PROJECT CLIMATE
Twin Phoenix

SHARING INFORMATION, MULTIPLYING KNOWLEDGE

themultiplier

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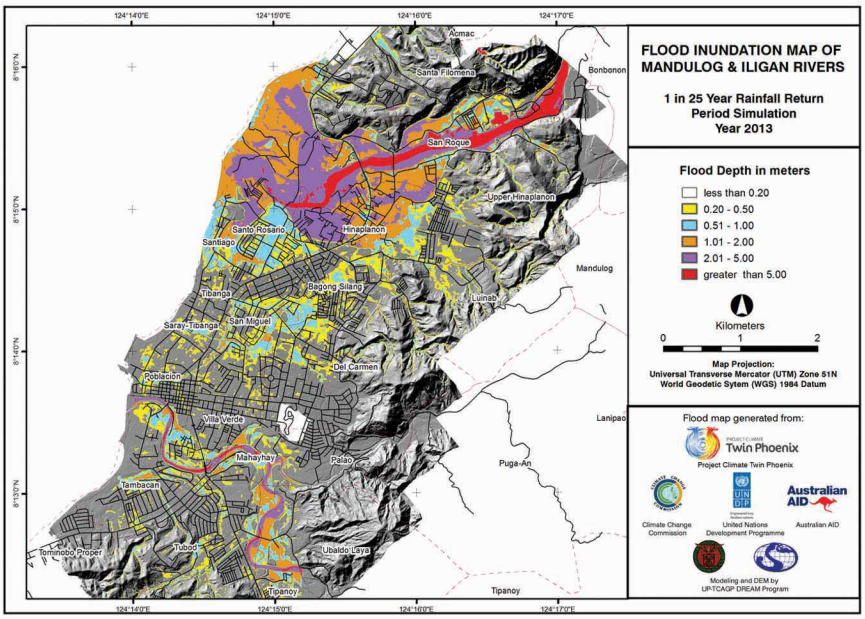


Mapping Hazards and Vulnerabilities to Reduce Risks of Communities

After the devastation of Tropical Storm Washi (2011) there is no longer any doubt that cities of Iligan and Cagayan de Oro are highly vulnerable to climate-related hazards brought about by extreme weather events. Aside from their geographical location, these localities' terrain make them prone to heavy flooding.

Urgent attention and action to undertake vulnerability and hazards assessments and risk mapping are therefore crucial to identify measures that will reduce the community's vulnerabilities to climate-related risks and enhance their adaptive capacity to impacts of a changing climate.

For this purpose, Project Climate Twin Phoenix generated high-resolution flood hazard maps for different rainfall scenarios which showed the extent of the flooded area, the depth of flood waters, and the period of flooding, among others. The flood hazard maps' 3D rendering also provide a visualization of future flood events using data gathered from state-of-the-art technology (LIDAR, satellite imagery, most advanced open-source flood modelling software) and validated by field surveys and river measurements and characterizations.

These maps, which the project refer to as climate-adjusted flood hazard maps were initially produced for the cities of Cagayan de Oro and Iligan and were developed from a series of measurements, characterization, and watershed analysis of the two cities' four major river systems—Cagayan de Oro, Iponan, Mandulog, and Iligan. Refined climate projections were simultaneously generated and were used as basis for the analysis of projected increases in rainfall on flooding.

Towards the achievement of this output, a partnership has been forged between the Climate Change Commission and technical experts from the University of the Philippines-Training Center on Applied Geodesy and Photogrammetry (UP-TCAGP) and PAGASA. A series of dialogues and consultations through several Experts Group Meetings were also organized to discuss the method to be used in the flood modelling, to determine climate data requirements, and to vet on initial results. Recently, a stakeholders' consultation with local officials and staff of the two cities were conducted to raise awareness and identify the use of the maps in early warning, infrastructure planning, watershed management, and local disaster risk reduction and management.

