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**Workshop Report**

# **Knowledge-based local adaptation planning in Guimaras Province, a vulnerable island province in the Philippines**

2 March, 2022



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**Institute for Global Environmental Strategies (IGES)**

**Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) Resource Facility**

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# 1. Background and Objective

Coastal communities are disproportionately affected by the impacts of climate change on the ocean, including depleted marine ecosystems, sea-level rise, and coastal hazards such as storm surges. These climate change-related impacts have been experienced by Guimaras, a small island province located in Western Visayas, Philippines. IGES and PEMSEA Resource Facility (PRF) launched a pilot project that aims to facilitate the formulation and implementation of appropriate and timely Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) measures, in coordination with Guimaras Local Government Units. This project is funded by Adaptation Research Alliance (ARA) micro-grant programmes with the purpose of accelerating co-production of adaptation knowledge around the globe.

This project was expected to produce local adaptation knowledge that helps local communities deepen their understanding of future climate change and design transformative adaptation strategies, which is defined as “changing ‘the fundamental attributes of a social-ecological system in anticipation of climate change and its impacts” (Matthews et al., 2018). To this end, we organised a stakeholder workshop where the following questions were considered: what type of adaptation responses are the most effective? Which locations are

priorities for implementation? And which timescales should be considered when planning for their implementation? (Magnan et al., 2020). This exercise is designed to inform local policy planning in response to climate change in the future.

As a tangible outcome of the workshop, we intended to co-produce a “local adaptation pathway” which has been considered an effective approach for facilitating transformative adaptation that deals with uncertainty over long-term climate change (Wise et al., 2013; Ranger et al., 2013; Buurman and Babovic, 2016). Previously, Barnett et al. (2014) revealed that a local adaptation pathway is feasible at the local scale, offering a low-risk and low-cost way to begin the long-term process of adaptation to sea-level rise. We applied the pathway approach to the coastal areas of Guimaras, with special attention to the integration between scientific knowledge and local knowledge. Our interests also included how Guimaras’ past experience with Integrated Coastal Management (ICM) functions in the pathway development processes because the ICM also sheds light on the integration and co-production of knowledge among different stakeholders at the local scale.

## 2. Description of Guimaras

Guimaras is a small island province located in Western Visayas, Philippines, with a coastline of 470 km and is well known for its sweet mangoes, sandy beaches, coves and agri-ecotourism sites. The Guimaras Provincial Development and Physical Framework Plan (PDPFP) 2020-2029, which mainstreams the sustainable development goals (SDGs) and climate change adaptation measures, has identified two priority concerns – coastal erosion, partly caused by sea-level rise, and the presence of geological and meteorological hazards where significant areas are susceptible to

karst subsidence. The planning and implementation of community-driven adaptation strategies are critical to overcoming these vulnerabilities in an inclusive manner. The PDPFP identified limited capacity to match new governance conditions, and insufficient knowledge base and technical data and analysis for sound decision-making as the main problems that have impeded past adaptation planning.

Under its integrated coastal management (ICM) programme, facilitated by PEMSEA’s Sustainable

Development Strategy for the Seas of East Asia (SDS-SEA), Guimaras Province adopted its Coastal Strategy in June 2020 (Provincial Board Resolution No. 160) with strategic actions related to climate change that are aligned with the PDPFP, national (Philippine Development Plan), regional (SDS-SEA Implementation Plan) and the SDGs. Through these efforts, in Guimaras, CCA and DRR concerns and corresponding strategic actions have been already mainstreamed into the provincial, municipal, and barangay level plans. For instance, the Guimaras Coastal Strategy, which serves as the long-term framework for the integrated management of the coastal and marine areas of Guimaras covered strategic actions related to climate change in response to existing and emerging threats. At the municipal level, annual and/or multi-year CCA and DRR plans are in place or are part of the annual work and financial plans, or have been incorporated into the comprehensive land use plans. Most of these plans need updating.

Therefore, the workshop was seen as an opportunity to produce knowledge resources to inform the updating processes of Guimaras’s CCA and DRR plans. As the recipient of ARA’s micro-grant programmes in mid-December 2020, we conducted two stakeholder

consultations in preparation for the workshop. Details of the process are provided below. All the preparation work was supported by the Guimaras Environment and Natural Resources Office (GENRO). We had a tight time frame from January to March (later extended to April) 2022. In the consultation, we explored the most feasible and best ways to produce knowledge products that would inform Guimaras’ local policymaking for CCA and DRR, given the limited timeline.



