Resilience Index. ARUP. Retrieved from http://www.arup.com/city_resilience_index
Rockefeller Foundation	Asian Cities Climate Change Resilience Network (ACCRN)	• Focuses on strengthening the capacities in cities to plan, finance and implement urban climate change resilience strategies and actions initially in 10 cities across India, Indonesia, Thailand and Vietnam (now expanded to 40, including Philippines and Bangladesh)	http://explore.acccrn.net/

		• Outlines five elements to building city resilience: i) engagement; ii: assessment; iii) planning; iv) action; and v) learning.	
UNDP	Community-Based Resilience Analysis (CoBRA) Framework	• Developed in the context of, and focus on, drylands of the greater Horn of Africa and drought-related disasters with an emphasis on improving development and humanitarian actions through better coordination with the aim of reducing negative impacts of shocks on livelihoods • Intended to give conceptual guidance and is less prescriptive compared to other frameworks. • Potential indicators of resilience are given based on the concept of 'capitals' i.e. physical capital, human capital, financial capitals, natural capitals, and social capitals (see UNDP, 2014, Annex 2 for full list).	UNDP. (2014). CoBRA Conceptual Framework and Methodology. UNDP. Retrieved from http://www.undp.org/content/undp/en/home/librarypage/environment-energy/sustainable_land_management/CoBRA/cobra-conceptual-framework.html
International Institute for Sustainable Development (ISSD)	Climate Resilience and Food Security Framework for Planning and Monitoring	• Focuses on understanding and monitoring food system resilience to climate change in order to support analysis of community-level food security, as well as resilience of food systems at larger scales.	IISD. (2013). Climate Resilience and Food Security: A framework for planning and monitoring. Retrieved from http://www.iisd.org/sites/default/files/publications/adaptation_CREFSCA.pdf
UN Food and Agriculture Organisation's (FAO)	Self-evaluation and Holistic Assessment of Climate Resilience of farmers and Pastoralists (SHARP) framework	• Addresses the need to better understand and incorporate the situations, concerns and interests of farmers and pastoralists relating to climate resilience and agriculture • Centers around three phases: i) Base assessment of current farmer/pastoralist situation through self-assessment with farming communities; ii) Gap analysis of climate change resilience weaknesses based on output of Phase 1 and available data on Climate Change in the relevant region; iii) Specific strategies for each situation (based on geography, practices and expected climatic changes) • Built on the concept of participatory learning exchanges with four main assessment areas: environment, social, economic, and governance	Choptiany, J., Graub, B., Phillips, S., Colozza, D., & Dixon, J. (2015). Self-Evaluation and Holistic Assessment Of Climate Resilience of Farmers and Pastoralists. Food and Agriculture Organization of the United Nations (FAO). Retrieved from http://www.fao.org/3/a-i4495e.pdf

Cross comparison of RRSP components and RBMES results matrices

RRSP Component 1: Reducing Exposure to Hazards through Ecosystem Stability and Resilience

Core investment areas will focus on key landscapes and include: (a) Forest development and rehabilitation (e.g., agroforestry, orchard development), (b) Watershed protection, rehabilitation and effective management (e.g., wetland rehabilitation, soil and water quality management, water reservoir) , (c) Coastal ecosystem management and rehabilitation (e.g., reef rehabilitation, mangrove plantation, buffer zones, marine protected areas), (d) Critical habitats and protected areas in tourism development areas

Water Sufficiency			
Ultimate Outcome	**Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change.**		
Ultimate Outcome Indicators	Water availability per capita (WAPC) ratio		Disaster Risk Index
Intermediate Outcome	**Water resources sustainably managed and equitable access ensured.**		
Intermediate Outcome Indicators	Water Resources Vulnerability Index *Water withdrawal to availability (WTA) ratio*		
Immediate Outcome	**1. Water governance restructured towards IWRM in watersheds and riverbasins.**		**2. Sustainability of water supply and access**
Immediate Outcome Indicators	No. of institutions (RBOs, LGUs) implementing IWRM		Water quality of priority river systems improved (by BOD water criteria: Class C <= 7mg/L; Class D >7mg/L & >= 10mg/L)
Output Areas **[Agency MFO]**	**1.1 Enabling policies for IWRM and CCA created.** [DENR and NWRB MFOs]	**1.2 CC adaptation and vulnerability reduction measures for the water sector implemented.** [DA, NIA, DENR, NWRB MFOs]	**2.2 Quality of surface and ground water improved.** [DENR, NWRB MFOs]
Critical Output Indicators	No. of CC-related water policies and legislations	No. of measures implemented	No. of Water Quality Management Areas (WQMA) established
	No. of river basin organizations institutionalized	% coverage of water license	Incidence of water-borne, climate sensitive diseases
	No. of CC-enhanced river basin master plans		No. of cities, municipalities served by sewerage / septage system