Under the Project, other maps will be produced. Partner agencies such as PAGASA-DOST (Research and Development Division and Hydro-meteorological Division), DENR's Mines and Geoscience Bureau, UP-TCAGP and UP-National Institute of Geologic Studies (UP-NIGS) and NAMRIA will be important partners in preparing updated flood- and rain-induced landslide maps and new storm surge and severe wind maps. Rain-induced landslide maps are being made for the municipalities of Laak, Monkayo, Montevista, Maragusan and New Bataan in Compostela Valley, and Baganga, Boston and Cateel in Davao Oriental. Updated flood hazard maps and new storm surge maps will also be prepared for the three municipalities of Davao Oriental.

City Governments Turn Plans into Action

The disasters that befell the country in 2013 are clear indications that more frequent and more extreme weather disturbances brought about by climate change is becoming the new norm. The need therefore to factor in climate change when making long term decisions and in planning for the future has become imperative as an adaptation measure. In 2013, Iligan City received assistance from Climate Change Commission (CCC), the implementing agency of Project Climate Twin Phoenix, to formulate its very own flood contingency plan. The city's chief executive, Mayor Celso Regencia, signed a Memorandum of Agreement with the Commission to integrate in the city's recovery program, post-Sendong, the impacts of climate change. An executive order was issued directing the Disaster Risk Reduction and Management Office to lead a technical working group composed of department heads in the formulation of the said plan. The Office of Civil Defense in Region 10, another partner in this initiative, provided the technical guidance to the preparation of the plan.

To complement this effort, orientation and workshops on flood contingency plan formulation were also organized for key government officials and staffs in the disaster risk reduction and management (DRRM) cluster to familiarize them with government policies on DRRM and climate change adaptation measures, flood hazard mapping, and early warning systems, among others. Technical experts from the Office of Civil Defense-Region 10 and PAGASA were invited as resource persons.

"Critical to the success of this initiative is the synergy between the community and their local government", said CCC Vice Chairperson, Sec. Lucille Sering. "The local governments' commitment and active participation paved the way for the creation of an enabling policy environment while the community's enthusiasm to build their own capacities by assessing and managing their own risks provided the buy-in at the community level".

To test the operability and usefulness of the flood contingency plans, flood drills will be conducted in the different barangays of Iligan City. Part of the drill will be the actual use of a local evacuation plan, for which the actual inputs of the communities will be taken into consideration. Results of the flood drill will be incorporated in the plan.

As of this writing, the flood contingency plan was approved on first reading by the Sangguniang Panglunsod.

Lessons learned from the process shall be used in the other targets of Project Climate Twin Phoenix, particularly on the updating of the contingency plan of Cagayan de Oro City, in conducting an inter-LGU contingency planning, and in the implementation of early warning. PAGASA shall also put up flood forecasting and early warning equipment to enhance the preparedness of the two cities. Said agency will also develop a manual of operations and protocol, including the advisory system for flooding.

Building Local Knowledge Management System to Improve Community Readiness

In the face of continuously changing climate, access to relevant climate information enables communities and local governments to manage uncertainties, make decisions, and to develop plans which are more responsive to local needs. Local climate information, complemented by scientific data, is essential to communities when they identify a range of livelihood and adaptation options, thus contributing to building community readiness.

To emphasize the importance of the use of climate information in adaptation planning process, the Climate Change Commission partnered with the National Economic and Development Authority Region 10 (NRO 10) to replicate the Climate Change and Disaster Risk Information System for Planning or "CRISP" in the region. CRISP was developed by the NEDA-UNDP-AusAid Integrating Disaster Risk Reduction and Climate Change Adaptation in Local Planning and Decision-making Processes, with Region 2 as pilot region.

CRISP is a web-based information management platform that provides free access to science-based information on geospatial or location-based data (such as land use, agriculture, roads and human settlements) from a variety of sources which are used in planning, decision-making, and social mobilization.

To ensure the successful establishment of CRISP, a Memorandum of Agreement was signed among partners which designated the Regional Land Use Committee as the working arm of the Regional Development Council.

