

Key Findings: Community Vulnerability Assessment

Name of village	Ku Lar Yaung
Date of assessment missions	27 th -28 th April 2019
Date of validation mission	22-June-2019
Total population of the village	1100
Total number of VA participants: i) during assessment mission; ii) during validation mission	(i)50
Gender	Total male: 551 Total female: 549

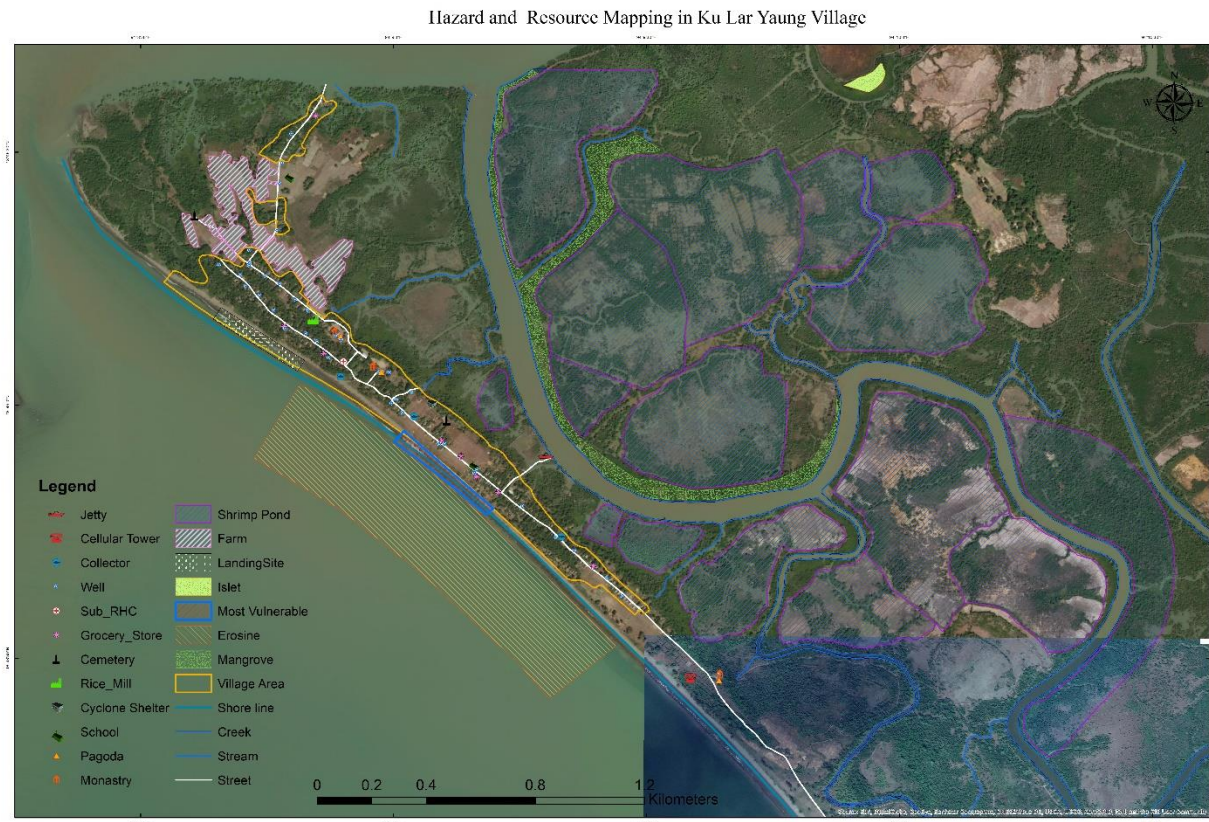


Fig.1. Hazard & Resource Mapping of Ku Lar Yaung Village

Fishing Ground Map of Ku Lar Young Village

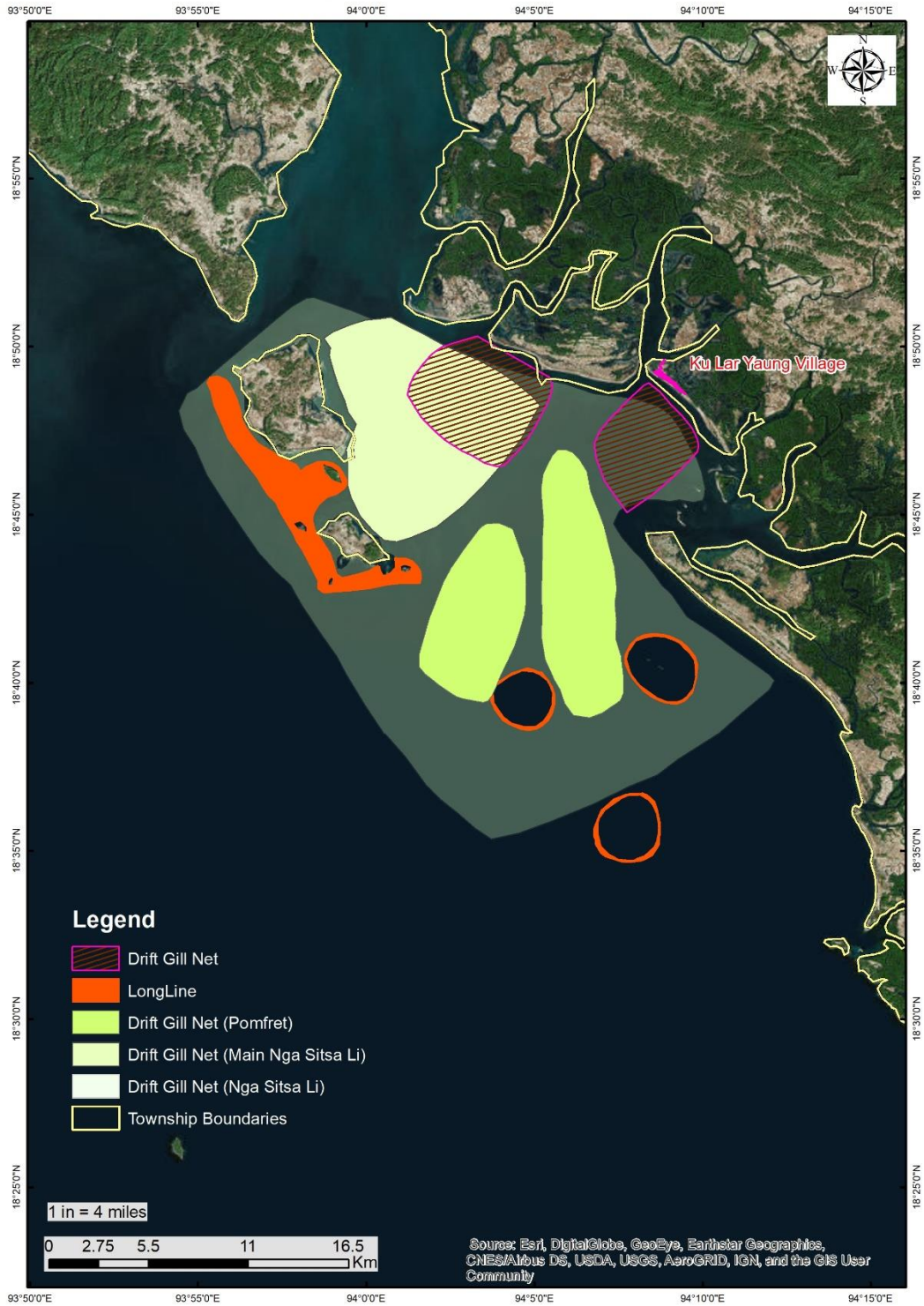


Fig.2. Ku Lar Young Village Fishing Ground Map

Rakhine State Pilot Villages Fishing Activity Heat Map

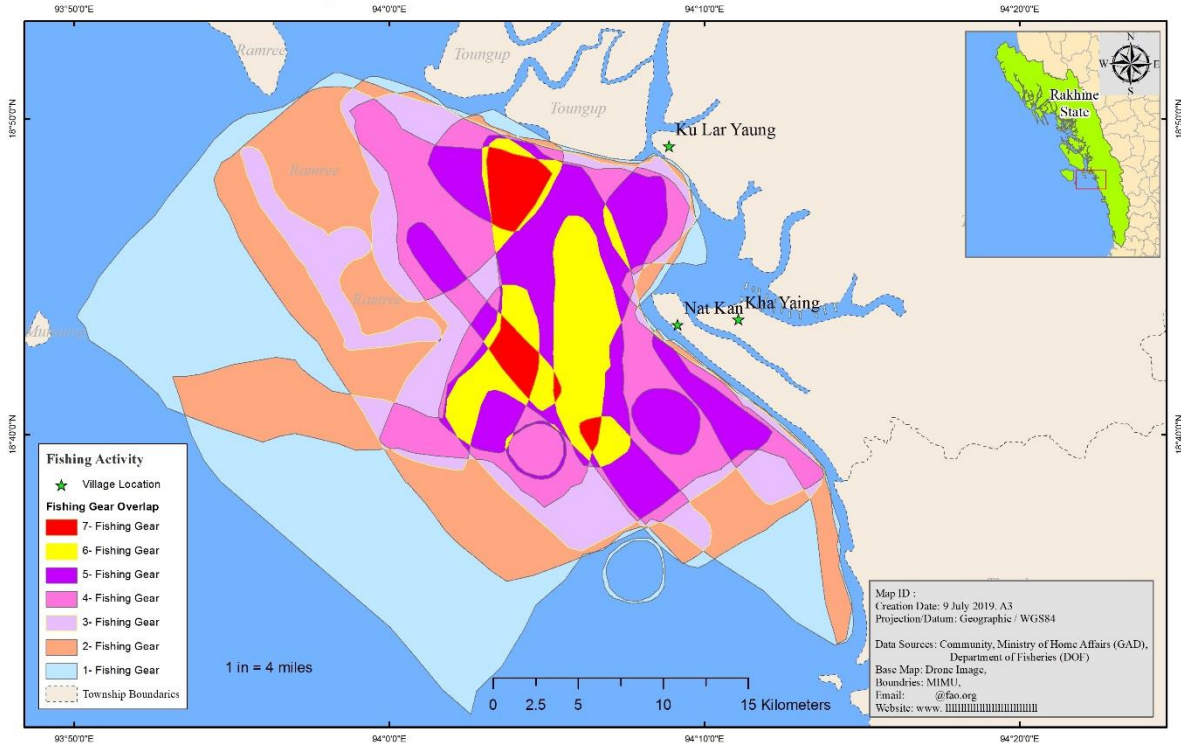


Fig. Heat map for 3 pilot communities in Toungup, Rakhine

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	Drought / heatwaves	Tsunami	Strong Wind		Others (specify)		
Livelihoods / Sector															
Fishing	M	H	H	H	L	L	H		H		M	L	M	H	L (Tornado)
Aquaculture	H	H	H	H	M	H	L	H	H	L	M	H	M	M	M (Aqu;Disease) H (Tornado) M (LPA)
Agriculture/ Farming		H		H			H		H			H		M	
Small Businesses															