Environment & Ecological Stability				
Ultimate Outcome	**Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change.**			
Ultimate Outcome Indicators	Trends in abundance and distribution of selected species		Amount of damage caused by major natural disasters (in Peso)	
Intermediate Outcome	**Enhanced resilience and stability of natural systems and communities.**			
Intermediate Outcome Indicators	i) Change in status of threatened and/or protected species ii) % change in water quality iii) % change forest cover			
Immediate Outcome	Ecosystems protected, rehabilitated and ecological services restored			
Immediate Outcome Indicators	Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management	Extinction of threatened species of wild flora & fauna prevented	% land area covered by forest from 23.8% in 2003 to 30% in 2016	% of critical coastal and marine habitats effectively and equitably managed
Output Areas **[DENR MFO]**	CC mitigation and adaptation strategies for key ecosystems developed and implemented.	Management and conservation of protected areas and key biodiversity areas improved.	Environmental laws [in the context of climate change] strictly implemented.	Natural resources accounting institutionalized.
Critical Output Indicators	No. of strategies and policy frameworks developed No. of types of CCAM programs in key ecosystems implemented	% CLUP-CDP climate proofed % PA and KBAs plans climate proofed	% CLUPs climate proofed	% LGUs implementing wealth accounting for valuation of ecosystem services

RRSP Component 2: Reducing Assets Vulnerability through Protective and Resilient Infrastructure

Core investment areas include: (a) soil and water impounding structures preventing erosion, landslide and floods; (b) protective structures including embankments and coastal protection measures ; (c) housing and public building (e.g., schools, health centers, community centers), quality through hazard-resilience standards; (d) rural connectivity through resilient transport facilities; (e) resilient service supply (e.g., water, sanitation, sewage, power); and (f) improved preparedness including early warning systems, evacuation roads and shelters, (g) resilient post disaster recovery and reconstruction.

Sustainable Energy				
Ultimate Outcome	**Successful transition towards climate smart development**			
Ultimate Outcome Indicators	Ton CO2 emissions reduction per year from RE production		Ton CO2 emissions reduction per year from transport sector	
Intermediate Outcome	**Sustainable RE and ecologically-efficient technologies adopted as major components of the sustainable development**			
Intermediate Outcome Indicators	Renewable Energy Ratio (Renewable Energy Supply/Total Supply Energy)	Energy productivity ratio of industries		Extended economic life of infrastructure
Immediate Outcome	**Sustainable renewable energy development enhanced**	**Environmentally sustainable transport promoted and adopted**		**Energy systems and infrastructures climate-proofed, rehabilitated and improved**
Immediate Outcome Indicators	Percentage change in sustainable renewable energy generation capacity	No. of BRT schemes developed for implementation		Amount of damage caused by major natural disasters (in Peso)
Output Areas	**Off-grid, decentralized community based renewable energy system to generate affordable electricity adopted.**	**Environmentally sustainable transport strategies and fuel conservation measures integrated in development plans**	**Innovative financing mechanisms developed and promoted.**	**Energy systems and infrastructures climate-proofed, rehabilitated and improved.**
Critical Output Indicators	No. of LGUs adopting off-grid RE systems	Increase in provision of mass transport system	% increase in new investments on environmentally sustainable transport	No. of vulnerable energy and transport system infrastructures redesigned, retrofitted and rehabilitated
		Number of BRT schemes developed for implementation	No. of financing programs to support upscaling and roll-out of pilot ESTs (e-jeepney, e-trikes, solar bus, etc.)	No. of engineering interventions for mitigation measures
	Increased percentage of households in off-grid areas using RE systems			Reduction in service interruption due to climate and disaster risks