Training on how to generate and use climate data and information were provided to the project management team and local experts. Technical sessions and learning visits were also undertaken during the development of the CRISP system/data requirements and other tools and applications. A user's manual for CRISP is being put together with the assistance of experts from NEDA.

CRISP was successfully launched last December 23, 2013. Visit www.crisp.norminet.org.ph for more information. The CRISP will be linked to the Iligan City this 2014 which will demonstrate the sharing of information with a local government unit. Data generated under Project Climate Twin Phoenix such as the climate-adjusted flood hazard maps, vulnerability and risk maps, the exposure data, and secondary data on critical infrastructure and facilities will be uploaded in the system.

Anticipating the Rains

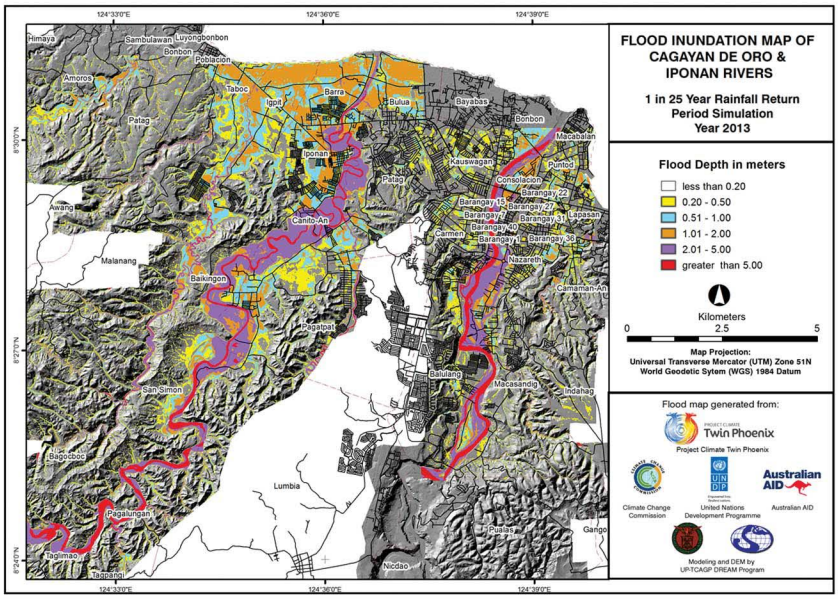
Project Climate Twin Phoenix is putting together a climate exposure database (ClimEx.db) for Cagayan De Oro and Iligan cities, which will help determine their vulnerability in terms of exposure and sensitivity to flood.

Investing in Disaster Risk Reduction helps reduce the impacts of hazards such as that brought about by flood. But with the limited resources we have, it is important to prioritize measures that will contribute to making communities safer from disaster when implemented.

In line with this, Project Climate Twin Phoenix is putting together a climate exposure database (ClimEx.db) for Cagayan De Oro and Iligan cities, which will help determine their vulnerability in terms of exposure and sensitivity to flood. The exposure database includes primary data such as the location, characteristics of buildings and houses, income and social data of households, and complemented by secondary data generated and maintained by national government agencies and local government units housed through the Climate Change and Disaster Risk Information System for Planning (CRISP).

As it is, updated information on climate impacts and adaptation planning suited for local needs are hard to find. The ClimEx.db, while mainly focused on exposure-related data, intends to provide as much detail as possible on a specific locality to aid decision makers in developing a coordinated plan of action aimed at reducing their disaster risk when the rains come. It will help local governments have better knowledge of who and what are exposed to flood hazard and could thus integrate these disaster risk information in preparing their contingency plans, mitigation actions, and social protection programs such as risk insurance and climate-smart livelihood.

The results of the ClimEx.db will be used to develop vulnerability and risk maps overlain on the flood hazard map. While flood-related data will be established for Cagayan de Oro and Iligan Cities, ClimEx.db is capable of generating data applicable to other hazards as well, such as earthquake and severe wind.



Rising to the Challenge: Mainstreaming Climate Change Adaptation into Planning

Locals from the cities of Cagayan De Oro and Iligan agree that the tropical storm Sendong, which devastated their area was nothing they ever experienced in the past: the timing was unusual and the amount of rain pouring was alarmingly intense which caused heavy flooding and landslides. For affected families in the areas, the impact means a threat to their safety and their livelihoods.