Grocery Store		M		H			M		H			L		M	

Fish processing		M		H			M		H			L		M	
Tailor Shop		M		H			M		H			L		M	
Fishmonger		M		H			M		H			L		M	
Government Services															
Electricity															
Water supply		H		H			M		H			L		H	
Public transportation															
Others (embankment)		H		H			M		H			L		H	
Natural Resources															
Beaches		H		H			M	H		H			M		H
Coral Reefs															
Marine Protected Areas															
Protected Areas – Terrestrial															
Mangroves		L		M					L			L		L	
Seagrass															
Water table/freshwater lens															
Others (specify)															
Assets/Infrastructure															
Fishing center/landing site		H		H			M	H		H			H		H
Fishing boats/gear – nets, pots, etc.		M	H	H	M			H		H			H	M	M
Village bazaar															
Port / jetty/bridge		M	M	H				M		H			L		M
Major road				H				H							

Processing centers															
Ice plants															
Drying facilities															
Hatcheries/ Nursery															
Religious building	M			M											
Schools	M	M	H	H				H				L	H	M	
Sub-RHC/ RHC/ Clinic	M	M	H	H				H				L	H	M	
House	M	M	H	H				H				L	M	M	
Others (specify)															
Others (specify)															

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)	H	H	Hazard and Resource Mapping, Matrix ranking of hazard,		

			Disaster and Climate Risk Assessment		
Changing ocean currents and conditions (e.g. acidity, higher temperatures, salinity)		M			
Drought/dry spells	L		Disaster and Climate Risk Assessment		
Forest fires					
Heavy rainfall and flooding events	M	L	Matrix ranking of hazard, Disaster and Climate Risk Assessment		
Cyclones and storms	H	H	Livelihood and hazard calendar, Matrix ranking of hazard, Disaster and Climate Risk Assessment		
Tide wave		M			
Landslides and erosion		L			
Saltwater intrusion		M			
Tsunami	M	L	Livelihood and hazard calendar, Matrix ranking of hazard, Disaster and Climate Risk Assessment		
Tornados	M	L	Livelihood and hazard calendar, Matrix ranking of hazard, Disaster and Climate Risk Assessment		
Strong wind	M	M	Livelihood and hazard calendar, Matrix ranking of hazard, Disaster and Climate Risk Assessment		