Water Sufficiency		
Ultimate Outcome	**Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change.**	
Ultimate Outcome Indicators	Water availability per capita (WAPC) ratio Disaster Risk Index	
Intermediate Outcome	**Water resources sustainably managed and equitable access ensured.**	
Intermediate Outcome Indicators	% water supply coverage	
Immediate Outcome	Access to safe and affordable water ensured	
Immediate Outcome Indicators	% ratio of water supply to water demand in critical areas (million liters per day)	% population with access to improved water sources* * climate proofed
Output Areas **[Agency MFO]**	Water supply and demand management of water improved. [NWRB, NIA MFOs]	Equitable access of men and women to sustainable water supply improved. [DENR, NWRB MFOs]
Critical Output Indicators	No. of site specific water supply and demand (water balance) studies conducted	% household in waterless municipalities with access to climate resilient water systems
	No. of water supply infrastructure assessed and climate proofed	

RRSP Component 3: Increasing Coping Capacity through Sustainable and Resilient Livelihoods

Core investment areas will focus on demand driven activities that augment community resilience and will include: (a) enhancing productivity of existing income activities through improved techniques (e.g., improved crop harvesting, climate resilient farming, sustainable aquaculture intensification); (b) new income activities including cash-for-work programs and/or micro-enterprises based on timber plantations, harvesting non-timber forest products, nature based tourism, etc.; and (c) social safety nets for the poorest communities.

Ultimate Outcome	**Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change.**			
Ultimate Outcome Indicators	Food security (satisfactory balance between food demand and food supply at reasonable prices) · Decreased food subsistence incidence (% population) □Stable average inflation rates among basic food commodities (in %)			
Intermediate Outcome	**Ensured availability, stability, accessibility, affordability, safe and healthy food amidst increasing climate change and disaster risks.**			
Intermediate Outcome Indicators	Annual self-sufficiency ratio in rice, white corn and fish of key food production areas, island provinces & municipalities			
Immediate Outcome	**1. Enhanced CC resilience of agriculture and fisheries production and distribution systems**		**2. Enhanced resilience of agricultural and fishing communities from climate change**	
Immediate Outcome Indicators	Average annual production loss due to weather and climate-related disasters	% change in agriculture and fisheries gross value added (GVA)	Annual average income of families in AF sector (in pesos, real terms, based on 2000 prices)	% by geographic distribution of AF households covered by innovative financing scheme (credit, insurance, guarantee, quick-response fund)
Output Areas **[DA MFO]**	**1.1 Enhanced knowledge on the vulnerability of agriculture and fisheries to the impacts of climate change.** [DA 2.0 Technical & Support Services]	**1.2 Climate-sensitive agriculture and fisheries policies, plans and [investment] programs formulated.** [DA 1.0 A&F Policy Services]	**2.1 Enhanced capacity for CCA and DRR of government, farming and fishing communities and industry.** [DA 2.0 Technical & Support Services]	**2.2 Enhanced social protection for vulnerable farming & fishing communities.** [DA 1.0 A&F Policy Services] [DA 2.0 Technical & Support Services]
Critical Output Indicators	No. of vulnerability and risk assessments for food production & distribution available at the provincial and regional scale	No. of CC-related policies enacted and plans and program implemented* *Consistent with CC-tagging	No. of climate-adaptive tools, technologies and practices transferred and adopted by communities and industry	No. of weather index-based and area-based yield crop insurance products accessed for different AF commodity
	No. of CC-related R&D projects		No. of beneficiaries of capacity development programs implemented for AF by sectoral agencies	

RRSP Component 4: Increasing Knowledge, Information and Institutional Capacities to Respond to Risks

Core investment areas include: (a) data systems including a collection of climate data; (b) analytical tools (e.g, vulnerability assessments, climate and ecosystem modelling, risk screening and measurement, economic valuation of risks and costing of risk reducing options); (c) climate information services; (d) trainings and programs for risk-informed planning (including training for the revision, updates of legislations regarding infrastructure and housing standards, flood plain management, integrated coastal zone management, and risk informed land use planning); (e) risk-informed development plans and strategies; and (f) improved planning, budgeting, execution and monitoring and evaluation of resilient investments.

Water Sufficiency		
Ultimate Outcome	**Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change.**	
Ultimate Outcome Indicators	Water availability per capita (WAPC) ratio	Disaster Risk Index
Intermediate Outcome	**Water resources sustainably managed and equitable access ensured.**	
Intermediate Outcome Indicators	Change in institutional adaptive capacity	
Immediate Outcome	**Knowledge and capacity for CCA in the water sector enhanced.**	
Immediate Outcome Indicators	Institutional capacity of key agencies in the water sector for water allocation and regulation improved	
Output Areas [Agency MFO]	**Knowledge and capacity for IWRM and adaptation planning improved.** [DENR, NWRB MFOs]	
Critical Output Indicators	No. of staff from key institutions trained on IWRM and climate change adaptation and mitigation	
	No. of KM products produced and accessed by IWRM practitioners at the national and local levels	
	Updated water resources database accessible to various users	