Project Climate Twin Phoenix conducted a case study to mainstream climate change adaptation into land use and development planning. Integration of adaptation measures into planning is regarded a must to mitigate the adverse impacts of climate change. Measures, structural and non-structural alike, such as adjusting land use practices and zoning or the implementation of community based warning system, were taken into account in the design of the Comprehensive Land Use Plan (CLUP).

An inception workshop and several site visits in the Typhoon-Pablo areas—New Bataan and Boston, were conducted to jumpstart CLUP preparation in these municipalities. Twenty local planners from four municipalities in Davao Oriental and six municipalities in Compostela Valley were given training on the use and application of geospatial tools for planning and in mainstreaming climate change in the formulation of CLUP. The training was conducted by the University of the Philippines-Mindanao College of Science and Mathematics' Department of Mathematics, Physics and Computer Science. A total of 43 local government personnel from 15 LGUs, 18 from the academe (Xavier University and MSU-IIT), and 5 from LGAs (NEDA Regional Office 10 and HLURB SMR) were given training on how to use GIS tools for mapping.

Building upon the results of these initiatives, a Zero Draft of the Supplemental Guidelines on the Preparation of Climate/Disaster Risk Sensitive Comprehensive Land Use Plans has been produced to show how climate risks are factored in planning. The supplemental guidelines outlines a number of priorities for local government and communities. It highlights among others the need to examine existing policies and frameworks which would allow the integration of climate change adaptation into planning and to build the capacities and competencies of local governments and communities to come up with adaptation measures best suited to their local conditions. The preparation of the Supplemental Guidelines will benefit from the piloting with Opol Municipality demonstrating how a "business-as-usual" CLUP will be enhanced to incorporate results of a climate and disaster risk assessment.

HLURB SMR, together with the Municipal Government of Opol are key partners of the CCC for this initiative. Several writeshops and workshops with built-in capacity building content have been supported by the project for the technical working group members of Opol, comprising of department heads, staff and representatives from the Sangguniang Bayan.

The preparation of the climate-and-disaster-risk-sensitive comprehensive land use plans for New Bataan and Boston commenced in October 2013. Capacity building activities were organized for the preparation of relevant thematic maps. Stocktaking of methodologies for climate and disaster risk sensitive comprehensive land use planning is being done in the meantime.

Local communities get greater involvement in disaster risk reduction

At the heart of Project Climate Twin Phoenix's approach is an emphasis on empowering local governments and building capacities of local communities to assess, plan, and manage their own disaster risks.

Towards this goal, Project Climate Twin Phoenix stresses the key role of training, science and technology, and bottom-up approaches in involving communities at-risk in decision-making and disaster planning. It continuously conduct trainings, workshops, and seminars to raise awareness on the relationships of climate, disasters, and development for national, regional, city and local stakeholders toward well-informed decision-making. To date, the level of awareness on CCA-DRR has been increased for about 200 participating local partners from 22 LGUs, 32 NGOs, two academic institutions, and 13 LGAs from the two regions.

During a recent capacity building activity conducted in the province of Davao Oriental, a total of 206 barangay officials, municipal planners, and public school teachers from the municipalities of Cateel, Boston and Baganga were trained on how to appreciate and use the geohazard maps to identify the critical areas which are susceptible to landslide, flood, and coastal geohazards. Participants' feedbacks from this training will form part of the knowledge products being produced by the project.

Meanwhile, this first quarter of 2014, a flood warning and evacuation drill based on the flood contingency plan will be conducted for four barangays in Iligan City to test the appropriateness of their contingency plan. A planning and scenario-building, followed by orientations in the barangays, and a table top exercise have already been scheduled. About 400 families from flood-prone zones are projected to participate in the drill.

PROJECT CLIMATE
Twin Phoenix
Understanding disaster risks in a changing climate, Working towards sustainable recovery.

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