Building the Technical Expertise of LGUs for the Robust Implementation of Ridge to Reef Approach/Watershed Ecosystem Approach to Local and Provincial Land Use and Development Planning in the Philippines

Activity Report/Completion Report

Year 2 Activity

1. **Title:**

Data Extraction and Mapping for the Provincial Development and Physical Framework Plan (PDPFP)

2. **Duration and Date**

The training workshop was held from November 12 to 13, 2024 (2 days). Hands-on activities were conducted at the end of each lecture in the afternoon. The workshop spans from 8 AM to 5 PM.

3. **Venue**

The two-day activity was conducted at the Bebot's Resort, Pansol, Calamba, Laguna.

4. **Content and Methodology**

The training workshop was strategically designed for the core team tasked with updating the Provincial Development and Physical Framework Plan (PDPFP) of La Union. This core group is composed primarily of technical staff from the Provincial Planning and Development Coordination Office (PPDCO), who play a central role in the data management, spatial analysis, and planning processes required for the PDPFP.

The main objective of the workshop is to strengthen the technical capacity of the PPDCO staff in both data collection and mapping, key components in the formulation and updating of the PDPFP. Specifically, the training aims to equip participants with practical knowledge and skills in systematically extracting relevant datasets from a variety of sources, including national government agencies, local offices, and open-access platforms. It also covers the standards and procedures for organizing and analyzing these data sets to ensure their usability and integration into the PDPFP.

In addition, the workshop includes hands-on sessions on generating required spatial outputs, such as thematic and sectoral maps, using appropriate mapping tools and geographic information

systems (GIS). By the end of the training, participants are expected to demonstrate the ability to identify and gather critical planning data, assess its quality and relevance, and produce accurate and policy-informing maps essential to the planning process.

Recommended Tools, Platforms, and Technologies for Data Sourcing

Based on the guidance provided by the Resource Persons during the workshop, the following applications, platforms, and technologies are recommended for use in sourcing, processing, and analyzing spatial and non-spatial data relevant to the PDPFP:

1. **OpenStreetMap (OSM):**
   A collaborative, open-source mapping platform that lets users to see and contribute geospatial data such as roads, buildings, land use, and community infrastructure. It is particularly useful for tracing underrepresented or rapidly changing areas.

2. **Philippine Geoportal:**
   Managed by NAMRIA, this government data platform consolidates official geospatial datasets, including administrative boundaries, topographic maps, land cover, and hazard maps. It is a key resource for planners and LGUs.

3. **Google Earth Engine (GEE):**
   A cloud-based geospatial analysis platform that offers access to a vast archive of satellite imagery and environmental datasets. It allows users to conduct advanced analyses such as land cover change detection, deforestation monitoring, and flood mapping.

4. **Project NOAH (Nationwide Operational Assessment of Hazards):**
   Originally developed by the DOST, this platform provides hazard maps, weather forecasts, and disaster risk information, including flood susceptibility, landslide-prone areas, and storm surge models.

5. **Sentinel Satellite Data (Remote Sensing):**
   Offered by the European Space Agency, Sentinel data provides high-resolution, multispectral satellite imagery useful for land use mapping, vegetation analysis, environmental monitoring, and post-disaster assessments.

6. **Unmanned Aerial Vehicles (UAVs) / Drones:**
   Drones can be used to capture high-resolution and real-time aerial imagery. They are ideal for localized mapping needs, such as land parcel surveys, infrastructure mapping, and disaster impact assessments, especially in areas with limited satellite coverage.

7. **REDAS (Rapid Earthquake Damage Assessment System):**
   A hazard simulation software developed by PHIVOLCS that enables users to model potential earthquake impacts. REDAS can also incorporate other hazard data and is used for risk-sensitive land use planning and disaster preparedness.

Key Government Agencies for Data Acquisition

In addition to digital platforms, the following national government agencies are primary sources of official datasets, maps, and statistical information that can support data collection and planning efforts:

1. **NAMRIA (National Mapping and Resource Information Authority):**
   The country's central mapping agency in charge of producing topographic base maps, land cover classifications, elevation data, and official administrative boundaries.

2. **DA–BFAR (Department of Agriculture – Bureau of Fisheries and Aquatic Resources):**
   Offers data on fisheries production, aquaculture sites, coastal resource maps, and marine biodiversity that are essential for coastal and marine planning.

3. **DENR (Department of Environment and Natural Resources):**
   Environmental data is available, including forest cover, land classification, protected areas, critical habitats, and biodiversity profiles. The DENR also helps with Environmental Impact Assessments (EIA) and other land-related data.

4. **PSA (Philippine Statistics Authority):**
   The primary source of demographic, socioeconomic, and population data, including census data, household income and expenditure surveys, labor force data, and small-area poverty estimates.

