Climate Risk Management: an integrated approach for Climate Change Adaptation and Disaster Risk Reduction in Indonesia

Concept Paper

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Cover Photo: Pilot project on sustainable peatland management (ICCTF). This project helped reduce greenhouse gas emissions from degraded land and also contributed to increasing awareness of community on sustainable use of degraded land and managing land-related risks by adopting more sustainable land-use practices.
Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>BAPPENAS</td>
<td>Badan Perencanaan Pembangunan Nasional (National Development Planning Agency)</td>
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<td>BMKG</td>
<td>Badan Meteorologi, Klimatologi, dan Geofisika (Indonesian Meteorological, Climatological and Geophysical Agency)</td>
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<td>BNPB</td>
<td>Badan Nasional Penanggulangan Bencana (National Disaster Management Agency)</td>
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<td>BPBD</td>
<td>Local Disaster Management Agencies</td>
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<td>CCA</td>
<td>Climate Change Adaptation</td>
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<td>COP</td>
<td>Conference of Parties</td>
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<td>CRM</td>
<td>Climate Risk Management</td>
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<td>CRM-TASP</td>
<td>Climate Risk Management-Technical Assistance Support Project</td>
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<td>DNPI</td>
<td>Dewan Nasional Perubahan Iklim (National Council on Climate Change)</td>
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<td>DRR</td>
<td>Disaster Risk Reduction</td>
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<td>DRR-A</td>
<td>Making Aceh Safer through Disaster Risk Reduction in Development</td>
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<td>GEF/SCCF</td>
<td>Global Environment Facility/Special Climate Change Fund</td>
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<td>GFDRR</td>
<td>Global Facility for Disaster Reduction and Recovery</td>
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<td>GHG</td>
<td>Green House Gases</td>
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<td>GoI</td>
<td>Government of Indonesia</td>
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<td>HFA</td>
<td>Hyogo Framework for Action</td>
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<td>INC</td>
<td>Initial National Communication</td>
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<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
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<td>KLH</td>
<td>Kementerian Lingkungan Hidup (Indonesian Ministry of Environment)</td>
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<td>MDG</td>
<td>Millennium Development Goals</td>
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<td>PLANAS-PRB</td>
<td>National Platform for Disaster Risk Reduction</td>
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<td>RAN-API</td>
<td>National Climate Change Adaptation Action Plan</td>
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<td>RAN-PRB</td>
<td>National Action Plan Disaster Risk Reduction</td>
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<td>RENAS PB</td>
<td>National Disaster Management Plan</td>
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<td>SC-DDR</td>
<td>Safer Community through Disaster Risk Reduction in Development</td>
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<td>SPARC</td>
<td>Strategic planning Action to strengthen Climate Resilience of rural communities in East Nusa Tenggara</td>
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<td>TNC</td>
<td>Third National Communication</td>
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<td>UN</td>
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<td>UNDP</td>
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<td>UNFCCC</td>
<td>United Nations Framework Convention on Climate Change</td>
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<td>UNISDR</td>
<td>United Nations Office for Disaster Risk Reduction</td>
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Executive Summary

As is the case with many other developing countries, climate change threatens the progress that Indonesia has made over the last decade on achieving the Millennium Development Goals (MDG). With over 17,000 islands, Indonesia is especially vulnerable to climate-related risks such as rising sea level, floods and landslides, wind storms, drought while erratic weather patterns impact agricultural production and fishery, which support many local livelihoods. Most MDG goals, particularly the poverty reduction goal, will be severely compromised if there are inadequate ‘climate proofing’ or adaptation interventions.

Two different frameworks can help address the development challenges caused by climate change: Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) frameworks. These two frameworks share the common goal of seeking to build resilience by reducing risks to human life. If implemented in a systematic and integrated manner, both frameworks could become an effective and practical way to manage climate risks and build resilience. The potential areas of synergy between the two frameworks already exist because they have overlapping initiatives and use similar tools to monitor, analyse and address risks associated with weather events and disasters. Therefore integration of the two frameworks could avoid the duplication of efforts, and streamline administrative structures, which in turn could help garner renewed political will or leveraging of additional financial resources.

Increasingly aware of the advantages of merging CCA and DRR frameworks to reduce the development loss and human suffering, some institutions have already started to integrate the two concepts. For example, UNDP has developed the Climate Risk Management (CRM) methodology, which essentially synergizes the approaches of CCA and DRR risk analysis and assessment to address climate-induced risks.

