

Key Findings: Community Vulnerability Assessment

Name of village	Zwe Bar Kone Tan, YGN
Date of assessment missions	26-27 Feb 2019
Date of validation mission	27 June 2019
Total population of the village	2643
Total number of VA participants: i) during assessment mission; ii) during validation mission	(i) 50 (ii) 42
Gender	Total male: 22 Total female: 20

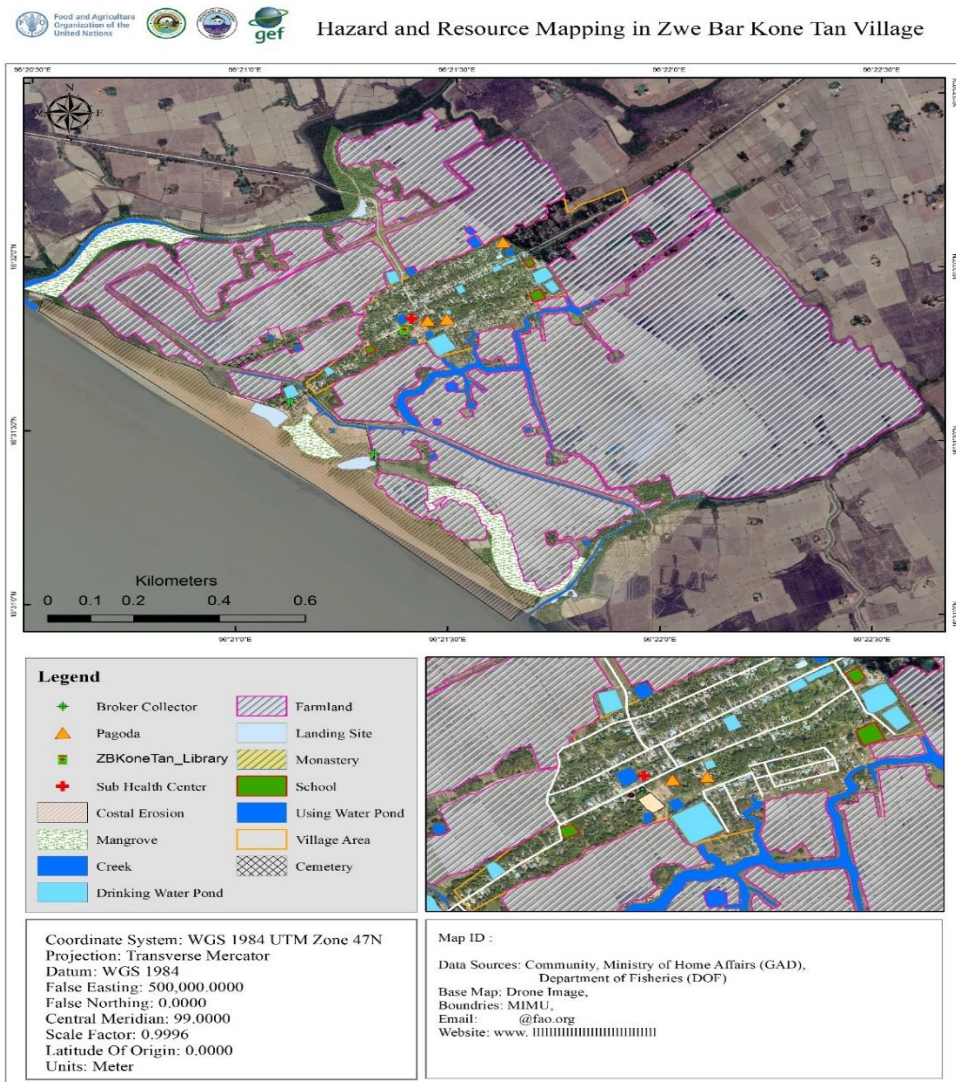


Fig.1. Hazard & Resource Mapping of Zwe Bar Kone Tan Village

Fig.2. Zve Bar Kone Tan Village Village Fishing Ground Map (Still drawing)