5. **OSM (OpenStreetMap):**
   While OSM is mostly driven by the community, local government and civil society initiatives are increasingly supporting it. It can be used as a supplement to official databases, particularly in informal settlements or rural places that are underrepresented.

6. **PAGASA (Philippine Atmospheric, Geophysical and Astronomical Services Administration):**
   Offers climate and weather-related datasets including rainfall and temperature records, historical typhoon tracks, climate projections, and hazard maps related to meteorological events such as floods and droughts.

Below are the two-day programs of activities:

Program of Activities
Day 1 - November 11, 2024

Time	Activity	OPR
7:00 AM	Registration	UPLB
8:00 AM	Preliminaries	
	Opening Remarks	**Dr. Rex Victor O. Cruz** Project Leader, APN
8:15 AM	Identification of Maps needed in PDPFP	**Ms. Roshelle Mamaril, EnP** Representative, Office of the Provincial Planning and Development Coordinator
9:15 AM	Workshop on Data Acquisition and Extraction, and Mapping for PDPFP	**Dr. Nico R. Almarines** Training Resource Person
12:00 PM	Lunch	
1:00 PM	Cont of Workshop on Data Acquisition and Extraction, and Mapping for PDPFP	**Dr. Nico R. Almarines** Training Resource Person
4:50 PM	Closing Program	**UPLB Project Staff**

Program of Activities
Day 1 - November 11, 2024

Time	Activity	OPR
7:00 AM	Registration	UPLB
8:00 AM	Recap of Day 1 Workshop	**For. Merven Mendrano** Economic Researcher, PGLU
8:15 AM	Cont. of Workshop on Data Acquisition and Extraction and Mapping for PDPFP	**For. Leonardo D. Barua** Training Resource Person
12:00 PM	Lunch	
1:00 PM	Cont. of Workshop on Data Acquisition and Extraction and Mapping for PDPFP	**For. Leonardo D. Barua** Training Resource Person

4:20 PM	Synthesis of the Training Workshop	**Ms. Roshelle Mamaril, EnP** Representative, Office of the Provincial Planning and Development Coordinator
4:45 PM	Awarding of Certificates	**UPLB Project Staff**
5:00 PM	Closing Program	

5. Participants and Facilitators

To support this capacity-building initiative, the workshop engaged highly qualified resource persons with extensive expertise in Geographic Information Systems (GIS), Remote Sensing, and Land Use Planning. The invited speakers were Dr. Nico R. Almarines, Assistant Professor at the Institute of Renewable Natural Resources, and Forester Leonardo D. Barua from the Makiling Center for Mountain Ecosystems (MCME).

Dr. Almarines and For. Barua provided in-depth technical lectures and practical demonstrations, focusing on the use of spatial data in planning applications. Their sessions covered topics such as spatial data sourcing, satellite image interpretation, map generation, and the integration of geospatial technologies in land use planning. Their contributions were instrumental in enhancing the participants' understanding of how geospatial tools and datasets can support the formulation of more responsive and resilient development and physical framework plans.

The active engagement of these resource persons significantly contributed to the overall effectiveness of the workshop, equipping the participants with practical skills and conceptual knowledge necessary for the successful completion of the PDPFP updating process.

6. Participants' Concerns and Key Takeaways

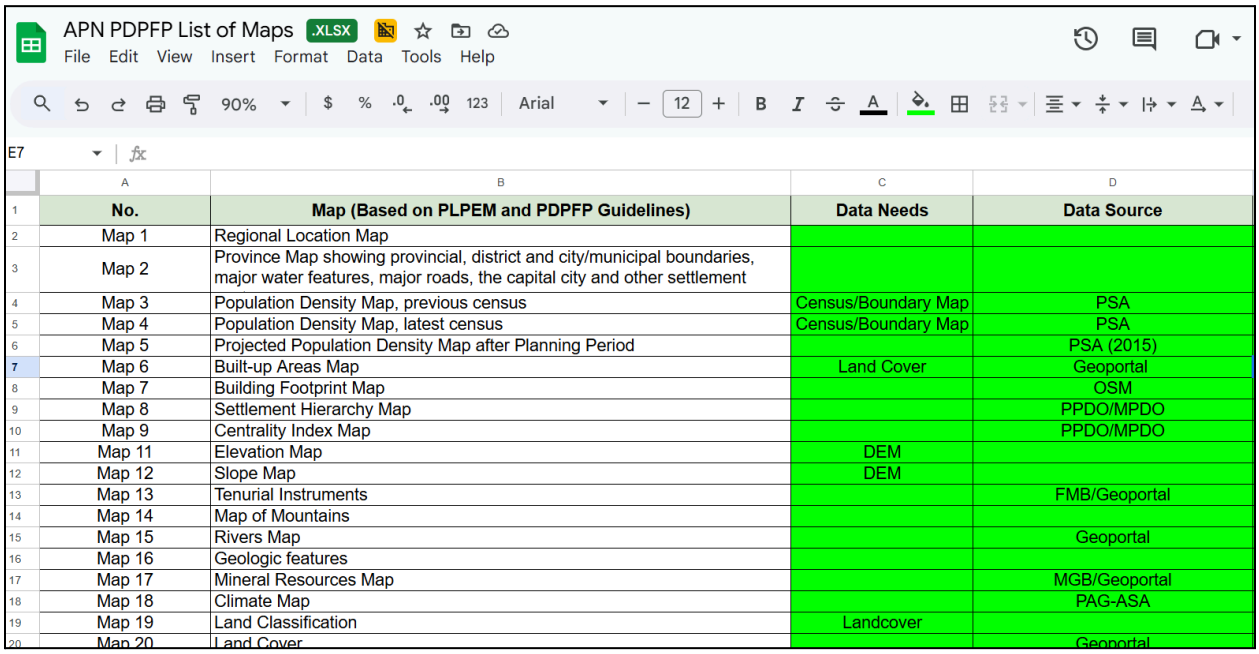
The participants were able to identify existing data gaps within their respective offices, particularly in relation to the data currently available for use in developing maps for their Provincial Development and Physical Framework Plan (PDPFP). Through the training, they became familiar with a wide range of new data sources and learned about various government agencies they can coordinate to access additional datasets. They also expressed their appreciation to the resource persons for introducing them to different software tools and open-access data portals that are freely available for use.

