



**PROTECTED AREA  
SUITABILITY  
ASSESSMENT (PASA)  
REPORT OF PAG-ASA  
ISLAND AND EASTERN  
KALAYAAN ISLAND  
GROUP, WEST  
PHILIPPINE SEA**

**Department of Environment  
and Natural Resources**

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Palawan*

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## **Chapter 1: Introduction**

### **1.1. Rationale**

Following the results of the UNCLOS Ruling of the Tribunal in the South China Sea Arbitration, the National Task Force on West Philippine Sea (NTF-WPS) created by virtue of Memorandum Circular No. 94, series of 2016, endorsed the draft Presidential Proclamation to declare certain parts of the West Philippine Sea as a marine protected area. The proposal for the declaration of Eastern Kalayaan and Pagasa Islands as Protected Seascape under RA 11038 or Expanded National Integrated Protected Areas System was jointly endorsed last 2018 by Secretary Hermogenes Esperon, Chair of NTF-WPS/National Security Adviser, and by DENR Secretary Roy Cimatu to the President. Series of exploratory meetings and planning on the conduct of marine scientific research (MSR) to support the MPA proposal were conducted in coordination with various agencies and academic institutions.

The results from the various expeditions/ MSRs (2017-2021) have been used as bases for the declaration of both Eastern Kalayaan and Pag-asa Islands. The high species richness, high biomass and presence of juveniles seem to indicate that the reefs surveyed support a stable, productive and resilient fish population despite the fact that no fisheries management programs are in place. However, the poor coral cover in the reefs of Pag-asa Island is an indication that without any significant intervention and with continued unregulated fishing, the high fisheries potential of the area may not be sustained.

Aside from these biophysical assessments conducted through the expeditions conducted by the University of the Philippines Marine Science Institute (UP MSI) as supported and initiated by the DENR to support the MPA proposal, Section 5 of Republic Act 11038 otherwise known as the Expanded National Integrated Protected Areas System Act of 2018 (E-NIPAS Act) directs the DENR to undertake a Protected Area Suitability Assessment (PASA) for each of the proposed protected area. To guide all DENR Offices on the process of conducting PASA, Technical Bulletin No. 2016-04 entitled 'Clarifying the Procedural Guidelines in the Conduct of PASA' was issued by the Biodiversity Management Bureau (BMB) outlining the detailed steps on how the assessment will be conducted and the minimum data requirements needed in the report. If the proposed area is found suitable for inclusion, an appropriate NIPAS category shall be recommended by the PASA team grounded on the results of the study.

This document presents the results of the different assessments and literatures gathered to support the establishment of the proposed Pag-asa Island Protected Landscape (PLS) and Seascape and Eastern Kalayaan Protected Landscape and Seascape (PLS).



## Objectives

The assessment aims to determine the suitability of Pag-asa Island PLS and Eastern Kalayaan PLS for establishment as a protected area and their inclusion in the NIPAS. Specifically, the assessment aims to answer the following questions?

### 1. Ecological & Biophysical Criteria:

- 1.1 What are the different rare and endangered floral and faunal species present in Pag-asa Island PLS and Eastern Kalayaan PLS?
- 1.2 What are the different restricted range and congregatory species present in Pag-asa Island PLS and Eastern Kalayaan PLS?
- 1.3 How intact are the natural upland forest, mangrove forest, seagrass beds or coral reef in Pag-asa Island PLS and Eastern Kalayaan PLS?
- 1.4 What are the abundant floral and faunal species in Pag-asa Island PLS and Eastern Kalayaan PLS?
- 1.5 Are there any important feeding, nesting or breeding ground of animals in Pag-asa Island PLS and Eastern Kalayaan PLS?
- 1.6 What are the different important geologic formations in Pag-asa Island PLS and Eastern Kalayaan PLS?
- 1.7 What are the hydrologic resources in Pag-asa Island PLS and Eastern Kalayaan PLS?

### 2. Socio-Cultural Criteria:

- 2.1 What are the socio-cultural features in Pag-asa Island PLS and Eastern Kalayaan PLS?
- 2.2 What are the existing land-uses in Pag-asa Island PLS and Eastern Kalayaan PLS?
- 2.3 Are there Indigenous Communities living in Pag-asa Island PLS and Eastern Kalayaan PLS?

### 3. Economic Criteria:

- 3.1 What are the economic activities in Pag-asa Island PLS and Eastern Kalayaan PLS?