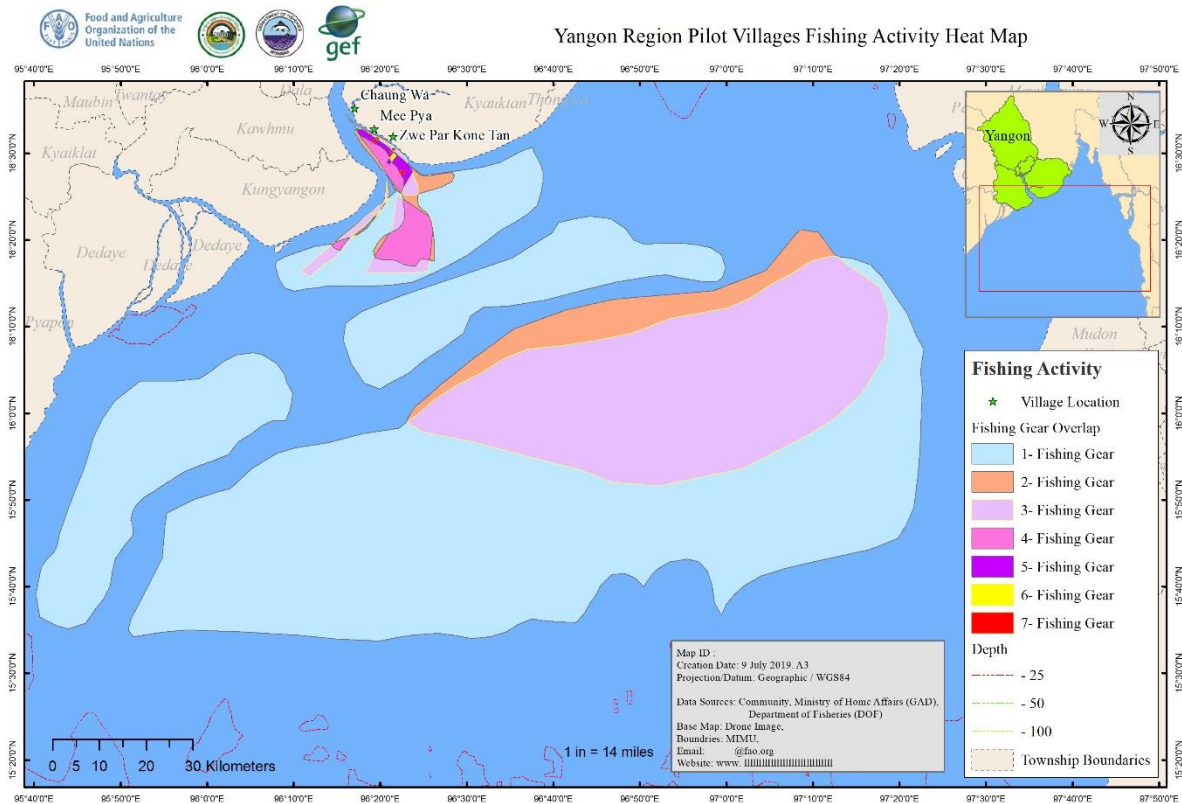


Fig. 3 Heat map for 3 pilot communities in kyauktan Township, Yangon Region

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

	Floods	Cyclones/ Storms	Heavy/ Extreme rainfall AND flood	Coastal erosion/ Sea level rise	Storm surge/ Tide surge	Pollution (Water)	Salt water intrusion	Drought/ heatwaves	Tsunami	Strong Wind/ Squall	Others (High temp)	
	Livelihoods/ Sector											
Fishing		H	H	M	M		M		H	M	M	M
Aquaculture		H	M	M	M		L	L	M		M	M
Agriculture/ Farming			M		H		L		H			M
	Small Businesses											
Grocery Store			H		M		L		M			L
Fish processing			H		M		L		M			L

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

Hatcheries/ Nursery															
Religious building			H		M		L		H				M		L
Schools			H		M		L		H				M		L
Sub-RHC/ RHC/ Clinic			H		M		L		H				M		L
House		H	H		H		M		H				H	M	M
Others (Livestock)		H											H	M	
Others (Bridge)			H		M		H		H				H	M	L
Embankment		M											M		
Trees / Horti		M											L		

Summary

Cyclone seems to be the highest destructive natural hazards in their region. Drinking water shortage was frequently occurred due to the increasing temperature in recent years. Storm or tide surge imposed saltwater intrusion to fresh water lens/areas.

