Key Findings: Community Vulnerability Assessment

Name of village	Nat Kan
Date of assessment missions	29th -30th April 2019
Date of validation mission	23-June-2019
Total population of the village	1100
Total number of VA participants: i) during assessment mission; ii) during validation mission	(i)40 (ii)29
Gender	Total male: Total female:

Hazard and Resource Mapping in Nat Kan Village

Fig.1. Hazard & Resource Mapping of Nat Kan Village

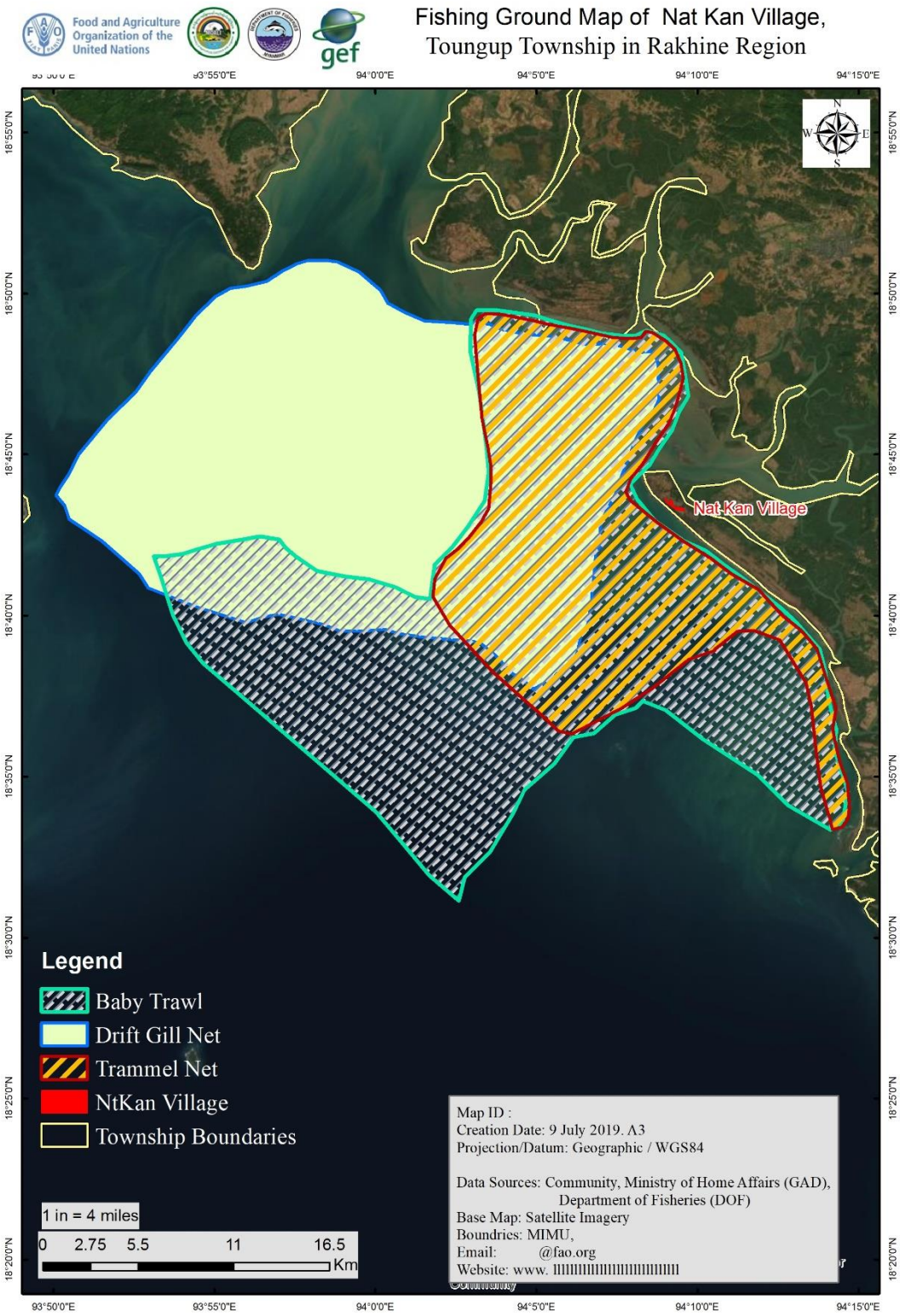

Fig.2. Nat Kan Village Fishing Ground Map

I. Summarizing Livelihoods, Sector, Assets Vulnerability Vis-à-vis hazards and drivers of change

	Floods		Cyclones/ Storms		Heavy/ Extreme rainfall		Coastal erosion/ Sea level rise		Storm surge		Pollution (Water)	Salt water intrusion	Drought/ heat waves	Tsunami		Strong Wind/ Squall		Others (specify)
	Int:	Com:	Int:	Com:	Int:	Com	Int:	Com:	Int:	Com:				Int:	Com:	Int:	Com	
Livelihoods/ Sector																		
Fishing	M	H	H	H	M		M	L	H	H				L	H	H	H	M /M (Tornado)
Aquaculture																		
Agriculture/ Farming		M		H				M		H					M		M	L
Small Businesses																		
Grocery Store	M	M	M	M				L		H					M	M	H	L
Fish processing	M	M	M	H				L		H					H	M	L	H
Tailor Shop		M		H				L		H					H		L	H
Fishmonger	M	M	M	H				L		H					H	M	L	H
Government Services																		
Electricity		L		H				L		H					L		M	M
Water supply		M		H				L		H					M		L	L
Public transportation																		
Others (specify) Embankment		H		H				H		H					H		M	L
Natural Resources																		
Beaches		H		H				H		H					H		M	L
Coral Reefs																		
Marine Protected Areas																		
Protected Areas – Terrestrial																		

Mangroves		L	H	H				M		H					M		L	M
Seagrass																		
Water table/ freshwater lens																		
Others (specify)																		
Assets/ Infrastructure																		
Fishing center/ landing site		M		H				M		H					H	H	M	L
Fishing boats/ gear – nets, pots, etc.		L	M	H				L		H					H	M	M	L
Village bazaar																		
Port / jetty/ bridge		M		H				M		H					H		M	M
Major road		L		H				L		H					M		X	L
Processing centers																		
Ice plants										H								
Drying facilities		M						M		H					M		M	M
Hatcheries/ Nursery																		
Religious building		L	M					L		H					L		M	M
Schools		L	H					L		H					M		M	M
Sub-RHC/ RHC/ Clinic	M		H													H		
House		M	H	H				M		H					M	M	M	M
Others (Livestock)			H															
Others (people)			M															

