Vulnerability & risk assessment in Myanmar’s Ayeyarwady Delta

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WHAT DO WE WANT TO ESTABLISH WITH A VULNERABILITY & RISK ASSESSMENT?

✓ The extent to which an activity or a group of persons is exposed (-) and sensitive (-) to a hazard, and its ability to respond or adapt (+).

When a person or an activity (for example rice cultivation) can be impacted by a hazard, for example storms or a cyclone.

The magnitude of damage that a hazard, like storms or cyclones, causes on people or on activities, for ex. rice cultivation.
AND WHY WOULD WE EVER WANT TO ESTABLISH THAT...?

In order to support communities to build their resilience.
LET’S CONSIDER...

i. Designing good and targeted interventions
ii. Avoiding ‘malresilience’ ;)
iii. Ensuring contribution to sustainable and transformational change

A VULNERABILITY/RISK ASSESSMENT...

...is the right approach.

- Supports holistic understanding of context & effective prioritisation
- Looks at whole spectrum of hazards & community livelihoods
- Complements power analysis in effective programme design
- Ensures interventions are locally appropriate and forward looking
- Many ways to frame & conduct

Pros and cons of tool

“+”
- Identifies risks of different groups
- Adds robustness to participatory, perception based analyses
- Women specific risks addressed
- Designed by development team, with input from humanitarian
- Takes a multi-hazard approach
- Is conducted relatively quickly
- Conducts preliminary consideration & disaggregation of vulnerable groups

“-”
- May deliver biased views if not facilitated well
PROCESS

PRE-VA

IMPACT CHAINS

SELECTION & STRENGTHENING OF ACTIONS

GROW, SELL, THRIVE.
GENDERED ENTERPRISE AND MARKETS PROGRAMME
# EXPOSURE TABLE

<table>
<thead>
<tr>
<th>N/A</th>
<th>Hazard is not relevant to the sector or crop or social group</th>
</tr>
</thead>
<tbody>
<tr>
<td>E3</td>
<td>Some not significant exposure expected (&lt;15%)</td>
</tr>
<tr>
<td>E2</td>
<td>Medium level exposure expected affecting a medium to considerable area of the activity (or of the sector’s facilities, or the group’s population) (15-50%)</td>
</tr>
<tr>
<td>E1</td>
<td>Significant level exposure expected affecting a considerable area of the activity (or of the sector’s facilities, or the group’s population) (50-80%)</td>
</tr>
<tr>
<td>E0</td>
<td>Total /large majority of the area of the activity (or sector’s facilities, or group’s population) widely and increasingly exposed to significant climate hazards (&gt;80%)</td>
</tr>
</tbody>
</table>

## Enter the description of Hazard here

| Sector/Crop/group | Activity (if applicable) | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example | Example |
|-------------------|--------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
# SENSITIVITY TABLE

<table>
<thead>
<tr>
<th>Sector/Crop /group</th>
<th>Activity (if applicable)</th>
<th>Example 1</th>
<th>Example 2</th>
<th>Example 3</th>
<th>Example 4</th>
<th>Example 5</th>
<th>Example 6</th>
<th>Example 7</th>
<th>Example 8</th>
<th>Example 9</th>
<th>Example 10</th>
<th>Example 11</th>
<th>Example 12</th>
<th>Example 13</th>
<th>Example 14</th>
<th>Example 15</th>
<th>Example 16</th>
<th>Example 17</th>
<th>Example 18</th>
<th>Example 19</th>
<th>Example 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>No negative impact, or some positive impact (*)</td>
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<tr>
<td>S3</td>
<td>Small impact, with little or no effect on operation/ activity/group (&lt;15%)</td>
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<tr>
<td>S2</td>
<td>Operation/ activity/group may be negatively affected to a low or moderate extent (15-50%)</td>
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<tr>
<td>S1</td>
<td>Operation/ activity/group will be negatively affected to a large extent (50-80%)</td>
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<tr>
<td>S0</td>
<td>Operation/ activity/group will be fully disrupted (&gt;80%)</td>
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</tr>
</tbody>
</table>