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	Hazard and Resource Mapping, Matrix ranking of hazard, Transact mapping	Low 3/ Medium 25/ High 14	
Changing ocean currents and conditions (e.g. acidity, higher temperatures, salinity)		H	Problem tree SWOT Asset Pendragon	3/12/27	
Drought/dry spells		H	Disaster and Climate Risk Assessment	9/16/17	
Forest fires					
Heavy rainfall and flooding events	M	M	Matrix ranking of hazard, Disaster and Climate Risk Assessment	5/25/12	
Cyclones and storms	H	H	Livelihood and hazard calendar, Matrix ranking of hazard, Disaster and Climate Risk Assessment	0/5/37	
Tide wave	M	H	Livelihood and hazard calendar	0/17/25	
Landslides and erosion	L	M	Matrix ranking of hazard	21/21/0	
Saltwater intrusion	M	M	Livelihood and hazard calendar, Disaster and Climate Risk Assessment	4/35/3	
Tsunami	H	M	Livelihood and hazard calendar, Matrix ranking of hazard, Disaster and Climate Risk Assessment	2/40/0	
Tornados	H	M	Disaster and Climate Risk Assessment	6/30/6	
Strong wind/ Squall	H	M	Transact, Matrix ranking of hazard,	4/24/14	

			Disaster and Climate Risk Assessment		
Low pressure area		H	Matrix ranking of hazard, Disaster and Climate Risk Assessment	0/11/31	
Others (specify)					
Exposed areas and group to the above hazards					
At-risk groups (e.g. children, disabled or elderly)		H		2/17/23	
Coastal and marine ecosystems (e.g. coral reefs, seagrass and mangroves)	M	M	Problem tree	4/32/6	
Farms and related facilities (e.g., irrigation system)			Transact, Matrix Ranking of hazards		
Fish ponds	H	M	Fishing ground mapping, Problem census	5/23/14	
Fishing grounds	M	H	Asset Pentagon, Disaster and Climate Risk Assessment	6/8/28	
Fishing facilities (e.g. landing sites, market, boat storage)		H		3/12/27	
Forest and terrestrial ecosystems					
Key housing areas or settlements	H	H	Transect mapping, Disaster and climate risk,	1/15/26	
Key commercial or industrial areas		H	Transect mapping, Disaster and climate risk,	1/14/27	

Public infrastructure (e.g. power station/lines, water system, cellphone towers, main roads, bridges)	M	M	Transect mapping, SWOT analysis, Disaster and climate risk assessment	2/31/9	
Social services (e.g. monasteries, community centre, fire and police stations, hospital/health centre, schools)	M	H	Hazard and resource mapping, Historical timeline	1/18/23	
Others (Livestock death)		M		0/28/14	
Overall Exposure Assessment	H				

Summary by TOT participants (exposure)

In this village, the most vulnerable community group are recorded as children, disabled and old peoples. Low pressure areas were often occurred at the Bay of Bengal and ultimately affected to their village.