### Schedule for workshop preparation

Date	Meeting
20 January 2022	ARA micro-grant global workshop and orientation
27 January 2022	IGES-PRF-GENRO’s first consultation and kick-off meeting
8 February 2022	IGES-PRF-GENRO’s second consultation with relevant LGU officials
2 March 2022	Stakeholder consultation workshop

## 3. Overview of Workshop

The workshop was held on 2 March, 2022, in conjunction with the 1st Quarter Meeting of the Sub-Committee on Natural and Human Induced Hazards Management of the ICM programme of Guimaras Province. The workshop was convened utilising a hybrid approach, which combined face-to-face interaction for most Guimaras participants, and online participation by other participants from Guimaras and by representatives from IGES and PRF.

The workshop started by acknowledging the 28 participants from Guimaras who were present at the workshop venue, representing the provincial government departments and offices, the municipalities of Buenavista, Nueva Valencia, San Lorenzo, and Sibunag, national agencies, the private sector, and academia, including those participating online from the municipalities of Jordan and Nueva Valencia, and online from IGES and PRF.

## 4. Workshop Program

Duration	Agenda	
9:00-9:05	Acknowledgement of participants	Ms. Rose Jane Sablon, GENRO
9:05-9:10	Opening Remarks	Mr. Leonard Pasiderio, Head, GENRO
9:10-9:20	Introductory Presentation	Ms. Nagisa Shiiba, Policy Researcher, Adaptation and Water Unit, IGES
9:20-9:35	Ice Breaking Discussion	Participants are randomly divided into groups with a few people
9:35-10:00	Session 1 Climate Impact Analysis	Participants are divided into groups with 2-5 people according to their municipalities
10:00-10:20	Session 2 Identify Hot Spots	
10:20-10:30	Break	
10:30-10:50 (5 min instructions & 15 mins discussion)	Session 3 Brainstorm Adaptation Options	
10:50-11:30 (10 min instructions & 30 mins discussion)	Session 4 Develop an Adaptation Pathways	
11:30-12:15	Plenary: Reflection and Feedback	Facilitated by GENRO
12:15-12:30	Summary and wrap up Closing Remarks	Ms. Teresita Siason, Head, Guimaras Local DRR Management Section

# 5. Summary of the Sessions

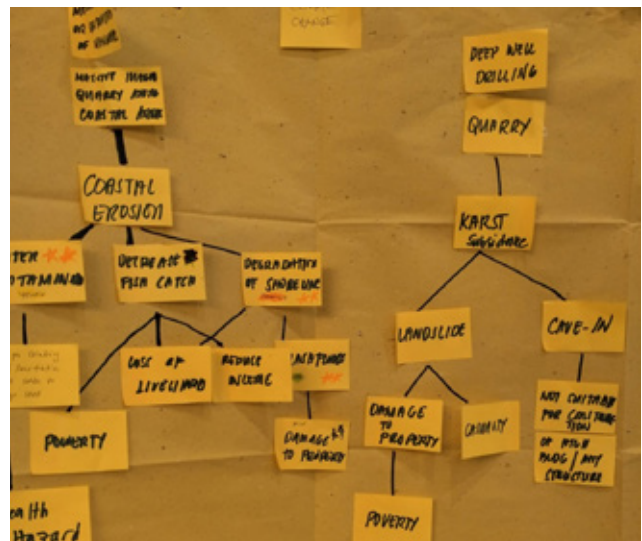
Following the opening remarks by Mr. Leonard Pasiderio, Head of Guimaras Environment and Natural Resources Office, the participants were grouped according to their municipalities with representatives

from the provincial departments, national agencies, private sector, and academia joining each of the groups to provide additional inputs.

## Session 1: Climate Impact Analysis

The first session was devoted to co-exploring climate impacts where the participants prepared impact chains that facilitated understanding of risks and impacts brought about by coastal erosion and karst subsidence and the cause-effect relationship. The workshop focused on coastal erosion and karst subsidence as key hazards that undermine the resilience of the communities in Guimaras given the preliminary discussion among IGES, PRF, and Guimaras LGUs. We employed the impact

chain approach to enhance the understanding of risk among the participants. An impact chain is an analytical tool that helps users to better understand, systemise and prioritise the factors that drive vulnerability of the system under review (GIZ, 2017). Participants were asked to discuss potential risks caused by climate change and cause-effect relationships among risks, creating a logic tree diagram on paper.



## Session 2: Identify Hot Spots

Each team then prioritised 4-5 major risks based on the risks identified from the previous step. Representatives from Nueva Valencia selected damage to properties along the coastal areas, habitat loss and damage to marine life, and human-related hazards as their prioritised risks. The Jordan team underlined the importance of damage to properties as well as impacts on marine resources. The San Lorenzo team also highlighted degradation of shoreline and damage to property, noting water contamination and flash flood as additional threats. The Buenavista team was specifically

concerned about reduced fish catch and flora and fauna, in addition to damage to property and humans. The Sibunag team prioritised loss of livelihoods, human life and property as well as degradation of marine habitat as key risks. The participants proceeded in identifying hotspots by using blank maps and coloured markers to plot the risks on the maps. This exercise helped the groups embody the potential risks by specifying the areas and populations that would be affected.