Environment & Ecological Stability				
Ultimate Outcome	**Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change.**			
Ultimate Outcome Indicators	Trends in abundance and distribution of selected species		Amount of damage caused by major natural disasters (in Peso)	
Intermediate Outcome	**Enhanced resilience and stability of natural systems and communities.**			
Intermediate Outcome Indicators	i) Change in status of threatened and/or protected species ii) % change in water quality iii) % change forest cover			
Immediate Outcome	Ecosystems protected, rehabilitated and ecological services restored			
Immediate Outcome Indicators	Area of forest, agricultural, fishery and aquaculture ecosystems under sustainable management	Extinction of threatened species of wild flora & fauna prevented	% land area covered by forest from 23.8% in 2003 to 30% in 2016	% of critical coastal and marine habitats effectively and equitably managed
Output Areas [DENR		Management and conservation of protected areas and key biodiversity areas improved.		**Capacity for integrated ecosystem-based management approach in protected areas and key biodiversity areas enhanced.**
Critical Output Indicators		No. of staff trained in ecosystem-based management approaches		No. of communicated best practices CC information management system established at the national level (CC Act) No. of gender-sensitive KM products developed and disseminated % staff trained ad implementing EBAs (NGAs and LGUs)

RRSP Component 4: Increasing Knowledge, Information and Institutional Capacities to Respond to Risks (cont'd)

Human Security			
Ultimate Outcome	**Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change.**		
Ultimate Outome Indicators	No. of lives lost due to emerging and re-emerging climate-sensitive diseases	Disaster Risk Index	
Intermediate Outcome	**Reduced risks of the population from climate change and disasters.**		
Intermediate Outome Indicators	Incidence of emerging and re-emerging climate-sensitive diseases in vulnerable areas (Dengue, Leptospirosis, Malaria, Cholera, Typhoid)	No. of beneficiaries of health services rendered for emerging and re-emerging climate-sensitive diseases	Amount of damage caused by major natural disasters (in Peso) No. of lives lost due to extreme hydro-meteorological events
Immediate Outcome	**CCA and DRR practiced by all sectors at the national and local levels**		
Immediate Outcome Indicators	No. of early warning system for emerging and re-emerging climate-sensitive diseases established in vulnerable areas		
Output Areas	**1.1 CCA-DRRM integrated in local plans.**	**1.2 Knowledge and capacity for CCA-DRRM developed and enhanced.**	
Critical Output Indicators	Percentage of CC- DRRM sensitive CLUPs and CDPs formulated		

RRSP Component 4: Increasing Knowledge, Information and Institutional Capacities to Respond to Risks (cont'd)

Knowledge and Capacity Development					
Ultimate Outcome	**Successful transition towards climate smart development**				
Ultimate Outcome Indicators					
Intermediate Outcome	**Enhanced knowledge on and capacity to address climate change**				
Intermediate Outcome Indicators	Knowledge gain on climate change science (ΔK)	Attitude change on each priority area per vulnerable group (ΔA)	No. of climate and disaster risk reduction measures / practices adopted by vulnerable groups ($\Delta P_{Adaptation}$)		No. of climate change mitigation measures adopted by industry or sector ($\Delta P_{Mitigation}$)
Immediate Outcome	**Knowledge on the science of CC enhanced**		**Capacity for CC adaptation and mitigation at the national and local levels enhanced**		**CC KM established and accessible to all sectors at the national and local level[3]**
Immediate Outcome Indicators	Degree of maturity of climate change science (body of knowledge) in the Philippines		Degree of participation of various stakeholders in CC projects / programs	Variety of CC adaptation and mitigation projects	% increase in CC adaptation best practices documented and disseminated at national and sub- national levels
	No. of climate information products generated and services rendered by the CC Centers of Excellence	No. of research and publications related to climate change	Proportion of LGUs with "Seal of Disaster Preparedness"	Rate of increase in number of CC instructional materials Percentage of correct answers for CC related questions in civil service, PRC and NAT exams	% increase in activity of CC COPs Level of activity in CC centers of private sector
Output Areas	**1.1 R&D Programs on CC science including scenario modelling & forecasting**	**1.2 Government capacity for CCAM planning and implementation**	**2.1. CC resource centers identified and established.**	**2.2. Formal and non-formal capacity development program for climate change science, adaptation and mitigation developed.**	**3.1. Gendered CC knowledge management established and accessible to all sectors at all levels.**
Critical Output Indicators	No. of centers of excellence on CC science (scenario modelling, downscaling, etc.) designated and capacitated.	No. of vulnerability and risk assessments conducted.	No. of resource centers identified and networked	No. of textbooks for pre- elementary, elementary, high school and alternative learning system with CC concepts integrated.	No. of government institutions, centers of excellence and CC resource centers linked to a national web-based CC information hub.
		Percentage increase in budget allocation and spending for CCAM programs, projects and activities	No. of CC resource networks accessed by LGUs and local communities		No. of gendered knowledge products for various audience and vulnerable groups accessible
		Percentage increase in the no. of trained personnel on CCAM in key agencies at the national and sub- national levels			No. of local institutions and communities accessing gendered knowledge products.