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	M	Problem tree		
forest and terrestrial ecosystems and related biodiversity		M			
Soil quality and fertility		H	Asset pentagon		
Status of fisheries resources	H	H	Semi structure interview Problem tree Historical timeline		
Status of mangrove forest resources		H			
Aquaculture water quality		M			
Domestic Water Quality	M	H	Hazard & resource mapping		
Drinking Water Quality	M	H	Historical timeline		
Aquaculture pond temperature		M			
Other (fishing group??)					
Others (specify)					
Socio-economic sensitivity					

Awareness of climate change		M			
Quality housing	L	M	Wealth ranking & resource mapping, transect mapping		
Financial resources (e.g. regular household income, insurance, loans/credit)	M	M	Venn diagram/ Problem tree		
Public utilities (safe drinking water, electricity and fuel)	M	M	Resource matrix & mapping Problem tree		
Dependence on non-climate sensitive sectors and related livelihoods (rather than farming, fishing (e.g tourism)		M			
Gender equality	L	M	Gender role		
Level of education and literacy		M	Asset Pentagon		
Level of migration worker	M	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	M	Venn diagram and Asset Pentagon		

Market information	M	M	Asset Pentagon & Venn		
Others (specify)					
Other (fishing group?? Eg. Fishing gear and Boat)					
Overall Sensitivity Assessment	M	M			

Summary by TOT participants (exposure)

Due to the increasing fishers and fishing, a significant decline in fishing resources is reported.

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	M	L	Livelihood calendar		
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		
Access to financial resources (e.g. regular household		L	Asset Pentagon		

income, insurance, loans/credit)			& Venn diagram		
Access to social safety nets and networks	M	M	Venn diagram and Asset Pentagon		
Access to important institutions	M	L	Venn		
Presence of/access to local groups, networks, fisherfolk/fish farmer organizations, producers groups, etc.	H	M	Venn, Asset Pentagon		
Availability of human resources (e.g. trained professionals, adequate workforce)		M	Asset Pentagon		
Level of cooperation and collective decision making	H	H	Venn and Asset		
Level of leadership		M	Gender roles	2/16/24	
Presence of climate proof infrastructure (e.g. roads, electric grid, water supply) and housing	M	L	Hazard and Resource Mapping, Resource matrix	27/13/2	
Presence of early warning and disaster risk management systems		L		35/6/1	
Others (specify) Presence of fishery management			Fisheries mapping		
Overall Adaptive Capacity Assessment	M	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	<p>High – Nargis cyclone in 2008 affected to the whole communities . Saltwater intrusion, flooding, heavy rainfall, and bad weather conditions</p>	<p>High – fishery sector is significantly impacted by the Nargis cyclone. (boats, fishing gears, , seed, domestic and drinking water sources)</p> <p>Nearly 70% of houses, 50% of livestock, 30% of boats, 40% of fishing net, 70% of trees, and 30% of drinking water ponds were badly damaged and killed.</p>	<p>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.</p>	<p>High (saltwater intrusion and flooding after cyclone)</p>	<p>The fishing community is highly vulnerable to cyclone, especially fisher groups.</p> <p>Households nearby coastline areas.</p> <p>Their village was totally devastated by cyclone and they have built up the whole village.</p>	<ul style="list-style-type: none"> - CCA and DRM training - Safety at the sea - Emergency respond - Early warning and early action - Ecosystem based Fisheries Management (EAFM)

Tsunami	High – it affects to the whole community.	High - In fisher community, 4 people were reportedly dead, and nearly 200 households were damaged, and a few animals were dead. Embankment was badly damaged and boat were destroyed.	Low- they do not any social safety net and network.	High	Fisher community was badly affected by the disaster.	<ul style="list-style-type: none"> - CCA and DRM training - Safety at the sea - Emergency respond - Early warning and early action - Ecosystem based Fisheries Management (EAFM)
Tornado	High- It affects to the whole community	Medium – Housing – nearly 5 houses were destroyed. Trees were fallen away.	Low – this community has lower fishery resource 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	It impacted to socioeconomic conditions of fishing community.	<ul style="list-style-type: none"> - CCA and DRM training - Ecosystem based fishery management (EAFM)
Strong wind/squall	High - Strong wind occurred frequently with medium intensity..	Medium – It badly damages the housing and rooftop because the community has mostly	Low – they are lacking climate proof infrastructures and lack of financial/capit	High	It highly affects to the whole community, most noticeably for fisher community	<ul style="list-style-type: none"> - CCA/DRM - EAFM