## Session 3: Brainstorm Adaptation Options

In this session, each group brainstormed adaptation options, while considering existing strategies and approaches.

### Nueva Valencia

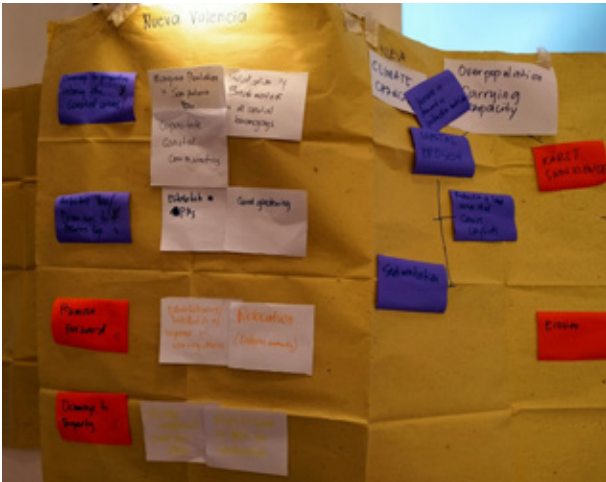
To prevent damage to properties in coastal areas, mainly in remote islands located in the southern part of the municipality, installation of breakwaters in all coastal barangays and capacity building of coastal communities were suggested as key adaptation strategies. In addition, the team proposed the establishment of a mangrove plantation in San Antonio, the peninsula facing the border with Sibunag. Moreover, marine habitats and ecosystems should be protected across the municipality through the establishment of protected areas and coral gardening. Since human-related hazards are likely to happen in the southern part of the municipality, the team suggested putting up signages or installing early warning devices, as well as looking at

relocation of the identified community in hazard prone area in Dolores. One specific suggestion to address damage to property was the strict implementation of the land use and zoning plan

### Jordan

The representatives narrowed their focus down to two major risks: impacts on marine resources and damage to properties. They proposed various adaptation strategies. With regards to marine resource conservation, they suggested establishing additional protected areas and raising awareness on CCA and DRR among community residents. In barangay Lawi, a recommended action is the implementation of reforestation and agroforestry project. To mitigate

damage to properties, strict implementation of the Comprehensive Land Use Plan was suggested. Furthermore, for specific barangays, including Hoskyn, Lawi, and Espinosa, the acquisition or investment of DRR equipment, and relocation of informal settlers are considered as important adaptation strategies.



### Buenavista

The team suggested several solutions to address the decreasing fish catch, which affected the fisherfolks, including strengthening community involvement in the administration and maintenance of protected areas, as well as maintenance and protection of existing mangroves areas. Decreased flora and fauna and ecosystems services are to be addressed through introduction of alternative livelihood, tapping the academia to extend outreach programmes that would help communities through research and extension. As for protecting properties and farmlands, the team suggested practices on sustainable farming and the introduction of new farming technologies, and tapping the management programs of local government units, national government agencies and non-governmental

organisations. Moreover, to prevent human injury and death, the team proposed to encourage residents of coastal barangays to adopt climate change resilience structures as well as strict implementation of building and zoning codes. Identified implementation sites are scattered across the municipality including along the coastal areas and inland farmlands.

### San Lorenzo

The team representing San Lorenzo identified site-specific risks and adaptation measures. Water contamination identified in its coastal barangay, Cabano, could be addressed by the construction of a water treatment facility, dikes or flood-control canals. They also identified threats of flash floods in this barangay and suggested intensive tree planting in coastal areas to minimise damage by coastal erosion. Regarding degradation of the shoreline happening in the northern part of the municipality, including Barangay Suclaran and M. Chavez, they suggested massive rehabilitation of mangrove areas. In the northern-most and southern-most areas, damage to property is a major concern, and therefore construction of geo-tubes was proposed.