Indicators related to resilience in the PDP (2017 – 2022)

Table 3. PDP 2017 – 2022 Indicators Related to Resilience.

Theme		Indicators	Plan targets					
			2017	2018	2019	2020	2021	2022
Building Socioeconomic Resiliency of Individuals and Families		Percentage of population covered by social health insurance	100%	100%	100%	100%	100%	100%
		Percentage of poor families covered by PhilHealth as identified under the Listahanan and LGU Sponsored Program (in %)	100%	100%	100%	100%	100%	100%
		Proportion of poor senior citizens covered by social pension	100%	100%	100%	100%	100%	100%
		Coverage of emergency employment programs during crisis (economic, financial, disaster-related)						
		Proportion of individuals affected by natural and man-made calamities provided relief assistance	65%	65%	65%	65%	65%	65%
		Coverage of Community-Based Employment Program (CBEP)						
		OFW membership to OWWAs, disability, and death benefits						
		Total government spending in social protection and employment programs as a proportion of the national budget and GDP						
		Labor share of GDP, comprising wages and social protection transfers						
Ensure Ecological Integrity, Clean and Healthy Environment	Increased adaptive capacities and resiliency of ecosystems and communities	Annual damages and losses (crops and properties) due to disasters caused by environmental and geological and hydrometeorological hazards (PDP 2011-2016)						
		Number of deaths, missing persons and persons affected by disaster per 100,000 peoples (SDG 13)						
		Number of LGUs with completed vulnerability assessments and climate and disaster risk assessment (CDRA)	486 CLUP (as of Oct 2016)					1458 cities and municipalities
			Watershed VA (c/o ERDB)					

	Number of approved CC/DRRM-enhanced plans:	552 CLUPs					All LGUs
		37 CDPs					
		1522 LDRRMPs					
		1114 LCCAPs					
	Number of schools and universities with CC and DRRM curricula	Higher education curricula					To be determined
		Primary and secondary education curricula					To be determined
		Technical education curricula					To be determined
	Number of climate-smart public infrastructure facilities established	# of climate-proofed school buildings					To be determined
		# of climate-proofed hospitals					To be determined
		Length of climate-proofed FMRs (km)					To be determined
	Number of LGUs with operating early warning systems (EWS) in place	1180 LGUs					Increasing annually
	Number of fully-functional NDRRM operations centers	Permanent: 775 LGUs Temporary: 1038 LGUs					Increasing annually
	Amount of funds accessed from PSF and GCF	PSF = 0					Full utilization of annual budget
		GCF = 0					Increasing amounts of funds accessed
	Number of beneficiaries of risk insurance or microfinancing mechanisms offered by the public sector	1715 LGUs (i.e. cities, municipalities and provinces) (97.14%) 458 NGAs (i.e. GOCCs, national offices and SUCs) (92.14%)					

Comparative indicator mapping between RRSP and RBMES

Table 4. RRSP and RBMES comparative mapping.