Noting the importance of integrating CCA and DRR into development policies and practices in Indonesia to protect and sustain development results, CRM framework may offer the Government of Indonesia a practical tool to effectively manage climate risks particularly in the areas of sustainable agriculture, marine and fishery, coastal and small islands planning and protection, water management and health sector.

This concept paper aims at providing the background information on climate risks in Indonesia (chapter 1), describing in detail the CCA and DRR frameworks and the CRM concept (chapter 2), discussing advantages and challenges of adopting the CRM methodology (chapter 3), reviewing examples and good practices of projects that incorporate both CCA and DRR components in Indonesia (chapter 4), and finally highlighting strategic entry points for a joint CCA/DRR approach in Indonesia (chapter 5).
CHAPTER I: Background

Climate change and disaster risks are closely linked; therefore, in order to build climate-resilient communities, both sets of risks must be addressed together. Climate change affects disaster risks in at least two ways. First, the risk is heightened by the likelihood of extreme weather events of great magnitude and increasing frequency. In Indonesia, powerful windstorms, landslides and floods are occurring more frequently due to climate variability. In parallel, the loss and damages caused by climate-related risks has also increased during the last decade. Over the past three decades (1980-2010) throughout Indonesia, hundreds of climate-related disasters occurred causing the loss of lives, destroying hectares of crops and damaging properties. In fact, Figure 1 shows that the number of climate hazards has been on the rise in Indonesia since 1950. In correlation, the number of natural disaster events linked with climate change such as floods, droughts and landslides have occurred more frequently and caused more fatalities over the years as shown in Figure 2a and 2b.

The second way in which climate change affects disaster risks is by increasing the vulnerability of communities to the natural hazards. Climate change stresses affect biophysical and human surroundings, by contributing to environmental degradation and socio-economic changes, and thereby further reducing the ability of communities to cope with the adverse impacts of climate changes. Climate change for instance can cause lower crop productivity, and degradation of agricultural land and other natural resources, which eventually increases food insecurity in rural and urban areas. The province of East Nusa Tenggara is a prime example of where prolonged droughts led to crop failure, which in turn contributed to acute malnutrition in the region that was already afflicted by irregular agricultural production. Communities experiencing severe malnutrition would be less resilient to respond to any subsidiary impact, and therefore a hazard is more likely to turn into a disaster.

Because the impact of climate change can be felt across many sectors, an integrated approach to address climate risks would be necessary to build “climate resilient” communities in Indonesia.
Figure 1: Number of climate hazards by type (right) and by year (left) – (Source: Indonesia Second National Communication)
CHAPTER 2: Introducing CCA & DRR

To understand the need to merge CCA and DRR into one common framework, it is necessary to have an overview of each of their characteristics. This chapter focuses on the definitions of CCA and DRR as well as on the features of their international and national frameworks and institutional arrangement in Indonesia.

2.1 Climate Change Adaptation

2.1.1 CCA Definition

The Intergovernmental Panel on Climate Change (IPCC) (1996) defines adaptation as the “adjustment in natural or human system in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities”iii.

The main purpose of CCA is to develop appropriate adaptation strategies to manage current and future climate risks. One of the important steps for CCA is to conduct a climate analysis based on the current climate in a particular location as well as the predictions of the climate change and vulnerability over a particular period of time. Under the CCA framework, risk is calculated based on the combination of the likelihood or probability of occurrence and the consequences of an adverse event such as climate hazard.iv Climate risks arise from interactions between climate and society and therefore can be assessed by two different methodologies: (1) natural hazard-based approach and (2) vulnerability-based approach. Under the natural hazards-based approach, the emphasis is placed on the assessment of climate hazard, and the climate risk is calculated as probability of climate hazard multiplied by the vulnerability (Climate Risk = Probability of Climate Hazard x Vulnerability). Under this approach, the hazard is generally known to occur at a certain level, and this information is used to assess how changing that particular hazard affects the vulnerability of a given community over space and/or time. On the other hand, the vulnerability-based approach focuses on the known vulnerability of a community and assesses the likelihood of climate related hazards to exceed the critical vulnerability threshold depending on the changing frequency, magnitude, and or combination of various climate events (Climate Risk = Probability of climate hazard exceeding one or more criteria of vulnerability).

As demonstrated above, climate risks depend on interrelated factors, and therefore, a successful climate change adaptation approach must be multi-faceted and aim to address various closely linked issues such as social challenges including poverty reduction, access to information and increased adaptive capacity of local communities and ecological issues such as prevention of land and water quality degradation, and preservation of biodiversity.