## **Chapter 2: Assessment Method**

### **2.1 Members of PASA Team**

Members of the PASA Team were composed of Officials and technical staff from the DENR- Biodiversity Management Bureau, DENR Regional and Field Offices of MIMAROPA, in particular the Provincial Environment and Natural Resources Office (PENRO-Palawan) and City Environment and Natural Resources Office (CENRO-Puerto Princesa), as reflected in the PASA Forms 1, 2, 3 included in this report.

### **2.2 Methodology**

The PASA consists of gathering, compilation and analysis of relevant information on the biophysical, socio-cultural and economic characteristics as well as other environmental features of the proposed protected area. As such, the conduct of PASA in the proposed Pag-asa Island PLS and Eastern Kalayaan PLS involved the following activities:

- Secondary Data Collection:
  - All relevant secondary data or information such as maps (topographic, soil, drainage, vegetative, land-use, geologic, climate, geo -hazard etc.), meteorological, bio-physical, socio-economic profile, and current development projects/ programs, among others shall be gathered and compiled from various sources. Historical data more particularly on the biophysical resources of the area must be considered. Secondary information from the last ten years reckoned from the time of the actual PASA should be used as important sources of information. Such secondary information shall be compiled and submitted as references in the PASA Report.

The secondary data / information used in this PASA are from the results of the DENR-funded marine scientific researches/ expeditions to the West Philippine Sea led by UP-MSI from 2017 to 2021, relevant journals/articles, as well as other DENR and Municipality of Kalayaan's relevant plans such as the Forest Land Use Plan- 2019-2029 (FLUP) and the Comprehensive Land Use Plan (CLUP). See *Annex A* for the link to the full reports/documents.

- On-site observation:
  - This will involve the actual gathering of information within the selected study sites. Primary data shall be collected and all observed bio-physical, socio-cultural and economic characteristics and other environmental features of the proposed protected area shall be recorded. This activity shall include spot mapping wherein important features/ characteristics such as waterfalls, craters, lakes and structures shall be presented in a



map. Photo-documentation and geo-tagging of important features shall be undertaken and submitted as part of the PASA report.

On-site observations and actual assessment to select study sites were undertaken during the previous expeditions to Pag-asa Island and some features in the KIG including the latest expedition (February 9-March 3 2022) of the UP MSI, the **PA0122 cruise**, under their Upgrading capacity, infrastructure, and assets for MSR in the Philippines (Upgrade - CIA) program with the support of the National Security Council (NSC) where BMB was invited as part of the Expedition team to conduct initial works on PASA including community consultations.

- Key Informant Interviews (KII)

- o Officials of local government units or local communities and leaders of indigenous peoples, if any, within and adjacent to the proposed protected area as well as the concerned NGOs and People's Organizations shall serve as key informants. Important discussions such as the insights and perceptions, issues and concerns raised by the informants on the proposed protected area should be noted and information provided shall be documented.

During the PA0122 cruise, KIIs were conducted along with on-site observations. Among the key informants identified in Kalayaan Island Municipality were as follows: LGU Officials (Pag-asa Island coordinator, Municipal Engineer, two (2) Barangay Councilors), Uniformed Personnel assigned in Pag-asa Island, Officials and members of the fisherfolk association and the women's group association and a youth representative. In addition, a focused group discussion with the community was conducted to map out the uses, resources as well as the threats and issues in Pag-asa Island.

### Chapter 3: Assessment Results and Discussions

(\* Data are arranged according to the outline of PASA Form 1, Form 2 and Form 3 of the Pag-asa island and Eastern Kalayaan respectively)

PASA Form No. 2

#### PROTECTED AREA SUITABILITY ASSESSMENT (Key Informant Interview) CONSOLIDATED/PROCESSED DATA

#### Respondents Profile

Following the guidelines set in Technical Bulletin No. 2016-04 for conducting PASA, interviews should consist of participants coming from the local community officials, leaders of indigenous cultural communities (if any), concerned NGOs, People's Organization and other Key Informant respondents. Since Kalayaan Municipality is composed of one (1) Barangay only (Pag-asa), with 193 civilian and undisclosed number of Uniformed Personnel currently present in the island, a total of 10 (ten) key informant respondents were interviewed composed of 40% female and 60% male. Interviews were conducted within the month of February of 2022.

#### 1. Natural Features

##### 1.1. Geology and Hydrology

Geological and hydrological features were asked during the interviews to know the local residents' observations on the physical attributes in Pag-asa Island as summarized in the following Table.