RRSP Component	RBMES		Key gaps	Suggested Indicators
	Theme(s)	Indicator(s)		
Reducing Exposure to Hazards through Ecosystem Stability and Resilience	Water Sufficiency	Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change. [Ultimate Outcome]	• Watershed protection, rehabilitation and effective management is largely limited to water governance and is very river-focused. There is not much in the way of wetland rehabilitation and soil quality (see table 16) nor on groundwater withdrawal/recharge	• Groundwater recharge rates increased from X to X [immediate outcome indicator] • % change in groundwater withdrawal from XXXX [Year] to XXXX [Year] [critical output indicator] • % change in groundwater recharge from XXXX [Year] to XXXX [Year] [critical output indicator]
	Environment & Ecological Stability	Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change. [Ultimate Outcome]	• Forest development and rehabilitation are limited to percentage change in forest cover which does not tell anything about rehabilitation. Further, there is not much in the way of agroforestry and orchard development (see table 18) • Coastal indicators are largely focused on management (primarily vis-a-vie valuation/accounting), and not rehabilitation. There is no specific mention of reef rehabilitation, mangrove plantation, or buffer zones. (see table 18) • Critical habitats and protected areas are biodiversity-centered (see table 18)	• No. of hectares of forest rehabilitated [critical output indicator] • % of LGUs developing forest rehabilitation plans [critical output indicator] • No. of CC-enhanced wetland management plans [critical output indicator] • No. of CC-enhanced MPA management plans [critical output indicator]
Reducing Assets Vulnerability through Protective and Resilient Infrastructure	Water Sufficiency	Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change. [Ultimate Outcome]	• Resilient service supply largely focuses on water, power and transport. Sewage and sanitation were not explicitly mentioned in the RBMES (see tables 21 and 16) • While there is reference to resilient transport facilities, it's explicitly rural connectivity focused – however, one could assume that the RBMES is implicitly considering this (see table 21). • The transport outcomes and indicators are in the Sustainable Energy Results Matrix. In other cases, rural connectivity may be poor in which case the priority would be improving connectivity before making transport facilities resilient. • The only mention of early warning systems is in Table 19, and it's with regards to emerging and re-emerging climate sensitive diseases. There is no mention of evacuation roads and shelters. • There is little in the RBMES with regards to soil and water impounding structures, or protective infrastructures and housing and public building; RBMES is more planning focused in this respect, with reference to climate integrated land use plans and the like; there is little on hazard-resilience standards. • There is an impression, overall, that the RBMES is more systems-level than the RRSP. • There is no mention of resilient post-disaster recovery and reconstruction. Also, the problem with including this under this component is that the World Bank is taking a very infrastructure-focused perspective of recovery. Infrastructure is only one part of the recovery issue – there are social, environmental, political, etc. factors at play as well (this could be part of an overall DRR plan)	• % of infrastructure protected via soil and/or water impoundment [critical output indicator] • % of LGUs with coastal protection measures in place [critical output indicator] • Hazard-resilience standards developed and implemented [output area] • Rural connectivity improved [immediate outcome] • Increased percentage of rural areas with resilient transport facilities [critical output indicator] • No. of sewage treatment facilities climate-proofed [critical output indicator] • % of LGUs with evacuation shelter infrastructure in place [critical output indicator]
	Sustainable Energy	Successful transition towards climate smart development [Ultimate Outcome]		
Increasing Coping Capacity through Sustainable and Resilient Livelihoods	Food security	Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change. [Ultimate Outcome]	• This component is too rural-focused. There is little room to integrate urban. For example, RBMES' Table 20 is focused on climate smart industries and services – it looks to promote green growth and sustainable livelihoods created by new, climate-smart industries. This conception of sustainability and resilience livelihoods should be integrated into this component of the RRSP • The ultimate outcome here refers to the 'built environment' i.e. buildings, bridges, infrastructure, yet virtually all of the different level outcomes and indicators focus on agriculture/farming/fishing.	• No. of ecotourism projects developed [critical output indicator] • No. of community funds developed for social protection [critical output indicator] • No. of sustainable aquaculture projects developed [critical output indicator] • Enhanced capacity for livelihood diversification [output area]

			● The food security results matrix (Table 10) can almost wholly be applied to this component – it deals primarily with agriculture and fisheries, both of which are key parts of this component ● There is not much, however, on new income activities such as cash-for-work programs, micro-enterprises and nature-based (eco) tourism.	
Increasing Knowledge, Information and Institutional Capacities to Respond to Risks	Water Sufficiency	Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change. [Ultimate Outcome]	● Overall, there are a comprehensive number of outcomes and indicators to work with from the RBMES; no glaring gaps are apparent upon review ● Component (f) from the RRSP (improved planning, budgeting, execution and monitoring and evaluation of resilient investments) seems to be about building program implementation/ administration-specific indicators for the RRSP	
	Environment & Ecological Stability	Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change. [Ultimate Outcome]		
	Human Security	Enhanced adaptive capacity of communities, resilience of natural ecosystems and sustainability of built environment to climate change. [Ultimate Outcome]		
	Knowledge and Capacity Development	Successful transition towards climate smart development [Ultimate Outcome]		