2.1.2 International and national CCA Framework

The CCA Framework relies on numerous conventions and action plans. The relevant ones are:

- The UN Framework Convention on Climate Change (UNFCCC): In 1992, countries joined an international conference and signed a treaty, the UNFCCC, to cooperatively consider what they could do to limit average global temperature increases and the resulting change of climate, and to cope with its inevitable negative impacts. The ultimate objective of the Convention is to achieve stabilization of greenhouse gas concentrations "at a level that would
The National Climate Change Adaptation Action Plan (RAN-API) is an initiative of the Government of Indonesia to develop a national action plan for climate change adaptation. The national action plan will include, among others, the mainstreaming of adaptation into national development planning, and the assessment of climate change vulnerability. The Government of Indonesia will launch the action plan in November 2012.

2.1.3 CCA National Institutions

Several Indonesian institutions are working on climate change issues by coordinating their efforts and incorporating climate change adaptation elements in their planning, projects and interventions. The main institutions are:

- The Indonesian National Council on Climate Change (DNPI), chaired by the president, formulates national policies, strategies, programs and activities on climate change responses. The institution also coordinates activities including climate change adaptation, mitigation, technology transfer and financing. It has established a working group on adaptation that focuses on agricultural adaptation, disaster risk reduction and climate change information dissemination. (Presidential Regulation No. 46/2008)

- The Indonesian Institutional Ministry of Environment (KLH). The Presidential Regulation No. 71/2011 provides a legal basis for KLH to coordinate the efforts of line ministries to carry out GHG inventories and to prepare the national communication on climate change to fulfill Government of Indonesia's obligation to meet the requirements of the UNFCCC.

- The National Development Planning Agency (BAPPENAS) integrates climate change into national development planning/processes and leads the implementation of the RAN-API, national action plan for climate change adaptation.

- The Indonesian Meteorological, Climatological and Geophysical Agency (BMKG)'s mission is to provide data and information about meteorology, climatology, air quality and geophysics in Indonesia. Its mandate includes supporting the mitigation and adaptation of climate change in the country. With the strong support from its centre for climate change and air quality (PIKU) and a subdivision of climate change information dissemination, BMKG is one of the leading institutions for climate change information. It disseminates local and regional information of the past, ongoing and future climatic changes.
2.2 Disaster Risk Reduction

2.2.1 DRR Definition

Disaster Risk Reduction is a systematic approach to identifying, assessing and reducing the risks of disaster. Disaster Risk Reduction can thus be defined as “the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.”

According to the UN Office for Disaster Risk Reduction (UNISDR), a hazard, which can be characterized as “a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage,” does not necessarily trigger a disaster. Indeed, a disaster occurs when the exposure of a group of people to a hazard exceeds their ability to cope with the hazard and leads to a serious disruption of the functioning of a society, and brings about significant losses and damages to human lives, and/or to the economy.

UNISDR uses the following formula to define a disaster:

\[
\text{Disaster Risk} = \text{Hazard} \times \text{Vulnerability} \times \text{Capacity}
\]

Based on the above definition, reducing disaster risks includes increasing capacities, decreasing vulnerability and exposure.

- **Hazard:**
  Lessen and mitigate the adverse impact of the hazards through structural mitigation measures (e.g., dam, earthquake-resistant building) and non-structural mitigation measures (e.g., regulatory measures, education and awareness).

- **Vulnerability:**
  Reinforce the physical, social, economic and environmental factors that strengthen the capacities of community and which make them less susceptible to the damaging effects of a hazard.

- **Exposure:**
  Reduce the number of potential losses and damages when hazards do happen (better land-use planning, relocating households living in prone-risk areas).

2.2.2 International and national DRR Frameworks

The DRR Framework relies on different institutions, conventions and action plans. The main ones are:

- **United Nation Office for Disaster Risk Reduction (UNISDR)** was created in December 1999 as part of the UN Office and the Secretariat with the purpose of ensuring the implementation of the International Strategy for Disaster Reduction. It serves as the “focal point in the UN system for the coordination of disaster reduction and works to ensure synergies among disaster reduction activities.”

- **The Hyogo Framework for Action (HFA)** is a 10-year action plan adopted by 168 Member States of the United Nations in 2005 at the World Disaster Reduction Conference. It is the first plan to “explain, describe and detail the work that is required from all different sectors and actors to reduce disaster losses.” Many different actors such as governments, international agencies and disaster experts worked...
together to develop this action plan. The HFA consists of five priorities for action, and highlights several guiding principles in order to achieve disaster resilience. The goal is to build the resilience of nations and communities to overcome disasters.