When assigning a value to S, remember that a wide scale of impact will increase the Sensitivity score.
<table>
<thead>
<tr>
<th>Sector/Crop</th>
<th>Activity</th>
<th>PV3</th>
<th>PV2</th>
<th>PV1</th>
<th>PV0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horticulture production</td>
<td>Vegetables outdoors</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Horticulture production</td>
<td>Greenhouse (tomato, cucumber, greens, ...)</td>
<td>3</td>
<td>3</td>
<td>N/A</td>
<td>3</td>
</tr>
<tr>
<td>Horticulture production</td>
<td>Persimmon</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Horticulture production</td>
<td>Figs</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Horticulture production</td>
<td>Berries (cornelian)</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>N/A</td>
</tr>
<tr>
<td>Horticulture production</td>
<td>Meat and dairy</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>N/A</td>
</tr>
<tr>
<td>Livestock</td>
<td>Hay (fodder)</td>
<td>3</td>
<td>N/A</td>
<td>1</td>
<td>N/A</td>
</tr>
</tbody>
</table>

N/A Not relevant to the sector/crop/activity
PV3 Sector/crop/activity is largely exempt from negative climate impacts and other political economy factors
PV2 Sector/crop/activity is likely to be partially effected by climate impacts and political economy factors
PV1 Sector/crop/activity is likely to be considerably effected by climate impacts and political economy factors
PV0 Sector/crop/activity is likely to be overwhelmingly effected by climate impacts and political economy factors
PROCESS

PRE-VA

IMPACT CHAINS

SELECTION & STRENGTHENING OF ACTIONS
CONTEXT OF LOCATION

• Delta primary LH activities: rice, fishing
• Secondary: wage labour, livestock rearing, firewood & charcoal
• Prone to cyclones, salinity intrusion incr. further upstream, SLR
• Ethnically heterogeneous: Buddhist (majority) and Christian, Muslim, Hindu – no violent conflict in region
• Mangrove depletion (shift to ag land) and overfishing critical issues
• Openness and cooperation by regional govt with international actors (INGOs)
BRIEF INFORMATION ABOUT THE COMMUNITY

- 3 coastal and upstream buddhist communities in Delta
- Mix of LH with either fishing or farming as main
- Land tenure for SHF, mostly 5-20 acre, up to 100 acre. 1 acre=50 baskets of rice
- Predominant alt rice variety (5 month planting), substitutes local var. (+6 mo) due to change in rainfall + 2 crops
- Fisher folk facing resource depletion
- Water governance conflicts fisher-farmer
- Market intransparency has large impact
METHODOLOGY FOR VRA

1. Selection of 3 communities (NAG + similar)

2. Visits to 3 communities and discussions with community members

3. Conduct VRA with expert group, incl. community representatives – Pre-VA, impact chains and selection of interventions

4. Debrief and analysis by Oxfam and NAG
EXPERT GROUP

Expert group formed by
• Dept. of Agriculture
• Dept. of Fisheries
• Dep. of Forestry
• Dept. of General Administration
• Dept. of Relief and Resettlement
• Fisheries School
• Fisherfolk Association
• Village representatives (authorities, women’s group, youth group, fisher folk, farmer)
• Network Activities Group (NAG) – NGO
• Action Aid – INGO
• Oxfam – INGO

Not in attendance
• Meteorological office

Gender representation: 5 women, 12 men
# IDENTIFIED HAZARDS

<table>
<thead>
<tr>
<th>Social group or LH activity</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclones &amp; Storms</td>
<td>Cyclones have caused significant devastation in the areal (e.g. Nargis in 2008); storms are frequent and possibly intensifying</td>
</tr>
<tr>
<td>Drinking water scarcity</td>
<td>Changing rainfall patterns and insufficient water storage facilities (in some villages)</td>
</tr>
<tr>
<td>Limited access to information (inc. market information)</td>
<td>Community members’ income depends directly on the middlemen’s price for fish and rice</td>
</tr>
<tr>
<td>Limited access to health services</td>
<td>Water and vector borne diseases (e.g. diarrhea, dengue fever); snake bites are common and can lead to complications (even fatal) if untreated</td>
</tr>
<tr>
<td>Fish resource depletion</td>
<td>Directly affects fisher folk livelihoods; also farmer indirectly (fish breeding in rice fields because no mangrove breeding ground)</td>
</tr>
<tr>
<td>Changing rainfall patterns</td>
<td>Directly affects rice farmers and wage labourers; also fisher folk</td>
</tr>
<tr>
<td>Increasing temperature</td>
<td>Affects health of elderly, livestock breeding, fish populations, and (in future) might affect rice yield</td>
</tr>
<tr>
<td>SLR, tide duration, river erosion/sedimentation, tsunami, deforestation, saline intrusion</td>
<td>Can damage rice crops, people’s homes and assets, infrastructure</td>
</tr>
<tr>
<td>Social group or LH activity</td>
<td>Justification</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Fisher folk</td>
<td>Highest proportion of population engages in fishing</td>
</tr>
<tr>
<td>Wage labourers &amp; traders</td>
<td>Considerable proportion of population engages in waged labour esp. in farming – also one example of a small enterprise making purses</td>
</tr>
<tr>
<td>Rice yield</td>
<td>Highest proportion of population engages in rice cultivation</td>
</tr>
<tr>
<td>Fish availability</td>
<td>Affects fisher folk and river ecosystem (however, it is impacted by hazards differently than fisher folk, so we separated categories)</td>
</tr>
<tr>
<td>Women specific activities</td>
<td>Women dedicate time activities, mostly care related, which require time and exposes them to hazards that men would not normally be exposed to</td>
</tr>
<tr>
<td>Livestock</td>
<td>Relevant LH activity for food security and trading (e.g. duck eggs)</td>
</tr>
<tr>
<td>Transportation(*)&amp;</td>
<td>Crucial for access to health services, education, goods and information (* could have been listed as hazard, too)</td>
</tr>
</tbody>
</table>
# PRE-VULNERABILITY ASSESSMENT MATRIX