### Sibunag

Effective brainstorming of the team from Sibunag generated a number of potential adaptation measures for the municipality, which is made up of numerous small islands. To prevent damage to property, disaster simulation exercises or drills, and installation and maintenance of hazard signages were suggested, including capacity building and advocacy for CCA and DRR and strengthening of the Barangay Disaster Risk Reduction Management Council. Degradation of the marine ecosystem could be reduced through mangrove rehabilitation, installation of artificial reefs, and the establishment of a mangrove nursery. The conduct of training and implementation of Integrated Coastal Resource Management were also considered as additional adaptation strategies. To save lives and livelihoods, the team proposed the establishment of climate-resilient water systems such as rainwater harvesters, and the establishment of Level III water systems. Enhancing agricultural planning, such as the

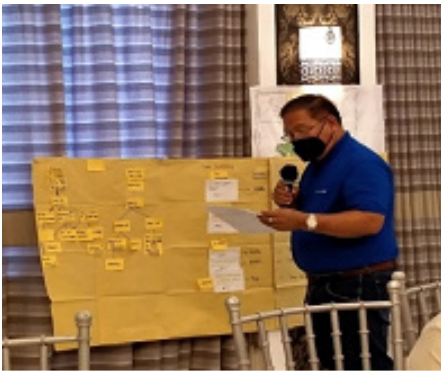
use of salt resistant rice variety, the construction of farm canals, and resilience building in farmer field schools were also proposed. Furthermore, the team suggested information, education and communication,

and advocacy campaigns to increase awareness on the different risks and the various adaptation options that are in place.

## Session 4: Develop Adaptation Pathways

The last step was the development of local adaptation pathways where future plans for implementation of the adaptation options for each of the risks were identified. Each team was asked to elaborate on their plan to implement the identified adaptation strategies, evaluate their potential effectiveness (low-middle-high) and the duration when the anticipated benefits can be discerned (short-medium-long). The implementation

plan outlines how the various adaptation options can be implemented progressively over the short-, medium- and long-term (i.e., 2022 to 2050) based on the readiness, required lead time up to the point when full-effectiveness of the options is achieved. The final outputs created by the 5 municipalities are provided in Annex 1.



## Reflections and Closing

After the completion of the group exercises, the five municipalities presented the consolidated results from the group exercises. In general, all municipalities were able to complete the group exercises using real-life examples/situations in their respective municipalities. From the project's perspective, the co-production process was aptly demonstrated whereby each exercise captured the knowledge, experiences and insights of everyone from the group, resulting in satisfactory outputs.

Representatives from the municipalities shared their feedback on the process of developing the adaptation

pathway, information requirements and usefulness in policymaking and implementation. In general, they found the adaptation pathway useful to inform planning and policymaking related to climate change. In particular, the developed pathways can provide useful inputs in the updating of the local climate change action plans of the municipalities as well as in the updating of the multi-year CCA and DRR plan for the province, which is due for completion in 2022.

The workshop was concluded with the closing remarks by Ms. Teresita Siason, Head, Guimaras Local Disaster Risk Reduction Management Section.

## 6. Way forward

In this workshop, we piloted the development of pathways which facilitated the convergence of knowledge of local stakeholders in the identification of concrete adaptation strategies at the municipal level. The discussion was successfully carried out despite the hybrid arrangement and the key success factor is the active engagement of the stakeholders, especially the local government officials representing different sectors. The facilitation, interaction and sharing have enabled a deeper understanding of the risks associated with climate change and the need to identify appropriate and risk-specific adaptation options. Guimaras' experience in ICM implementation was a great help in introducing the co-production process. ICM promotes multi-sectoral engagement with multi-level integration and coordination and thus, every sector has a responsibility. The participants shared their view that the ICM experience has provided a venue for multi-stakeholders' consultations in addressing priority concerns, including climate change.

To further this experience, we should also address the information gaps in the co-production process by providing more localised evidence on future impacts of climate change and relevant hazards. In our pilot activity supported by the ARA microgrant,

we focused on practicing co-production processes through interactive discussions by and among the stakeholders rather than developing scientific evidence given the limited timeframe. As a way forward, we intent to pursue supporting policymakers with solid and site-specific information on future climate change impact projections that would ensure the adequacy and enhance the effectiveness of their identified adaptation measures. For instance, downscaling climate simulations with different GHG emission scenarios and on different time scales would be of significant use for adaptation planning. Although a growing number of climate simulations are available (and some of them are free of charge), most of them are at global and national levels and downscaling the impacts of climate change on specific concerns (e.g., coastal erosions and karst subsidence) is still required to be tailor-made by experts. Asia-Pacific Climate Change Adaptation Platform (AP-PLAT) is one of the providers of climate downscaling tools at the municipal level. While it now offers municipal-level projections, albeit only for temperature increase and precipitation, projections are expected to expand to other climatic factors that affect coastal communities in the future. In particular, the current detailed analysis of the adaptation pathways produced by Guimaras showed that no clear decisions

had been made on 'when' to implement the selected adaptation measures. This is because, as mentioned earlier, there was a lack of future projection data on climate change and its impacts. Prioritising the timeline for implementation of adaptation measures is very important for the proper allocation of limited resources, such as financial and human resources. IGES will report the data gaps identified in this ARA Microgrant Project to the scientists who developed AP-PLAT. The project has been a very important stepping stone in terms of communicating the scientific data needs of local communities to scientists.