Low pressure area	M	M	Matrix ranking of hazard, Disaster and Climate Risk Assessment		
Others (specifcy) Disease (Aqu)			Matrix ranking of hazard and Livelihood and hazard calendar, Disaster and Climate Risk Assessment		
Exposed areas and group to the above hazards					
At-risk groups (e.g. children, disabled or elderly)		M			
Coastal and marine ecosystems (e.g. coral reefs, seagrass and mangroves)		H			
Farms and related facilities (e.g., irrigation system)		L			
Fishing grounds	H	M	Fishing ground mapping		
Fishing facilities (e.g. landing sites, market, boat storage)	M	M	Hazard and resource mapping, Disaster and Climate Risk Assessment		
Forest and terrestrial ecosystems		H			
Key housing areas or settlements	M		Transect mapping		
Key commercial or industrial areas		H			
Public infrastructure (e.g. power station/lines, water system, cellphone)	L	M	Transect mapping, SWOT analysis		

towers, main roads, bridges)					
Social services (e.g. monasteries, community centre, fire and police stations, hospital/health centre, schools)	M	M	Hazard and resource mapping		
Others (specify)		M			
Overall Exposure Assessment	M	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		H			
forest and terrestrial ecosystems and related biodiversity		M			

Soil quality and fertility	M	H	Asset pentagon		
Status of fisheries resources	H	H	Semi structure interview		
Status of mangrove forest resources		M			
Aquaculture water quality	M	H	Semi structure interview		
Domestic Water Quality	L	H	Hazard & resource mapping		
Drinking Water Quality		H			
Aquaculture pond temperature		H			
Others (specify)					
Socio-economic sensitivity					
Awareness of climate change		M			
Quality housing	H	H	Wealth ranking & resource mapping, transect mapping		
Financial resources (e.g. regular household income, insurance, loans/credit)	H	M	Venn diagram		
Public utilities (safe drinking water, electricity and fuel)	M	M	Resource matrix & mapping		
Dependence on non-climate sensitive sectors and related livelihoods (rather than farming, fishing (e.g tourism)		M			

Gender equality	M	H	Gender role		
Level of education and literacy	M	M	Asset Pentagon		
Level of migration worker	H	M	Problem tree		
Presence of social networks and safety nets	M	M	Venn diagram and Asset Pentagon		
Working age population (between 18-60 years)		M			
Access to public and private extension services	M	H	Venn diagram		
Market information	M	H	Asset Pentagon & Venn		
Others (specify)					
Overall Sensitivity Assessment	M	H			

Guide for sensitivity rating:

High/ Healthy Status	Medium	Low/ Poor Status	Not assessed
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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		L			
Access to alternative or diversified livelihoods	L	L	Livelihood calendar		
Access to natural resources (e.g. coastal, marine and	M	M	Resource matrix		

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

Presence of fishery management					
Overall Adaptive Capacity Assessment	L	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	Justification by tools	Priorities for adaptation* -- this then draws the link to the CBCCA-EAFM process
Flooding	Medium_ flood effects community annually with medium intensity.	Medium – key aquaculture pond and landing site significantly disrupted (e.g. damage pond embankments, not accessible landing area)	Low – community is lacking social safety nets and networks when flooding was occurred. They do not have climate proof infrastructure.	Medium	Low-lying coastal area and one side effected erosion and other side accretion.	-	- CCA and DRM training - Ecosystem Approach Aquaculture/ Fisheries Management (EAFM,EA A)
Cyclone	High – cyclone effects the community during pre-monsoon (April-May) and post	High – fishery and aquaculture activities are significantly destroy. That is	Low – community is lacking social safety nets and networks when flooding was	High	The community is located between the sea and creek. Also	-	- CCA and DRM training - Safety at the sea - Emergency respond

	monsoon (Sep-Nov)	boats, fishing gears, pond embankment, seed, domestic and drinking water sources.	occurred. They do not have climate proof infrastructure.		erosion-affected area is very close with sea which is key vulnerable area of community.		<ul style="list-style-type: none"> - Early warning and early action - Ecosystem Approach Aquaculture/ Fisheries Management (EAFM, EAA)
Storm Surge	High- Storm surge made most vulnerable to small, medium and large scale aquaculture farming.	Medium – It affects not only soil quality and water quality of fishing ponds. And it also affects domestic water quality.	Low – this community has lower fish farming management as well as not having sufficient human resources (i.e knowledge and technology) to reduce the impacts of storm surge on aquaculture ponds.	High	Especially, aquaculture farmer community are the most affected community to the impacts of storm surges.	-	<ul style="list-style-type: none"> - CCA and DRM training - Ecosystem Approach Aquaculture (EAA)
Coastal Erosion	High_ the embankment erosion was found as high in aquaculture sector and low in fishing sector. It	High – it is highly impacted to housing nearby the bank/coast and moderately affects to public	Medium- They do not have sufficient climate proof infrastructure (e.g. roads, electric grid, water	High	Coastal erosion is significantly affected the community especially household living near	-	<ul style="list-style-type: none"> - CCA and DRM training