II. Summarizing Community Vulnerability and Capacity in terms of Exposure, Sensitivity and Adaptive Capacity

Round 1: As an internal exercise based on our analysis of available data (this will help us interpret and check community perspectives later on…)

Round 2: To be conducted during the validation exercise after presenting and reviewing with the community the results of the VA

Note: these variables we can further refine/ increase if needed for more precise conceptualization… though it might be helpful if we could have a 'standardized' set of variables that would be applicable across all communities to facilitate comparisons across areas… not absolutely needed though and we can determine later….

Exposure to Climate Change and Related Hazards

Factor/ Area of concern	**Rating (by internal team)**	**Rating (by participants)**	**VA tool used**	**Number of participants (if possible)**	**Remarks**
Hazard Analysis					
Coastal erosion and related flooding (e.g. higher tides or sea levels)	**M**	**H**	Hazard and Resource Mapping, Matrix ranking of hazard, Disaster and Climate Risk Assessment	**28**	
Changing ocean currents and conditions (e.g. acidity, higher temperatures, salinity)		**M**		**15**	
Drought/dry spells		**L**	Disaster and Climate Risk Assessment	**17**	
Forest fires					
Heavy rainfall and flooding events	**M**	**M**	Matrix ranking of hazard, Disaster and Climate Risk Assessment	**15**	
Cyclones and storms	**H**	**H**	Livelihood and hazard calender, Matrix ranking of hazard, Disaster and Climate Risk Assessment	**28**	
Tide wave		**M**		**27**	
Landslides and erosion	**M**		Matrix ranking of hazard		**x**

Saltwater intrusion		M		23	
Tsunami	L	M	Livelihood and hazard calendar, Matrix ranking of hazard, Disaster and Climate Risk Assessment	22	
Tornados	M	M	Livelihood and hazard calendar, Matrix ranking of hazard, Disaster and Climate Risk Assessment	14	
Strong wind	M	H	Livelihood and hazard calendar, Matrix ranking of hazard, Disaster and Climate Risk Assessment	28	
Low pressure area		M	Matrix ranking of hazard, Disaster and Climate Risk Assessment	15	
Others (specifcy) Disease (Aqu)			Matrix ranking of hazard and Livelihood and hazard calendar, Disaster and Climate Risk Assessment		x
Exposed areas and group to the above hazards					
At-risk groups (e.g. children, disabled or elderly)		M		22	
Coastal and marine ecosystems (e.g. coral reefs, seagrass and mangroves)		H		28	
Farms and related facilities (e.g., irrigation system)					x