In addition, based on those practices, we ultimately aim to inform policymaking processes for developing a mechanism that facilitates community-based adaptation. Our exercise on developing local adaptation pathways serve as a starting point to explore the following questions: which form or structure of knowledge products would inform the policymaking process more effectively, and what processes are necessary to co-produce knowledge among people who have different backgrounds, insofar as they understand climate risks? Also, this exercise demonstrated that five different municipalities showed their uniqueness in choosing risks, adaptation strategies and implementation timelines. Since climatic information always entails uncertainty, policymakers have to select certain scenarios to design their future actions and plans. The workshop has showcased how

consensus-building was facilitated among participants in each municipality in identifying and agreeing on the best adaptation options and implementation timelines. As a future research question, it would be worthwhile to observe deeper how people share their perceptions of climate risks and design adaptation strategies as a group by providing more detailed scientific information as well as to consider how to support this process in a discussion with broader participation by stakeholders. While the workshop was attended by representatives from relevant provincial and municipal departments and offices, selected national agencies with mandates on climate change and disaster risk reduction and management, the local universities and private sector partners, it would be beneficial to involve the representatives from the barangays (i.e., smallest political unit in the Philippines) and communities/household levels to facilitate top-down and bottom-up adaptation planning.

Moreover, it is vital to establish a mechanism for timely feedback on the results to scientists. In doing so, a means of interpreting scientific information into a format that can be used by local communities can be explored. The continuation of this project is very meaningful because the results of this primary action research can be vertically deployed and utilised in other communities within the Asia-Pacific through the networks of AP-PLAT and PEMSEA.

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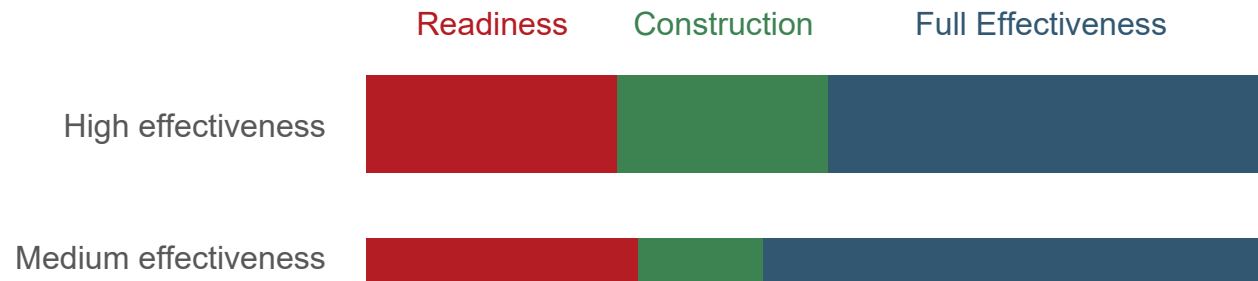
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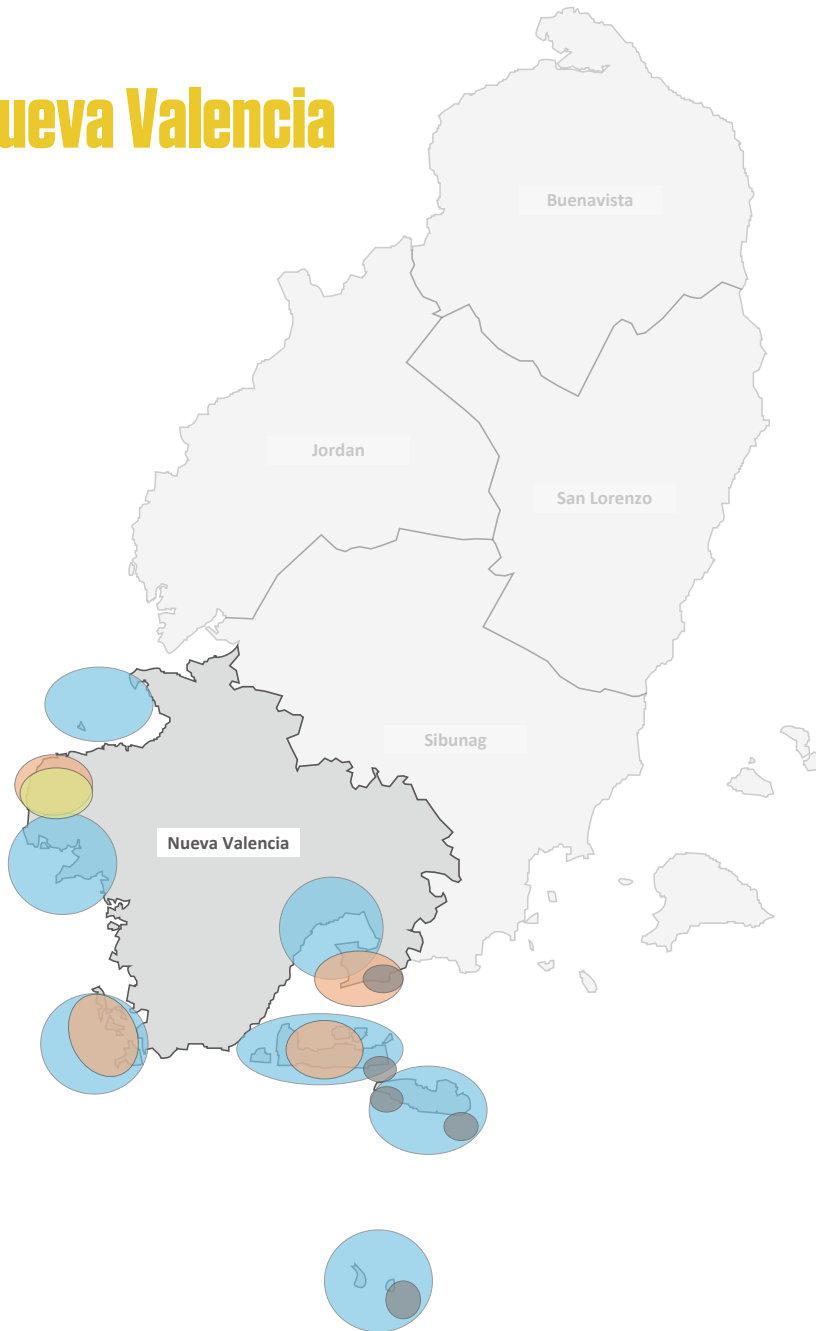
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# Appendix. Local Adaptation Pathways