The participants, particularly those from the Office of the Provincial Planning and Development Coordinator (OPPDC) of La Union, highlighted the practical value of the knowledge and skills they gained from the workshop in the development of their PDPFP. They emphasized that this type of capacity-building activity is highly beneficial for their technical staff, as it empowers them to directly apply what they have learned, both in terms of data handling and map

generation. As a result, they anticipate a reduced need to hire external consultants or mapping experts, leading to more cost-efficient and internally driven planning processes.

7. Activity Materials

Participants were required to bring their own laptops, along with the datasets they had already gathered for use in developing the maps required for the PDPFP. The resource person provided a comprehensive list of the required maps, along with the corresponding data inputs needed to generate each one.


APN PDPFP List of Maps .XLSX

File Edit View Insert Format Data Tools Help

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No.	Map (Based on PLPEM and PDPFP Guidelines)	Data Needs	Data Source
Map 1	Regional Location Map		
Map 2	Province Map showing provincial, district and city/municipal boundaries, major water features, major roads, the capital city and other settlement		
Map 3	Population Density Map, previous census	Census/Boundary Map	PSA
Map 4	Population Density Map, latest census	Census/Boundary Map	PSA
Map 5	Projected Population Density Map after Planning Period		PSA (2015)
Map 6	Built-up Areas Map	Land Cover	Geoportal
Map 7	Building Footprint Map		OSM
Map 8	Settlement Hierarchy Map		PPDO/MPDO
Map 9	Centrality Index Map		PPDO/MPDO
Map 11	Elevation Map	DEM	
Map 12	Slope Map	DEM	
Map 13	Tenurial Instruments		FMB/Geoportal
Map 14	Map of Mountains		
Map 15	Rivers Map		Geoportal
Map 16	Geologic features		
Map 17	Mineral Resources Map		MGB/Geoportal
Map 18	Climate Map		PAG-ASA
Map 19	Land Classification	Landcover	
Map 20	Land Cover		Geoportal

Figure 1. Excel file listing all maps required for PDPFP.

Furthermore, based on the guidance provided by the Resource Persons during the workshop, the following applications, platforms, and technologies were recommended for sourcing, processing, and analyzing both spatial and non-spatial data relevant to the PDPFP. These tools were explored and utilized by the participants during the sessions:

1. Open Street Map (OSM)
2. Geoportal by NAMRIA
3. Google Earth Egine

8. Appendices

Table 1. Participants during the two-day workshop.

Name	Office
Merven D. Medrano	PGLU - OPPDC
David M. Rabelas	PGLU - OPPDC
Roshelle A. Mamaril	PGLU - OPPDC
Mariel Faye M. Mina	PGLU - OPPDC
Roland F. Faminialagao	PGLU - OPPDC
Marinette V. Aquino	PGLU - OPPDC
Mayer Abaya	PGLU - OPPDC
Rex Victor O. Cruz	UPLB
Vida Q. Carandang	UPLB
Nico R. Almarines	UPLB
Leonardo D. Barua	UPLB
Viella Marie M. Tunay	UPLB
Diego Miguel C. Sapnu	UPLB
Paulo R. Dimagiba	UPLB
Sophie V. Dulay	UPLB
Francis Emmanuelle Florece	UPLB
Garry M. Oca	UPLB
Denise Kamyll M. Navarro	UPLB
Pocholo Jairus Miguel Venido P. del Rosario	UPLB
Glenda C. Alcachupas	UPLB

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