Fishing grounds	**M**	**M**	Fishing ground mapping, Problem census	**27**	
Fishing facilities (e.g. landing sites, market, boat storage)	**M**	**M**	Asset Pentagon, Disaster and Climate Risk Assessment	**22**	
Forest and terrestrial ecosystems					**x**
Key housing areas or settlements	**M**	**H**	Transect mapping	**28**	
Key commercial or industrial areas		**M**		**20**	
Public infrastructure (e.g. power station/lines, water system, cellphone towers, main roads, bridges)	**L**	**H**	Transect mapping, SWOT analysis	**21**	
Social services (e.g. monasteries, community centre, fire and police stations, hospital/health centre, schools)	**M**	**M**	Hazard and resource mapping	**27**	
Others (specify) Embankment		**H**		**28**	
Overall Exposure Assessment	**M**				

Guide for exposure rating:

Low	**Medium**	**High**	**Not assessed**
impacted rarely (e.g. every 10+ years) / only a few people or areas impacted	impacted from time to time (e.g. every 5-10 years) / a number of people or areas impacted	Impacted frequently (e.g. every 1-4 years) / a large number of people or areas impacted	Factor not assessed

Sensitivity to Climate Change and Related Hazards

Factor/ Area of concern	Rating by internal team	Rating (by participants)	VA tool used	Number of participants (if possible)	Remarks
Ecological sensitivity					
coastal and marine ecosystems (e.g. coral reefs, seagrass and mangroves) and related biodiversity		**M**		**28**	
forest and terrestrial ecosystems and related biodiversity					**X**
Soil quality and fertility	**L**	**M**	Asset pentagon	**25**	
Status of fisheries resources	**H**	**M**	Semi structure interview	**26**	
Status of mangrove forest resources		**M**		**25**	
Aquaculture water quality			Semi structure interview		**x**
Domestic Water Quality	**L**	**H**	Hazard & resource mapping	**23**	
Drinking Water Quality	**L**	**H**		**27**	
Aquaculture pond temperature					**x**
Other (fishing group??)					**X**
Others (specificy)					**x**
Socio-economic sensitivity					
Awareness of climate change		**M**		**26**	

Quality housing	**M**	**M**	Wealth ranking & resource mapping, transect mapping	**23**	
Financial resources (e.g. regular household income, insurance, loans/credit)	**M**	**H**	Venn diagram	**24**	
Public utilities (safe drinking water, electricity and fuel)	**M**	**M**	Resource matrix & mapping	**16**	
Dependence on non-climate sensitive sectors and related livelihoods (rather than farming, fishing (e.g tourism)					
Gender equality	**M**	**L**	Gender role	**22**	
Level of education and literacy	**M**	**H**	Asset Pentagon	**24**	
Level of migration worker	**H**	**L**	Problem tree	**19**	
Presence of social networks and safety nets	**M**	**H**	Venn diagram and Asset Pentagon	**20**	
Working age population (between 18-60 years)		**H**		**16**	**Need to consider this role because they said that there is no migrant worker in their village, it means that their village have enough man-power for working**

					population. This answer should be low or medium
Access to public and private extension services	**H**	**H**	Venn diagram and Asset Pentagon	**27**	
Market information	**M**	**L**	Asset Pentagon & Venn	**16**	
Others (specify)					
Other (fishing group?? Eg. Fishing gear and Boat)					
Overall Sensitivity Assessment	**H**				

Guide for sensitivity rating:

High/ Healthy Status	**Medium**	**Low/ Poor Status**	**Not assessed**

ADAPTIVE CAPACITY FOR Climate Change and Related Hazards

Factor/ Area of concern	**Rating by internal team**	**Rating (by participants)**	**VA tool used**	**Number of participants (if possible)**	**Remarks**
Awareness of climate change adaptation strategies		M		16	
Access to alternative or diversified livelihoods	L	L	Livelihood calendar	26	
Access to natural resources (e.g. coastal, marine and forest ecosystems and related resources, land, water, fertile soil, good quality water)	M	M	Resource matrix /Asset Pentagon	28	