	It occurs frequently during monsoon season.	basic housing materials.	al to invest in their housing.		where they cannot do fishing due to frequent strong wind.	
Storm surge/ tide wave	High – saltwater intrusion, flooding of fields and water ponds, which lead to less drinking water	High – damaged farms, and badly impacted to water availability and human health	Medium – Embankment management, renovating of fish and drinking water ponds	Medium	Flooding was a serious problem for the whole communities, especially western part of the village (i.e houses, boats and fishing gears, etc)	<ul style="list-style-type: none"> - Establish mangrove forest - Upgrading embankment
Heavy rainfall & flood	High- heavy rainfall imposed flooding and tide wave, which ultimately affected to coastal erosion.	Medium- marine ecosystem and mangrove forest. Drinking water availability	Low – poor infrastructure	Medium	The whole community is affected.	<ul style="list-style-type: none"> - Early warning and early information - Safety at sea - Mangrove reforestation
Coastal erosion	High- strong tide wave imposed the coastal erosion	Medium- Houses nearby coast, vulnerable houses and communities in the western part of the village	Low - less mangrove forest along the coastline areas	High	Communities nearby coastline areas	<ul style="list-style-type: none"> - Better embankment establishment - More mangrove forest/ or reforestation

*(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
-Cyclone -Tsunami -Tornado -Strong wind/squall -Salt water intrusion -Strong wind/squall	- Depletion of fisheries resources - Having poor quality housing - 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	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?
 - **Some farmers are using stow net for fishing although it is prohibited.**
- 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)	No stable fish market where lack of market information	No fresh water available They are lacking	After disaster, the participation of women in different number of	No fresh water available (depletion) Limited employment opportunity

	retailer or fish collector underpriced	technical support. They reported that lacking storage facilities. Labor scarcity (due to high migration)	activities (fisher) is still large (88%). Pregnant and old people are highly vulnerable	Decline in socioeconomic development/status
Issues raised by a particular community	Labor scarcity (mostly in rush period _ August-September)		Women take responsibilities in fish processing and selling at the market	
Trends				Decrease in number of farmers (agriculture) Significant decrease in livestock population However, rapid mechanization in farming (agriculture) due to banking sector development (different installment)
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 moneylender, community group formed under MFF and groceries are the most important stakeholders because they require these supporting stakeholders for their businesses/fishing.	Fish collector, Village GAD, fuel shop, and small microfinance institute are the most important stakeholder
Which stakeholders do not have many relationships with other stakeholders	DoF, and Department of rural development (DRD) 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 academic institutions for further research to give more policy inputs.	GAD, DOA and land record department do not have many relationship.

- Who is providing money and other material resources and to whom? Are there stakeholders who are excluded? Are there other potential sources of support?
 - **Small microfinance institutes and Mya Sein Yaung (private moneylender) are the main moneylenders.**
 - **FAO can be potential source of support.**
- Is information flowing between stakeholders and in both directions (vertically and horizontally)? If not, why? How can this be improved?
 - **They reported that they do not have access to market information even though they wanted to sell the products at Yangon market. Collecting market information from Yangon market and providing more market information to community could be an option for them to consider for selling their products in good market price.**
- 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**)
 - **Strow nets are used by the rich people although it is not agreed by the community. The majority of community cannot complain about this issue because the rich people have agreement to use strow net with the authorities.**
- What are the strategic points to intervene to improve decision-making or relationships across stakeholders?
 - **Need timely informed climate change and disaster information**
 - **Need to build embankment along the coastal line for reducing the impacts of flood or storm surge**

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?

- **Frequently occur natural disasters and climate change impacts on their fishing ground and community itself.**

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?

- **This community is highly vulnerable to different kind of natural disasters and climate change events. Within the last 10 years, the village has been re-located to inland due to increase coastal erosion. Within the community, rich people are dominated in fishing. Therefore, CBCCA process should be launched to address these issues.**

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

- **Increased mechanization in farming (agriculture) and increasing demand of fish products in Yangon market and nearby markets are the strength and opportunity in ZWKT village.**

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