- The Disaster Management Law No. 24/2007 was endorsed by the Indonesian Parliament in 2007 as part of Government commitment on HFA. The law emphasized the disaster management reform in Indonesia focusing on decentralized and inclusive partnership on disaster risk reduction. A number of ancillary regulations were endorsed to support this law since then among other: Government Regulation No. 21/2008 on Disaster Management Implementation, Government Regulation No. 22/2008 on Disaster Aid Financing and Management, Government Regulation No. 23/2008 on Roles of International Organizations and Foreign Non-Government Organizations in Disaster Management. In addition, the Government of Indonesia also prepared the disaster management related planning documents with support from UNDP-support programme, the Safer Community through Disaster Risk Reduction in Development (SC-DRR), and the World Bank.

- Disaster Management Plan (RENAS PB) 2010-2014 was endorsed by Head of BNPB with regulation No. 03/2010. The plan laid out the data and information on disaster risk in Indonesia and the national government plan to reduce those risks during period of 2010-2014.

- National Action Plan DRR (RAN PRB) 2010-2012 was endorsed by Head of BNPB with Regulation No. 05/2010. The RAN PRB depicted the interests and responsibilities of different stakeholders on implementation of national DRR policies in alignment with HFA.

### 2.2.3 DRR National Institutions

Several Indonesian institutions are addressing disaster risks issues by incorporating DRR components in their interventions.

- **National Disaster Management Agency (BNPB) and Local Disaster Management Agency (BPBD)**
  The national institution in charge of Disaster Risk Reduction is the National Disaster Management Agency (BNPB). It was established in 2008 with Presidential Regulation No. 08/2008. BNPB is mandated to lead the coordination on disaster management. Following the instructions laid out in the disaster management law for decentralized disaster management, local Disaster Management Agencies (BPBD) have also been established at provincial and district level to play a similar role to the BNPB. As of the end of 2011, all 33 provinces and 340 of the 694 districts had established BPBDs.

- **National Platform for DRR (PLANAS PRB)** is another important institution working on DRR. This is a multi-stakeholder forum that was established to support and facilitate cooperation and partnership among stakeholders for advocating disaster risk reduction in Indonesia. This forum tries to accommodate different group of stakeholders and synchronize various national DRR initiatives and activities. The Indonesian National Platform for DRR is also aimed at promoting the country’s progress on Hyogo Action Plan implementation. Similar fora have also been established in 9 provinces: Aceh, West Sumatera, Bengkulu, Central Java, Yogyakarta, Bali, NTT, South Sulawesi and Maluku with support from UNDP's national programme SC-DRR and UNDP-supported provincial project Making Aceh Safer through Disaster Risk Reduction in Development (DRR-A).
CHAPTER 3: Rationale for implementation of CRM in Indonesia

Disaster Risk Reduction and Climate Change Adaptation share common goals. Both aim at reducing the vulnerability of communities and achieving sustainable development

3.1 Similarities between DRR and CCA:

Sound CCA and DRR strategies share the common objective of seeking to reduce factors that contribute to climate-related hazards, risks and disasters. In working on CCA and DRR initiatives there are noticeable overlaps, particularly in the use of similar tools to monitor, analyse and address the consequences of climate/weather events and disasters. Both DRR and CCA recommend proactive and anticipatory actions to reduce climate risks of different time scales. Both concepts are not bound to a given sector per se but must be implemented via policies across sectors, in particular across the areas of agriculture, water resources, health, land use, environment, finance and planning. DRR and CCA strategies also have direct influence on other policies, most notably poverty reduction, planning for sustainable development and access to education.

3.2 Climate Risk Management: An attempt to create a common framework

Climate Risk Management (CRM) is a new approach developed by UNDP incorporating both DRR and CCA components. CRM seeks to maintain and improve society’s ability to achieve socio-economic and development goals in the context of the changing climate. By looking at the historical and current patterns, the observable trends and the predicted global warming-based climate scenarios, CRM takes into account both the risks associated with the changing climate and projected climate variability. The information collected in the analysis is used to mitigate risk factors that otherwise contribute to climate risks such as crop failure, public infrastructure and properties damage, disease outbreaks, livelihood losses, and mortality. CRM entails working with national government within their development priorities and helping them to build the necessary capacity to manage and reduce climate and disasters risks over short and longer-term time scales. At national and regional levels, UNDP disaster reduction advisors and climate change advisors work together to assess existing climate risks for particular countries, help build and develop national expertise and provide technical support. Specific activities at the country level include identifying risks and assessing CRM needs, building national databases on disaster losses and climate change impacts, raising awareness and advocacy for CRM, integrating CRM into institutional and legal instruments and finally, integrating gender mainstreaming into CRM activities.
3.3 Benefits and advantages of linking the CCA and DRR concepts