Access to financial resources (e.g. regular household income, insurance, loans/credit)	L	L	Asset Pentagon & Venn diagram	28	
Access to social safety nets and networks	L	L	Venn diagram and Asset Pentagon	28	
Access to important institutions	M	L	Venn	28	
Presence of/access to local groups, networks, fisherfolk/fish farmer organizations, producers groups, etc.	L	L	Venn, Asset Pentagon	28	
Availability of human resources (e.g. trained professionals, adequate workforce)	L	M	Asset Pentagon	17	
Level of cooperation and collective decision making	L	M	Venn and Asset	28	
Level of leadership	M	L	Gender roles	24	
Presence of climate proof infrastructure (e.g. roads, electric grid, water supply) and housing	L	L	Hazard and Resource Mapping, Resource matrix	27	
Presence of early warning and disaster risk management systems		L		28	
Others (specify) Presence of fishery management	L		Fisheries mapping		
Overall Adaptive Capacity Assessment	**L**				

Guide for adaptive capacity rating:

High	Medium	Low	Not assessed

Summary of VA Findings (Exposure, Sensitivity and Adaptive Capacity)

Climate change hazards/ drivers of change	Exposure	Sensitivity	Adaptive Capacity	Overall vulnerability rating	Key vulnerable areas/ groups	Priorities for adaptation* -- this then draws the link to the CBCCA-EAFM process
Cyclone	High – cyclone effects the community during pre-monsoon (April-May) and post monsoon (Sep-Nov)	Medium – fishery sector is significantly destroyed such as boats, fishing gears, , seed, domestic and drinking water sources.	Low – community is lacking social safety nets and networks when cyclone was hit. They are lacking cyclone shelter and do not have climate proof infrastructure.	High	The fishing community is highly vulnerable to cyclone, especially small and medium fisher groups. The village is located near the sea and do not have any barrier to prevent from cyclone.	- CCA and DRM training - Safety at the sea - Emergency respond - Early warning and early action - Ecosystem based Fisheries Management (EAFM)
Storm Surge	High- Storm surge made most vulnerable to small, medium and large scale in fisheries sector.	Medium – It affects livelihoods and infrastructure .	Low – this community has lower fishery resource management as well as not having sufficient human resources (i.e knowledge and	High	It impacted to socioeconomic conditions of fishing community.	- CCA and DRM training - Ecosystem based fishery management (EAFM)

			technology) to reduce the impacts of storm surge on aquaculture ponds.			
Strong wind/ squall	High - Strong wind occurred frequently about (4) times per annual with medium intensity. It affects to fishers community. It occurs frequently during monsoon season. It was reported that 10 medium fisher household and 3 large fisher household were impacted by the squall in the past.	Medium – It badly damages the housing and rooftop because the community has mostly basic housing materials.	Low – they are lacking climate proof infrastructures and lack of financial/capital to invest in their housing.	High	It highly affects to the whole community, most noticeably for fisher community where they cannot do fishing due to frequent strong wind.	- CCA/DRM - EAFM
Flood	Medium – It occurs almost	Medium – it affects socioeconomi	Low – they do not have any climate proof	Medium	The whole community is	- CCA & DRM - EAFM

	every year but the intensity is low.	c conditions of farm households, especially to housing, and some public utilities.	infrastructure, and social safety net.		impacted by the flood.	
Heavy rainfall	Medium- Due to heavy rainfall, several fisher businesses were affected and stopped temporarily , as it affects significantly to medium fishers but less impact to small and large fisher household.	Medium – it highly affects to medium small scale processors and fishers, while it also affects to small and large fisher communities.	Low – They do not have any climate proof infrastructure or materials (e.g boat, houses,) and are also lacking climate information.	Medium	The fisher community is the most vulnerable community.	- CCA and DRM - EAFM
Coastal erosion	Medium- it has occurred almost every year, but the intensity is still not significant.	Medium- it badly damaged houses and infrastructure nearby the coastline.	Low – they have low social safety net and infrastructure.	Medium	The community living nearby coastline areas are badly damaged.	- DRM

*(this one to be really determined during EAFM/EAA and CBCCA planning).. but if there are things mentioned during the VA process, they can be noted here already)

III. Broader thematic and cross-thematic analyses of Community Vulnerabilities

(can be answered as bullets, or short paragraphs, or diagrams)

- Are common themes emerging from participants' answers in terms of exposure, sensitivity, adaptive capacity and overall vulnerability?

