Policy Roundtable Discussion on Climate Change Responses in Cambodia: Challenges and opportunities for Climate Change Research

Climate Change Vulnerability: Households Assess level in Kampong Speu Province, Cambodia

Phnom Penh, 14 Jan 2014
Introduction

Legend

Vulnerable Regions (Country std)
- Mildly vulnerable (0.59 - 0.60)
- Moderately vulnerable (0.60 - 0.63)
- Highly vulnerable (0.64 - 0.75)

(Yusuf & Francisco, 2009)
Research Objectives

1. To measure households’ vulnerability to climate change among communities in Kampong Speu province
2. To identify household based adaptation options;
3. To discuss policy interventions that may improve adaptation capacity of household level
Conceptual framework

Vulnerability

Exposure

Sensitivity

Adaptive Capacity

(McCarthy et al., 2001)
Exposure indicator and weight

Exposure

- Windstorm (14.52)
- Flashflood (52.96)
- Drought (35.52)
Sensitivity indicators and weight

- Physical: 20.68
- Livelihood: 25.57
- Human: 23.70
- Financial: 30.05
- Dependent ratio: 55.50
- % Agricultural laborers: 44.50
- % Agricultural income
- Distance to water body
- % of dept.

Diagram:

- Sensitivity
  - Human (23.70)
  - Livelihood (25.57)
  - Physical (20.68)
  - Financial (30.05)
  - Dependent ratio (55.50)
  - % Agricultural laborers (44.50)
  - % Agricultural income
  - Distance to water body
  - % of dept.
Adaptive capacity indicators and weight

- Social capital (18.42)
- Human (21.62)
- Physical (19.08)
- Irrigated agri. land
- Money can be borrowed during disaster
- Education of hhh (47.00)
- Labourers (53.00)

- Technology (20.34)
- Economic (20.54)
- Income per capita (32)

- % remittance
- % None-agri. income
- Motorcycles (32.37)
- Phones (34.07)
- TV & Radios (33.56)

- Money can be borrowed during disaster
- % None-agri. income
Research Design

1. Indicators Identification
   - Exposure
   - Sensitivity
   - Adaptive capacity

2. Consultation (FGDs)
   - Indicator

3. Data Gathering (Household)
   - Weight
   - 600 hh Sampling

4. Data Analysis
   - Indexing
   - Analytical approach

- Data Gathering: 600 households
- Weighting approach
Research Design

Analytical approach

1. Indicators
   \[ I_i = \frac{X_i - X_{\text{min}}}{X_{\text{max}} - X_{\text{min}}} \]

2. Dimension
   \[ D_j = \sum_{i=1}^{n} I_i W_i \]

3. Vulnerability attribute
   \[ VA_k = \sum_{j=1}^{n} D_j W_j \]

4. Vulnerability
   \[ V = (e + s + (1 - ac))/3 \]

Sampling

Kampong Spue Province

- Highland
  - 2 communes
  - Hazard
  - 105 hh/com

- Lowland
  - 4 communes
  - Hazard
  - 105 hh/com

630 Households
Result: Vulnerability Assessment

Vulnerability Index

Households

Index
Results: Vulnerability Assessment

Exposure
- Storm
- Flood
- Drought
- Lowland
- Highland

Vulnerability
- Exposure
- Inverse adaptive capacity
- Sensitivity

Sensitivity
- Human
- Financial
- Infrastructure
- Livelihood

Adaptive capacity
- Infrastructure
- Human
- Economic
- Technology
- Social Capital
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Windstorm</th>
<th>Flash flood</th>
<th>Drought</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changing crop calendar</td>
<td>No</td>
<td>22 (20.6%)</td>
<td>112 (18.7%)</td>
</tr>
<tr>
<td>Pumping</td>
<td>No</td>
<td>10 (9.3%)</td>
<td>270 (45%)</td>
</tr>
<tr>
<td>Changing crop</td>
<td>No</td>
<td>16 (15%)</td>
<td>284 (47.3%)</td>
</tr>
<tr>
<td>Using fertilizer</td>
<td>No</td>
<td>No</td>
<td>224 (37.3%)</td>
</tr>
<tr>
<td>Agricultural diversification</td>
<td></td>
<td>15 (14%)</td>
<td>No</td>
</tr>
<tr>
<td>Build stand still house</td>
<td>No</td>
<td>24 (22.4%)</td>
<td>No</td>
</tr>
<tr>
<td>Level up land around house</td>
<td>No</td>
<td>10 (9.3%)</td>
<td>No</td>
</tr>
<tr>
<td>Move to safety hill</td>
<td>No</td>
<td>31 (29%)</td>
<td>No</td>
</tr>
</tbody>
</table>
Conclusion

- Households in KSP is vulnerable due to sensitivity and low adaptive capacity while exposure is quite low
  - Drought is the pronoun hazard in Kampong Spue
  - Sensitivity: livelihood and infrastructure
  - Adaptive capacity: technology, social capital, economic, and infrastructure.
- Highland is more vulnerable than lowland
- Adaptation practices is still traditional.
Policy Implication

- Building water reservoir and storage
- Developing capacity of households, commune, district government to improve better water storage and water conservation method
- Providing more agricultural extension service to farmer
- Diversifying households’ livelihood, especially poor family and family solely dependent on rice production.
- Expanding the implementation of rice bank and crop insurance to other communes.
- Commune and District should keep priority of drought and water problem in development plan, for instance, 5 year commune development plan
Thanks for your attention
Welcome Questions and Comments!!