The main rationale to link the CCA and DRR concepts lies in the complementarities of both models. The long historical experience in analyzing and managing disaster risks could greatly contribute to CCA, in terms of policy and institutional approaches as well as technical methods and tools. If CCA and DRR teams were working closely together, CCA practitioners could build upon experience and knowledge of DRR rather than starting afresh. On the other hand CCA practitioners could support DRR to evolve and apply creative methods to respond to recent challenges and risks caused by climate change. With their expertise in forecasting and climate projection CCA practitioners could help DRR teams to incorporate well-documented patterns of risks in the future. Finally, strengthening the linkage between CCA
and DRR would avoid the duplication of efforts, streamline administrative structures and hopefully lead to a renewed political will, along with financial incentives, to invest resources for preventative measures.

3.4 Challenges of adopting a DRR-CCA approach

Despite all the benefits of linking both concepts, some challenges remain. The first challenge encountered is that DRR and CCA are partitioned and collaboration between both fields, having different origins, roots and cultures can be difficult. CCA finds its origin in a scientific theory whereas DRR takes its roots in humanitarian assistance and recovery following a disaster event. Historically, there are separate communities of policy makers, practitioners and researchers working on DRR and CCA, with limited overlap in networks, fora and methods. The two communities often use different language to describe identical concepts.

Another challenge is that too often both domains still operate largely isolated from each other. In Indonesia, at the national level, environmental authorities have the responsibility for CCA and its mainstreaming in the planning of line ministries. DRR is a truly cross-sectoral approach because of the vast array of possible disasters such as natural disaster of all kinds, conflicts and pandemics. BNPB, civil defence and home affairs divide among each other some of the responsibility for DRR and also disaster management, when the disaster occurs. Similar to the national level, at the international level initiatives and institutions approach these issues separately. In international agencies, CCA and DRR units are separated and rarely communicate about their work or coordinate their actions. Key donor governments and institutions are still struggling to ensure good communication and collaboration between these two separate communities.

CHAPTER 4: Examples of projects with DRR and CCA components in Indonesia

The following are some examples of UNDP projects that incorporate CCA and DRR:


CRM-TASP seeks to maintain and improve society’s ability to achieve socio-economic and development goals in the context of the changing climate. It focuses on climate-related development outcomes – in areas such as agriculture, water resources, food security, health, the environment and livelihoods – that are sensitive to climate variability and change as well as climate-related disasters. It seeks to directly influence decision-makers’ priorities by providing relevant decision-support information and tools. Implementation of the project in Indonesia involved UNDP’s Crisis Prevention and Recovery team, the Ministry of Environment and GRM International (as local consultants) as well as the Indian Institute of Tropical Meteorology. The pilot study in Indonesia focused on food security issues especially in the climate stressed regions. It aimed at i) supporting agriculture production infrastructure to enable it to realize potential benefits of climate risk information and ii) encouraging research to develop decision-support tools to better manage food security decision.
- Strategic Planning Action to Strengthen Climate Resilience of Rural Communities in NTT (SPARC)

This project, with funding from the GEF/Special Climate Change Fund (GEF/SCCF), focuses on strengthening and developing climate-resilient institutions and rural communities around livelihoods, food and water security. In particular, it will support the following long-term solutions: 1) Local government (including both provincial and district governments) has integrated climate resilience principles in policy, planning and budgeting, and have the institutional capacity to develop, implement and monitor this; and 2) Communities will strengthen their food and water security as well as diversify their livelihoods in anticipation of further changes in the climate and its impacts. The results of the project are expected to contribute to the development of national policies on climate change adaptation. SPARC is expected to also result in the development of 120 community action plans based on vulnerability reduction assessments. Based on these assessments, community-based DRR strategies will be formulated and the local trainers will facilitate the process with the communities to implement the strategy in order to manage climate-induced risks affecting water, food and livelihood security.