Exposure	Sensitivity	Adaptive capacity	Overall VA
-Coastal erosion -storm -Strong wind	- Depletion of fisheries resources - Having poor quality housing - Household with a lot of migrant worker (so that labor scarcity) - Access to private and public extension services	- Do not have alternative livelihood activities - Lacking important institution links for better management options - Poor cooperation and collective decision making	KLY village is highly vulnerable to different kinds of natural disasters/hazards and climate change impacts, especially occurring at fishing and aquaculture livelihood dependent households.

- Are there unexpected answers? Or answers that you expected but are missing? Why do you there are unexpected questions or answers?
    - **They are using baby trawl for fishing although it is prohibited. They are also catching fish in the protected areas where ecosystem is still functioning.**
    - **We are expecting to get reported on the richness of ecosystem.**
    - **They reported that soil structure and quality are badly damaged due to the intrusion of saltwater.**
- Are there particular themes or issues raised within a specific demographic (e.g. people of a specific age, gender, livelihood type, income bracket or level of education)?
- Are there particular themes or issues raised by a particular community group in the VA (e.g. fisheries, aquaculture, small scale processors, etc.?)
- Are there any significant trends (e.g. increasing or decreasing focus on an issue based on location or over a time period)? Any issue repeatedly discussed or mentioned?
- Are there any major differences among participants' answers (e.g. community leaders or resource managers holding a different view from the majority of households or resource users)? Or are there differences in findings from other sources (e.g. findings from resource mapping compared to interviews or existing or other related documents)?

	Fishery	Aquaculture	Women Group	Small scale processor
Issues raised within a specific demographic (Livelihood type)	They are lacking technical support. They reported that lacking storage facilities. Labor scarcity (due to high migration)	N/A	After disaster, the participation of women in different number of activities (fisher) is still large (88%).	N/A
Issues raised by a particular community	Offshore (boat) fisher are also catching fish in their protected areas and in the areas where their baby trawl fishing are carried out.	n/a	Women take responsibilities in fish processing and selling at the market	Took cash advance from moneylender or broker and sold out fish products in lower prices when they need to repay the loans. They have to sell the groceries/foods in credit and thus they suffer from accumulation of credit sales.
Trends	decline fish catch, spend more fishing time significant decreased in mangrove forest and thus increased coastal erosion	N/A		
Major differences among participants' answers				

- What questions are still not answered? What additional information should be gathered or checked during the validation mission?

- **Coastal marine ecosystem condition (good, damage) and impacts of climate change and disaster. (note: we have acquired information where these resources located and we know whether climate change and disaster has impacted on these resources. Thus, we will upgrade our questions especially when we do fishing ground analysis)**
- **Awareness of climate change (Note; we will add this questions in their semi-structured questionnaires).**
- **Agriculture sector (Note: we will invite farm households who are doing agriculture for their livelihood. In some village, we have invited but we do not have questions whether the natural hazards has impacted to their sector or not. Therefore, we owe to update our questionnaires)**
- **Forest and terrestrial ecosystems and related biodiversity**
- **Mangrove condition (Why, when, how,..etc)**
- **Presence of early warning system (Note: this will be part of our implementation processes)**
- **Working age population (Note: we do not have this information at the village level).**
- **Dependence on non-climate sensitive sectors and related livelihoods (rather than farming, fishing (e.g tourism) (note: we will ask the community when we do validation of the results).**

Specific to institutional and stakeholder dimensions and dynamics of the VA:

- Which stakeholders have the most relationships and why?
- Which stakeholders do not have many relationships with other stakeholders and why? Should they develop more relationships and, if so, with whom?

	Fisher	Fish farmers (Aqua)
Which stakeholders have the most relationships	Daily worker, fish collector and groceries are the most important stakeholders because they require these supporting stakeholders for their businesses/fishing.	N/A (there is no aquaculture (fish farmer) farming in this village.
Which stakeholders do not have many relationships with other stakeholders	DoF, and GAD do not have many relationships because of their working conditions They need to develop more relationship with private sectors for achieving more income opportunities and	N/A

	academic institutions for further research to give more policy inputs.	