**Table 1. Geologic and Hydrologic Features present in Pag-asa Island (2022)**

Geology		Hydrology	
Rock Formation	x	Coral reefs	√
Caves	x	Coasts	√
Mountains	x	Beaches	√
Cliffs	x	Ponds	x
Beach Forest	x	Mangrove	x
		Bays	x
		Lake	x



		Sand Dunes	√
		Islet/ Cays	√
		Wells	√

## 1.2 Uses

The respondents were asked on their perception on how the above geological and hydrological features in Pag-asa Island were being used and recognized by different sectors of the community.

Military used to dominate land use in Kalayaan. The existing civilian community within the municipality is made by bringing-in populace from mainland Palawan. The needs of the first community established in Pag-asa are provided by the LGU including housing. For several years, there has been no significant development that took place within the municipality. Among the urban land uses, institutional facilities dominates the landscape at 80 percent. This is attributed to the military facilities within the locality.

### *Local Communities*

- Majority of the respondents see the natural features in Pag-asa Island, aside from residential purposes, as a source of food and livelihood, in particular, fishing and gleaning activities. Some see these features as aquatic wildlife habitats, in particular, nesting areas of sea turtles and resting areas for migratory seabirds. For most of the fishermen, they see beaches as docking and shelter area for their fishing boats/vessels. The forest area is regarded as a protected area by the community while the beach area as recreational area and a place to conduct seasonal community activities such as gleaning ("*Panginginas* or *Hibasan*"), coastal clean-ups and pawikan hatchlings release. The community also regarded some parts of the island as agricultural, including livestock farming and backyard farming areas.

### *Local/ National Government*

- The local government of Kalayaan Municipality sees the potential of Pag-asa Island as a tourist destination as reflected in the Tourism Master Plan of the LGU. Some portion of the Island and other features in KIG are reserved for uniformed personnel for military purposes, while other national government agencies such as the DENR sees the area as critical area for conservation because of its various ecological significance.

### 1.3.1. Threats

The identified geological and hydrological features of Pag-asa Island were threatened by natural and various anthropogenic activities. The respondents were able to highlight some of the threats to these natural features, as follows:

- Top on the list on the threats that the respondents identified was the changes in the Island's coastline. They have observed occurrence of coastal erosion through receding of the Island's coastline and changes in depth. According to the locals, the island has receded from 36 hectares (10 years ago) to about 32 hectares at present.
- Another prominent threat on the island based on the local communities is the presence of foreign fishing/militia vessels, including bullying of foreign ships to Filipino fishing vessels, as well as observed presence of illegal, unreported and unregulated (IUU) fishing, in particular cyanide fishing at night by Vietnamese fishermen.
- The locals have also reported that there are rampant harvesting of endangered wildlife such as giant clams and brain corals, while the fishermen reported presence of "dapag" or Crown of Thorns (CoTs) starfish infestation in some of their fishing areas.
- The Pag-asa Island and other features of the KIG are also experiencing marine litter and plastic trash accumulation depending on the season.

### 1.3.2. Interventions

To address the threats identified, the local government unit, in coordination with the Palawan Council for Sustainable Development (PCSD) and other concerned government agencies, developed and adopted the Strategic Development Plan (SDP) for the island which includes zoning of the island based on their uses/ proposed development plan. In addition, the Bureau of Fisheries and Aquatic Resources (BFAR), according to the KIG fishers, has provided several fishing boats to the community to address the concerns on livelihood and increase the fishing efforts in the area by the Filipino fisherfolks. On the other hand, to immediately respond on the problems of marine litter and plastic wastes accumulation in the island, regular monthly clean up drives were being conducted by the community.

## II. Biological Features

### 2.1. Flora

Respondents were asked on their observation and perception on the dominant flora species in their respective areas. Based on their listings, the species were ranked down as to its frequency it was mentioned by the respondents:

**Table 2. List of Flora based on KII (2022)**

Common Name	Scientific Name/ Family	Conservation Status
"Bitaog"/ "Dangkalan"	<i>Calophyllum inophyllum</i>	Least Concern
"Biton-Biton"	<i>Barringtonia asiatica</i>	Least Concern
"Talisay"	<i>Terminalia catappa</i>	Least Concern



"Niyog"	<i>Cocos nucifera</i>	Not evaluated
"noni" / "apatot" / indian mulberry	<i>Morinda citrifolia</i>	Not evaluated
Banana	<i>Musa sp</i>	Least Concern
"Baryaw-baryaw" / "Kay-kay" / "Lusay"	<b>Seagrass:</b> <i>Cymodocea rotundata</i> , <i>Halodule uninervis</i> and <i>Halodule pinifolia</i>	Least Concern
"Lato" / Paket-paket"	<b>Seaweeds:</b> <i>Caulerpa lentillifera</i>	Not evaluated