## Legend



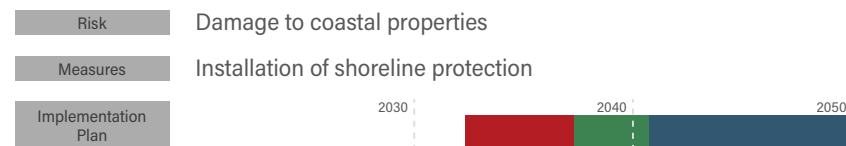
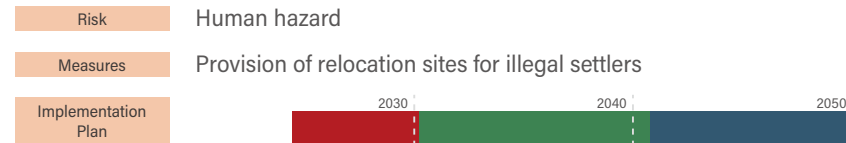
# Nueva Valencia



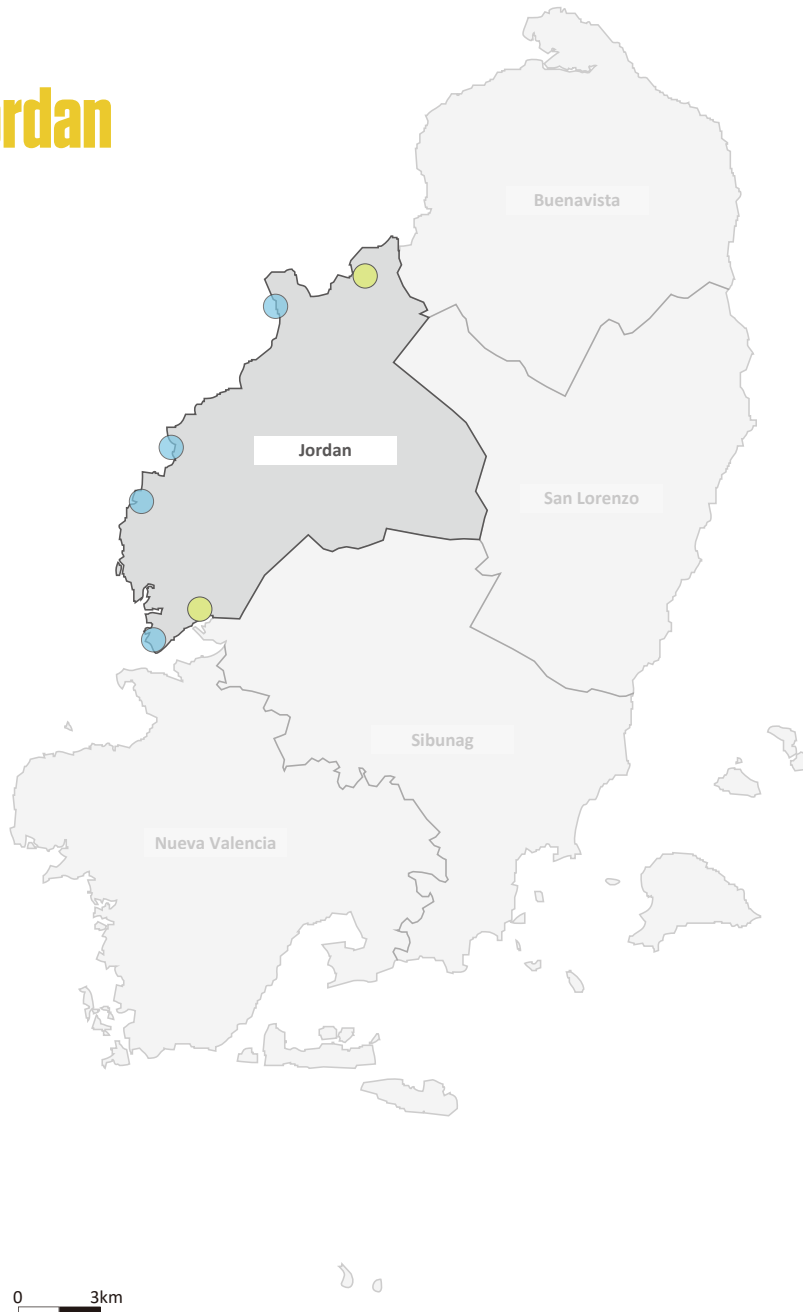
## Coastal Erosion



## Karst Subsidence



# Jordan



## Coastal Erosion

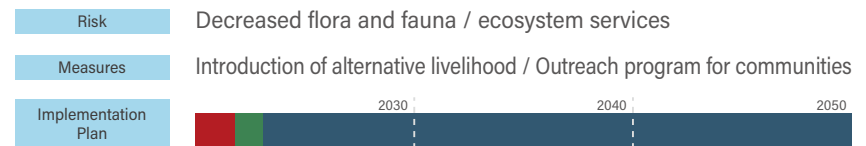


\* Green: Applicable for both risk

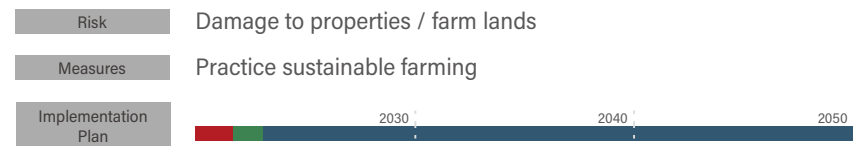
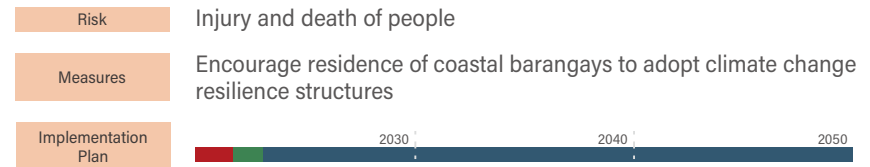
# Buenavista