<table>
<thead>
<tr>
<th>Sector/Crop</th>
<th>Activity</th>
<th>Cyclones &amp; Storms</th>
<th>Drinking water scarcity</th>
<th>Limited access to information (Inc. Markets)</th>
<th>Limited access to health services</th>
<th>Fish resource depletion</th>
<th>Changing rainfall patterns</th>
<th>Increasing temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social group</td>
<td>Fisherfolk</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Social group</td>
<td>Wage labourers &amp; traders</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Crop</td>
<td>Rice yield</td>
<td>0</td>
<td>N/A</td>
<td>1</td>
<td>N/A</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Activity</td>
<td>Fish availability</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Social group</td>
<td>Women specific activities</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Activity</td>
<td>Livestock</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Activity</td>
<td>Transportation of people</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>N/A</td>
<td>3</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**GROW.SELL.THRIVE.**

GENDERED ENTERPRISE AND MARKETS PROGRAMME

Page 17
Fish resource depletion

- Decrease in fish availability
- Scarcity of fodder for animals

- Insufficient for home consumption
- No surplus fish to sell

- Lack of employment opportunity
- Low income
- Increase health risk
- Increased production cost
- Malnutrition

- Food insecurity

**Interventions**
- Conservation (Enforcement of Rules and Regulations)
- Avoid overfishing
- Create alternative livelihoods
- Technical support & Awareness raising
- Mangrove reforestation

**IMPACT CHAIN FOR FISH RESOURCE DEPLETION**
**IMPACT CHAIN FOR SEA LEVEL RISE & SEDIMENTATION**

- **Intrusion of saline water (damage to paddy fields)**
- **Decrease in paddy yield**
- **Adversely affect on farmers**
- **Imbalance of income and expenditure**
- **Assets sold out**

**Interventions**
- Robust embankment
- Tree planting along riverside & sidewalk to avoid erosion and wind protection
- Selective rice variety (research and data collection)
- Data collection for draining specs, e.g. renovative drainage

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**Sea Level Rise (extend category)**

- Damage to fish pond
- Fatal disease affect poultry

**Decrease income and loss of benefit for livestock breeding**

**Damage to village roads and embankment**

**Difficulty of local transportation**

**Delay/inconveniences for economic, health and education**

**Weakness in development**

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**GROW.SELL.THRIVE.**

**GENDERED ENTERPRISE AND MARKETS PROGRAMME**
BUILDING ADAPTIVE CAPACITY

Five principles

• Asset base
• Institutions and entitlements
• Knowledge and information
• Innovation
• Flexible and forward looking decision making and governance
MAIN FINDINGS

- Rice farming revealed as overall more relevant for livelihoods than fishing
- Although cyclones can have most devastating impact, its low frequency reduces community member’s prioritisation and efforts for preparation
- Fisher folk face several serious governance and environmental degradation (and malpractice) barriers; middlemen (collectors) hold excessive power
- Market intransparency and lack of access to fair loans are significant barriers to development
- Need investigation into land tenure issues
- Need research on recent impact on rice yields to identify best adaptation paths
- Local authorities have limited knowledge of process of assessing community needs and capacities – and therefore to do appropriate, inclusive planning
LESSONS LEARNED

- Limited participation of government officials in discussion in the beginning
- Simplification of criteria for exposure and sensitivity allowed for a quicker analysis
- Session on selection of interventions needs to be more structured and allowed more time
- Research before the field by INGOs is crucial