	was occurred due to the high tide and sea level that affects the community.	utilities (such as safe drinking water, electricity and fuel, etc).	supply) and housing.		the bank/coastal areas, as well as even highly impacted to public utilities.		
Heavy/extreme rainfall	Medium – It affects different scales of aquaculture farmers in this community. But noticeably, it highly affects to small-scale aquaculture farmers.	Medium – It affects to both soil and water quality (i.e not only domestic water quality but drinking water quality) of fishing ponds.	Low – They are generally lacking efficient human resources (e.g. trained professionals , adequate workforce) and do not have access to extension services and institutional services to reduce the impacts of heavy rainfall on farms.	Medium	Mainly impacted to aquaculture community where they do not have efficient human resources to tackle the impacts of heavy rainfall and access to extension services how to monitor the quality of water.	-	- CCA - Ecosystem Approach Aquaculture (EAA)
Tsunami	Medium – Tsunami is not frequently occurring but the intensity of Tsunami	Medium – Due to Tsunami that was happened in 2004, 4 people died as a result	Low_ this community do not have Access to social safety nets and networks as well as	Medium	According to the geography , located near the sea, which is key vulnerable	-	- Disaster Risk Management (DRM) - Ecosystem Approach Fisheries Management

	was roughly high. It affects to both fishing and fish farmers communities.	and the fisher's properties were lost.	linkages with other important institutions to avoid risks.		area of community.		ent (EAFM)
Strong wind	Medium - Strong wind occurred annually and frequently about (7) times with medium intensity. It affects to both fishers and fish farmer communities. It occurs frequently and the wind speed ranges from 40-50 mph especially during monsoon season.	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.	Medium	It highly affects to the whole community, most noticeably for fisher community where they can do fishing due to frequent strong wind.	-	- CCA/DRM - EAFM

*(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) - Lack of financial support	- Do not have alternative livelihood activities - Lacking important institution links for better management options - Lack of efficient human resources	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?
 - **We are expecting to get more information about impacts of climate change and natural hazards on agriculture, and ecosystem, but we missed that information. Because life under water (sea) was difficult to monitor and even though some people may perhaps know that information, we didn't get that information.**
- 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)	Increasing number of fishers Illegal Unreported and Unregulated fishing (IUU)	In rainy season, it is difficult to commute to the market by boat where boat is the main transportation way for them. Water pollution is also reported by the community	Wage differences between men and women	Lack of storage facilities Higher interest rate (moneylender)
Issues raised by a particular community			Women take responsibilities in fish processing and selling at the market	
Trends	decline fish catch, spend more fishing time	<ul style="list-style-type: none"> • increase ponds 36 (continuously within 20 years) • Mangrove deforestation 		Increasing number of small grocery shops (rivalry) Highly competitive with other sewers High demand for ready-made clothes than hand-made sewing clothes
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	Retail shop, fuel shop and fishing gears shop (outside village) because they require these supporting stakeholders for their businesses/fishing.	Lumberyard, mechanic, fishing net shop, backhoe driver because they have to contact with lumberyard for selling, mechanic for repairing and fishing net, and backhoe for pond digging.
Which stakeholders do not have many relationships with other stakeholders	DoF, Forest Dept, Land Record does not have many relationships because of their working conditions	DoF should develop more relationships with Forest Dept, land record, DRD, DoA, community and University.

	<p>They need to develop more relationship with private sectors for achieving more income opportunities and academic institutions for further research to give more policy inputs.</p>	
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- 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 cyclone shelter for their community**
 - **No one is providing money for their community but moneylender and PACT microfinance gave loans to the community.**
 - **Perhaps 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 cooperate with the institution.**
- 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?

- **Some pond areas have 150-200 acres, which were resulted by cutting down mangrove forest. Therefore, EAA trainings are required for this community.**
- **Low-lying coastal area and one side effected erosion and other side accretion. In addition, strong wind is also often occurring and highly affected to the whole community, most noticeably for fisher community where they can do fishing due to frequent strong wind. 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.**
- **This community has lower fish farming management as well as not having sufficient human resources (i.e knowledge and technology) to reduce the impacts of storm surge on aquaculture ponds. In addition, mangrove forest area has been declined. 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:	More extension services on advanced technology and processing activities Easy access to market information
Institutional priority:	Early warning and early action practices Safety at sea Disaster risk management (planning + actions) Mangrove reforestation