Based on the interviews, Bitao, or *Calophyllum inophyllum*, stood out as noteworthy in the fact that not only was it relatively abundant, but also that only a handful of individuals were toppled by Typhoon Odette. Other species, such as Talisay, or *Terminalia catappa*, coconut, Botong, or *Barringtonia asiatica*, and *Scaevola taccada*, to name a few, while relatively abundant, did not seem to have fared as well Bitao during Typhoon Odette. As expected from isolated islands, plants such as coconut and Talisay are plentiful as they have seeds that are able to drift along ocean currents until finding a suitable place to germinate thus often colonizing far away islands. Besides trees, the banana plant also seems worth mentioning. Observation and communication with the community on the island suggest that the plant is suitable for growth on the island.

Anecdotal accounts of residents indicate that many of the abundant trees on the island such as *Calophyllum inophyllum* and *Musa sp.* were introduced sometime in the history of the region. Vegetable gardens in the community also consist almost entirely of non-native crops; such as *Capsicum frutescens* (chili), *Solanum* species (tomato, eggplant and potato), *Spinacia sp.*, *Allium cepa* (Onion), *Cucumis sp.*, (cucumber) and many more. In addition to these, many species were also introduced as ornamentals. Common plants that one will encounter along roads and in gardens in the local community and military settlements would include *Catharanthus roseus* (Madagascar periwinkle), *Bougainvillea sp.*, *Helianthus sp.* (sunflowers), and *Euphorbia milii* (crown-of-thorns) to name a few.

### 2.1.1 Importance Value of Flora based on KII

The respondents narrated each of their perceptions on the importance of the different flora species found in their areas. Responses were analyzed and arranged based on their commonness. Most of the respondents narrated that flora species especially the trees protect the community from natural calamities like typhoons and floods, that it will provide oxygen, lower the temperature caused by global warming and provide shade both for humans and animals. They also believed that the trees, especially the beach forests are important for "water retention" in the island. On the other hand, they see the seagrasses and seaweeds as their source of food because some of the

community members, especially women, are gleaning in the seagrass/ seaweed meadows area of the island. They also understand that these areas are habitat for juvenile fishes and other aquatic fauna.

## 2.2. Fauna

For the wild fauna species, most of the respondents only mentioned species listed in Table 3 categorized according to their group/family.

**Table 3. List of Fauna based on KII (2022)**

Common Name	Scientific Name/ Family	Conservation Status
<i>Fish</i>		
Talakitok	Family: Carangidae, <i>Caranx</i> sp.	Least concern
Maya-maya	Family: Lutjanidae	Least concern
Lapu-lapu	Family: Serranidae, <i>Epinephelus</i> sp.	Least concern
Mamsa	Family: Carangidae, <i>Caranx</i> sp.	Least concern
Tulingan	Family: Scombridae, <i>Euthynnus affinis</i>	Least concern
Tanigue	Family: Scombridae, <i>Scomberomorus commerson</i>	Least concern
<i>Seabirds</i>		
Tagak	Family Ardeidae, <i>Egretta garzetta</i>	Least concern
Seagull	Family Laridae	Least concern
<i>Marine Turtles</i>		
Pawikan/ Green Turtle	<i>Chelonia mydas</i>	Endangered
Hawksbill Turtle	<i>Eretmochelys imbricata</i>	Critically Endangered
Loggerhead Turtle	<i>Caretta caretta</i>	Vulnerable
<i>Dolphins (Bottlenose)</i>	<i>Tursiops</i> sp.	Near Threatened
<i>Molluscs</i>		



Pasyak / Sikad sikad	<i>Strombus sp.</i>	Not evaluated
Giant Clams	<i>Tridacna maxima</i>	Lower Risk: Conservation Dependent
	<i>Tridacna crocea</i>	Least concern
	<i>Hippopus porcellanus</i>	Lower Risk: Conservation Dependent
Corals	<i>Pocillopora sp.,</i>	Least concern or Vulnerable
	<i>Porites sp.,</i>	Near Threatened
	<i>Heliopora sp.,</i>	Vulnerable
Others:		
Sea urchins “tirik”	Class: Echinoidea	Not Evaluated
Sea cucumber “balatan”	<i>Holothuria sp.</i>	Least concern
Crown of Thorns Starfish or “dapag”	<i>Acanthaster planci</i>	Least concern; invasive species

### 2.2.1 Importance Value of Fauna based on KII

In terms of the importance value of the fauna found in and adjacent to the island, most of the respondents said that these fauna, particularly the fishes, are their source of food. For some of the respondents, they understand that the wild fauna species are important to them as they see their value in its contribution to biodiversity, and that fauna species are important part of a life cycle. Meanwhile, they see the coral reefs as very important in terms of coastal protection against strong typhoons/ waves and storm surges.