- Third National Communication

Indonesia as a Party to the UNFCCC has the obligation to prepare the National Communication Document, based on the guidelines provided by the Conference of Parties (COP) for non-Annex I countries (Decision 17/CP.8). Indonesia considers the preparation of the National Communications as an extremely important process not only for producing the National Communication Document to fulfill its commitments under the UNFCCC, but also for strengthening the capacity of sectors and local government in setting up policies and strategies for the implementation of climate change adaptation and mitigation actions. Following the submission of the Initial National Communication (INC) to the UNFCCC in 1999, and the Second National Communication (SNC) in 2010, Indonesia is now preparing for the Third National Communication (TNC). Presidential regulation No. 71/2011 sets forth a legal basis for the Ministry of Environment (KLH) to coordinate the efforts of line ministries to carry out GHG inventories. In coordination with relevant institutions, UNDP will support KLH’s effort to fulfill its mandate under the above-mentioned presidential regulation and support the preparation of the TNC for Indonesia. The TNC will assess the national context on GHG emissions and describes different adaptation and mitigation measures to address climate change challenges. The report will also include additional information on obstacles, shortages and the country’s needs related to funding, technology and capacity.
### CHAPTER 5: Next possible steps

#### 5.1 Areas of CRM application

The CRM approach is multi-faceted and encourages cross-sectoral involvement; therefore, there are numerous entry points for successful implementation of a combined CCA/DRR framework. The entry points could involve the development of policies or strategies at the national and subnational levels, institutional development for climate risk management, or implementation of a CRM project in a local community.

The table below gives some examples of areas where CRM could be incorporated.

| Areas of Conversion for CCA and DRR: Entry Points for CRM in Indonesia |
|---|---|
| **Develop Strategy & Policy Framework** | • Support the development of RAN-API by incorporating CRM concept.  
• Conduct trainings and workshops at the national, regional, provincial and/or local levels to socialize and improve stakeholders' understanding of CRM.  
• Integrate CRM in different land use planning and related policies, strategy, and regulatory framework at the national, regional, provincial and local levels.  
• Mainstream disaster and climate concerns in development planning.  
• Develop joint programming between development partners and government to programmatically link DRR and CCA. |
| **Institutional Development** | • Host multi-stakeholder platforms at the national or provincial level to build consensus on CRM.  
• Engage in awareness raising on CRM concepts at the national and subnational levels.  
• Conduct community education and resilience building programs.  
• Develop sector-specific interventions from risk reduction and adaptation perspective.  
• Develop necessary regulations and legal framework to implement CRM. |
| **Examples of Pilot Initiatives** | • Early warning systems that incorporates both DRR/CCA concepts.  
• Ecosystem based projects (eg. rehabilitation of mangroves) that combine both DRR/CCA.  
• Sustainable livelihood projects (eg. diversification of income generating activities).  
• Sustainable agriculture approaches (eg. climate resilient seeds/cultivars) that involve technology innovation for the integration of historical data and future projections.  
• Infrastructure reinforcement that focuses on CCA with disaster risk management (e.g. coastal planning that incorporates construction of dykes and seawalls).  
• Natural resource management for hazard mitigation and vulnerability reduction. |
5.2 Conclusion

In Indonesia, the CRM concept has not been fully integrated in the national approach to climate related risks or disaster management. While CCA and DRR will continue to have distinctive areas of focus, there are certain overlapping climate related risks that could be more effectively managed if these two frameworks are synergized and CRM is implemented. In order to build a climate resilient society, the Government of Indonesia and developing partners may consider taking a strategic approach to strengthen the CRM framework and integrate the concept into their programmes and development policies. Some of the potential priority areas for CRM are sustainable agriculture, marine and fishery, coastal and small islands planning and protection, water management and health sector. If the CRM framework is adopted by the line ministries and the institutional arrangement is clearly defined to address these priority areas, the Government of Indonesia will likely find that climate risks are better managed and development results are sustained as a result of synergizing the existing CCA and DRR frameworks. Indonesia, as one of the countries with highest risks of natural disasters, has the opportunity to pioneer and demonstrate how to effectively manage these climate risks by successfully implementing CRM.

Figure 5: The Government of Indonesia and UNDP Indonesia Country Office have developed a Country Programme Action Plan (CPAP) for 2011-2015, which clearly identifies several outcomes related to CCA and DRR. Accordingly, UNDP is committed to work with the Government of Indonesia to integrate approaches for CCA and DRR to achieve the outcomes articulated in the CPAP.
REFERENCES

1 Indonesia Second National Communication, Ministry of Environment, Republic of Indonesia (2010)
12 Id.