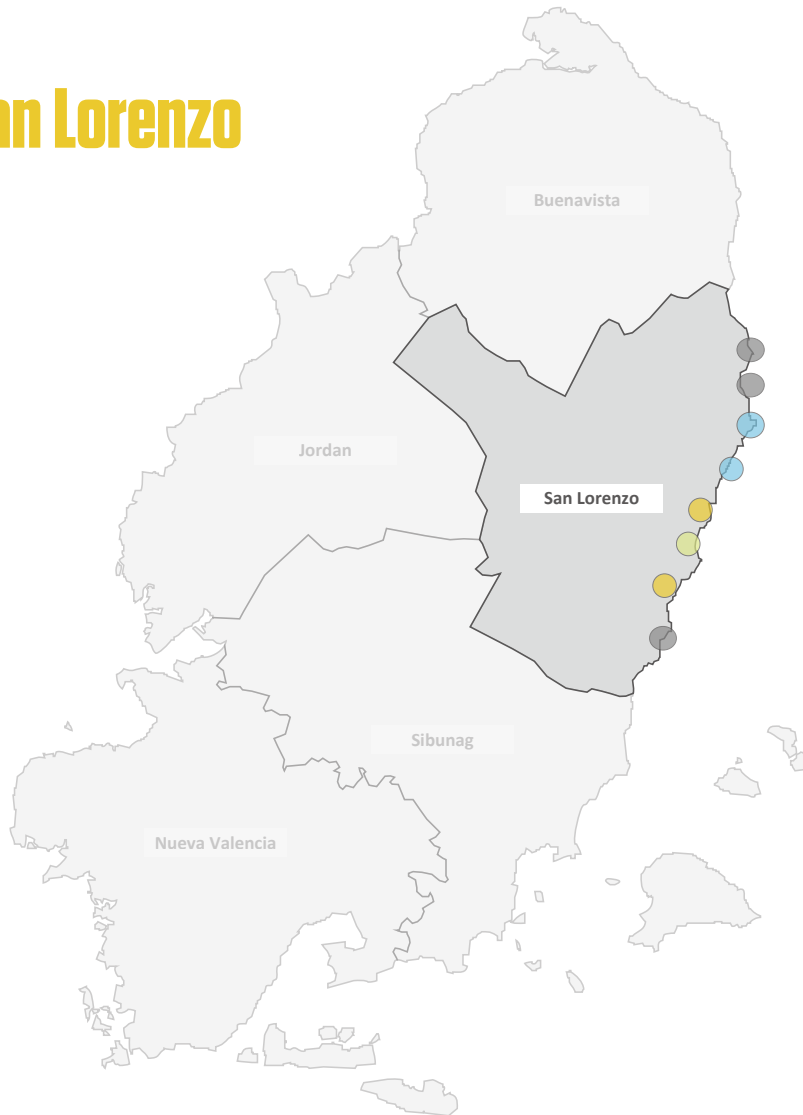
## Coastal Erosion



## Karst Subsidence

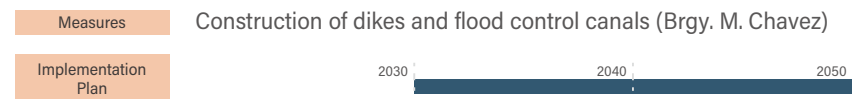
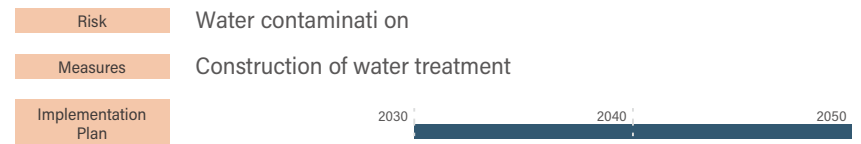
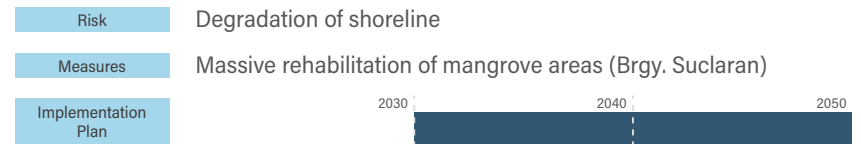
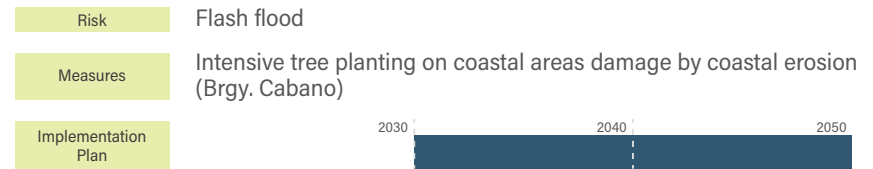


# San Lorenzo

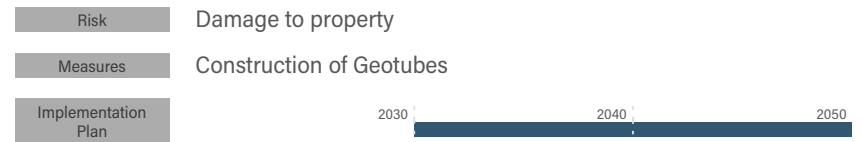


0 3km

## Coastal Erosion



## Karst Subsidence



# Sibunag



## Coastal Erosion

Risk	Loss of property
Measures	Conduct of DRR-CCA training, advocacy, drills / Installation of hazard signage / Strengthening of BDRRMC/ Establishment of small farm reservoir, water impounding
Implementation Plan	
Risk	Degradation of aquatic habitat / marine ecosystem
Measures	Mangrove rehabilitation / Installation of artificial reefs / Establishment of climate information system/IEC Advocacy Campaign / Implementation of ICRM / Coastal Clean-up
Implementation Plan	
Risk	Loss of livelihood
Measures	Enhance climate resilient agriculture (farmer field school, development of saline rice variety) / Training of climate change adaptation / IEC and advocacy campaign
Implementation Plan	
Measures	Construction of Farm Canals
Implementation Plan	
Risk	Loss of lives
Measures	Construction of rain Water Harvester & level 3 water system / Zero open defecation
Implementation Plan	
Measures	Construction of rain Water Harvester & level 3 water system / Regular bacteriological test
Implementation Plan	
Measures	IEC/Advocacy Campaign
Implementation Plan	