### 2.3. Feeding, Nesting, Resting and Breeding Sites

The Pag-asa Island serves as an important nesting area for marine turtles, while some features of the KIG (e.g. Lawak Island) as feeding and roosting areas for seabirds/ migratory birds. This was validated by the respondents of the KII, in particular by the fisherfolks and the marine turtle hatchery operator. During the 2022 Expedition/ PASA on-site observation, several fresh turtle tracks were observed every morning. There is an existing marine turtle hatchery/ nursery, however it was damaged by the recent typhoon Odette. It was also reported by the officials of the island that some of the locals are taking and collecting the marine turtle eggs either for food or for livelihood.

### **III. Socio-Cultural and Economic Features**

#### **3.1. Population, livelihood and Practices**

Most of the livelihood of the local communities are or related to fishing like dried fish making. However, there are also backyard farming/livestock breeding, LGU staff, construction (as LGU Contract of Services) and sari-sari stores.

#### **3.2. Indigenous and Cultural Communities**

There are no reported / identified Indigenous People (IPs) or Indigenous Cultural Communities (ICCs) originating in Pag-asa Island. However, different individuals of diverse ethnic origin thrive in the island including "Cuyunons".

#### **3.3. Perceived Threats/Views of the Protected Area to the Local Communities**

Respondents of the KII were asked on their perceived threats/opinion of the proposed protected area to them and to the local community as a whole. Majority of the responses are supportive of the establishment of a marine protected area either through a local ordinance (LGU) or through the national government mechanism (NIPAS framework). However, concerns raised during the interview primarily pertained to how to enforce environmental laws and how to deal with foreign poachers/ illegal fishers.

#### **3.4. Issues and Concerns/Problems Encountered by the Local Communities**

Aside from the responses summarized/ indicated in Section 1.3.1 of this Form, the following were the issues and concerns encountered by the local community in terms of socio-economic development:

- The residents of Pag-asa Island have reported instances of saltwater intrusion and limited freshwater supply.
- The members of the fisherfolk association have also reiterated their concerns on the presence of foreign vessels around the island especially those that are engaging in IUU (cyanide fishing at night by Vietnamese fishermen). They have also reported that their fishing ground area is decreasing/ or being restricted due to the presence of multiple big foreign vessels in their area.
- In terms of development constraints as reported by the officials and locals of Pag-asa Island, they see that the lack and or insufficient capacity, knowledge and awareness on environmental stewardship and law enforcement are the main causes on some of the destruction of the marine environment in the area. They also reported the difficult transport system and lack of basic services and facilities as one of the challenges in pursuing all their development plans and activities in the island and in other features of the municipality. Respondents also expressed their desire for economic progress as they observed that many of the local community have limited access to other sources of income in Pag-asa Island.



#### IV. Economic Development Features

##### 4.1 Current and Future Development Plans and Programs

The Kalayaan Municipality is implementing programs, infrastructures and other activities related to environmental and economic development as reflected in the Strategic Development Plan (SDP) of Pag-asa Island and KIG. Majority of the answers generated from the interviews were at the community level only, while programs pertaining to military activities were undisclosed by the uniformed personnel respondents.

**Table 4. Current and Future Development programs based on KII respondent's personal knowledge**

Development Programs	Current Programs	Future Programs
Socio-economic/ infrastructure program	Construction/ renovation of the Pasalubong Center as part of the Tourism facilities	Greenhouse and Aquaponics infrastructure
	Livestock Raising Program	Development of Livelihood Programs as indicated in the SDP (e.g. Biodiversity Friendly Enterprises (BDFE)
	Goat Raising	Food processing facilities
	Dried Fish Making	Standard housing design
	Covered court construction	Cooperatives
	Backyard farming/ community gardening	Portable ATMs
	Airstrip development	Renovation of infrastructures damaged by Typhoon Odette
	Fishing boat provision	Construction of ecotourism resorts and facilities
	Food subsidy	