- Who is providing money and other material resources and to whom? Are there stakeholders who are excluded? Are there other potential sources of support?
    - **Bridge Asia_Japan (BAJ) had provided school for the welfare of their community**
    - **Government is now supporting in the construction of secondary school in their village**
    - **No one is providing money for their community but moneylender, Mya Sein Yaung and PACT microfinance gave loans to the community.**
    - **Perhaps Mya Sein Yaung (private money lender?) and FAO could be a future support in their community development project.**
- Is information flowing between stakeholders and in both directions (vertically and horizontally)? If not, why? How can this be improved?
    - **Market information sharing between collector and community was occurred.**
    - **Information flowing should be improved between DoF and respective community for technical, legal, policy, etc….**
- Are there overlaps or gaps in the policies and laws governing the institution? How can this be improved? Are there policies and laws that affect (either positively or negatively) relationships among stakeholders or institutions? ***(***this can then be a link/input to Component 1)***
    - **There may be overlaps or gaps in the policies and laws,**
    - **Need to improve policies and law awareness through cooperation amongst different stakeholders.**
- What are the strategic points to intervene to improve decision-making or relationships across stakeholders?
    - **More collaboration among stakeholders (eg. DOF and community) and strengthening public-private partnership are essentially required.**
    - **The outcomes of the VA assessment and community planning should be carefully reviewed by the respective stakeholders so that the community can be enable to implement the necessary adaptation options and the decision makers could understand which sectors or actions should be prioritized.**

IV. Identifying Linkages to EAFM/EAA and Community-based CCA Planning and Implementation

Linking to EAFM and EAA

Which findings, factors, variables in the VA have relevance to EAFM and EAA?

- **The fishing ground is closely situated near the village.**
- **They have a huge potential (good soil and water quality) to implement the aquaculture sector in their village.**
- **Because the village is located near the sea, it is often impacted by the different natural disasters and hazards (such as storm surge, coastal erosion, etc). In addition, strong wind is also often occurring and highly affected to the whole community, most noticeably for fisher community where they cannot do fishing due to frequent strong wind. The village is also situated in low lying coastal areas, and thus often suffered from high tide. Furthermore, the fishermen reported that they have to spend more time for fishing as the fish resources have been declined and there are no specific boundary lines amongst fishermen. Therefore, EAFM training and Safety at the Sea are required for this community.**
- **In addition, mangrove forest area has been declined and thus the community is often highly impacted from the storm surge and high tide than before. Therefore, the community (not only fisher but also fish farmers) are impacted by the deterioration of the ecosystem and mangrove deforestation. Therefore, EAA and EAFM training are relevant for this community.**

Linking to CBCCA (and DRM) Planning and Implementation

What are the main concerns, issues, weaknesses, etc. that should be addressed before launching the CBCCA process? Any weaknesses or threats that should be noted?

- **The community is located low lying coastal area and often affected by different kinds of natural hazards and disasters (coastal erosion, storm, flooding, strong wind, etc). In addition, this community is neither well organized nor collaborate each other. They do not have any community group to tackle the impacts of climate change and are generally lacking strategies/action plans to reduce the impacts of natural hazards on their livelihood dependent sectors. They are also lacking efficient human resources and technological knowledge. Even though individual know that their dependent sectors are increasing vulnerable but as a whole community, they are ideally lacking community adaptation planning and disaster management. Moreover, they do not have any social safety nets and networks where this village is not easily accessible to market information, access to important institution, early warning system and even opportunity to get higher price for the fish products. Therefore, CBCCA and DRM implementation are necessary for this community.**

What are the entry-points for launching the CBCCA process? Any strengths or opportunities that could be tapped?

- **Community aware that their surrounding ecosystem and environment are badly damaged and deteriorated by the enormous exploration of fishery resources and mangrove deforestation. They know that fishing resources have depleted in their fishing grounds. In addition, they are increasing vulnerable in terms of socially and economically to the impacts of climate change and natural disasters where these natural phenomena has been frequently occurred and they are facing increasing challenges on their livelihood dependent sector. But, they are lacking knowledge and do not know how to implement the strategic DRM and CCA planning. Therefore, CBCCA process could be implemented in this community.**

As in the summary table, are there any priorities for CCA/DRR that were explicitly mentioned or discovered during the VA process that could be taken forward or used as a kick-off point?

Area of priority	Action needed
Technical priority:	Community development CCA plan should be developed with experts or technicians Early warning and early action practices Access to market information DOF, DDR and DMH should collaborate and work together to empower technical supports to the affected community
Institutional priority:	Safety at sea Disaster risk management (planning + actions eg. Drill for cyclone and Tsunami) Mangrove reforestation Improve legal framework and supporting activities