<b>Development Programs</b>	<b>Current Programs</b>	<b>Future Programs</b>
	Sheltered port development	
Environmental Program	Local conservation area - Forest area part	Marine turtle hatchery renovation
		MPA Establishment
		Rehabilitation of damaged beach forest

## Chapter 4: Recommendations

The following are the recommended future activities and next steps relevant to the conservation and management of the Pag-asa Islands, the Kalayaan Island Group and its features, as identified by the DENR Region IVB with the BMB, subject to the alignment with relevant plans and programs of the Government and concerned/relevant Offices and Agencies:

*1. Recommended inter-agency activities, subject to further consultations and planning with concerned Agencies/Offices:*

- o Agro-commercial and -industrial development (Sewage Treatment Plants, Solid Waste Management, Desalination Plant, Community-based Water Supply)
- o Geological Hazards and Vulnerability Assessment, Groundwater Assessment
- o Ambient Water Quality Assessment & Monitoring
- o *Carrying Capacity Studies* - There is a need to prioritize the conduct of carrying capacity studies for Pag-asa Island and other features being eyed for resettlement and development by the National Government, prior to the construction of any facilities. This is in consideration of the limited groundwater supply, potential impacts of increased solid and waste water generation, and the limited space in these small islands/features that can accommodate concrete structures vis-à-vis coastal erosion;
- o Technical Assistance and Capacity Building for Marine Turtle Hatchery, Assessment and Monitoring of Avifauna, Biodiversity, Wildlife, Habitats and Ecosystem Services - There is a seasonal nesting of Marine Turtles in Pag-asa Islands, hence there is a need to provide capacity building for the LGU community on hatchery operations including monitoring and proper handling of marine turtle eggs as well as the pawikan hatchlings release. There is also a need to repair/improve the marine turtle hatchery including provision of relevant materials/ equipment.
- o Beach Forest Rehabilitation: Beach forests are present in Pag-asa Island. Beach forest rehabilitation may be undertaken as the island, including the beach vegetation, were severely damaged by the most recent typhoon Odette in 2021. Rehabilitation of the beach forests with correct species, may contribute to coastal integrity and may possibly reduce erosion. Further consultations with beach forest experts are needed if such undertakings will be pursued.



## 2. Cross-Cutting concerns

- o Roll-out of West Philippine Sea Strategic Communication Plan- Immediate awareness/ social marketing campaign and capacity building to LGU on marine conservation/ environmental stewardship should be conducted. Once capacitated, the LGU can re-echo or conduct regular orientation/briefing every time there's newly assigned Uniformed Personnel in the island.
- o Explore opportunities for mobilizing investments and technology transfers, and strengthening technical and human capacity in central waste management facilities. Since most of the solid wastes in Pag-asa island are either burned down or transported back in the mainland Palawan, a shift towards reducing, reusing, and recycling using small-island-appropriate technologies, as well as circular economy (turning wastes into resources) should be introduced.
- o Initial identification/ assessment of potential biodiversity friendly enterprises (BDFE) in the area can be done following the results of the FGD and KIIs.
- o Strengthen partnership with Academe, including, but not limited to, UP MSI, Western Philippines University, Palawan State University, on research and monitoring activities in Pag-asa Island and the KIG. Institutionalization / provision of support for scholars of Professional Masters on Tropical Marine Ecosystems Management (PM-TMEM) to undertake their research/ special problems in the island is recommended. Moreover, the UP MSI is also requested for a presentation of KIG Expedition Results including assessment of threats on the following:
  - Coastal erosion and historical changes in habitat extent/loss
  - Historical changes in biological communities, loss of biodiversity
- o Issues and recommendations concerning fisheries and law enforcement in Pag-asa Island such as provision of fishing boats appropriate in the area, capacity building for Uniformed Personnel with regard to environmental stewardship, as well as upgrading their assets (e.g. provision of motorized boats and required equipment needed to perform their function on enforcement) are suggested to be discussed/ raised with relevant agencies through existing technical working groups/ coordination mechanisms (e.g. BFAR-BMB Convergence, TWG for the development of Pag-asa Island and KIG)

- o Lastly, a policy/set of guidelines on sustainable small island development including building resilience can be developed following the studies conducted in Pag-asa Island as well as the experiences from other similar small islands in the Philippines. As most of the small islands are characterized by limited land resources, which are under increasing demands and intense pressures from multiple and competing uses as well as from climate change and extreme events which can threaten the island's habitability, a guide to judicious use on the island's available land resources including subscribing to more sustainable consumption and production patterns must be in place.