Strengthening adaptive capacity of smallholders: Experiences from climate change adaptation projects
Key hazards:

- Rainfall patterns no longer respect the traditional seasonal calendar (difficult for farmers to adjust their traditional cropping calendar)
- Extreme temperature: more severe cold and hot spells
- Increased intensity of rainfall resulting in floods and localized landslides
- Stronger winds and storms are more frequent and causing impacts on livelihoods and infrastructures

![Climatic hazards - major impact on livelihoods and infrastructure](chart_image)
Livelihood drivers of change

- HH head decision taken
  - Good influence: 34.0%
  - No influence: 61.7%
- NGO program/support
  - Good influence: 49.8%
  - No influence: 46.7%
- Company program/support
  - Good influence: 26.3%
  - No influence: 64.4%
- Govt. program/support
  - Good influence: 37.3%
  - No influence: 60.9%
- New agri technologies
  - Good influence: 25.2%
  - No influence: 67.1%
- Weather
  - Good influence: 22.7%
  - No influence: 70.4%
- Price changes of agricultural outputs
  - Good influence: 45%
- Price changes of agri inputs
  - Good influence: 41.3%
- NGO program or support
  - Good influence: 49.8%
Addressing markets is more important to farmers than most agricultural technologies. It should be the first step.
## 2. Strengthening Adaptive Capacity of Smallholders

<table>
<thead>
<tr>
<th>Activity</th>
<th>Female (%)</th>
<th>Male (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Join a farmer group</td>
<td>50.6%</td>
<td>73.2%</td>
</tr>
<tr>
<td>Buy new agricultural tools or equipment</td>
<td>48.1%</td>
<td>67.1%</td>
</tr>
<tr>
<td>Ask advice from other farmers</td>
<td>38.5%</td>
<td>62.2%</td>
</tr>
<tr>
<td>Ask advice from Govt. extension workers</td>
<td>33.3%</td>
<td>56.1%</td>
</tr>
<tr>
<td>Changing farming techniques</td>
<td>37.8%</td>
<td>49.4%</td>
</tr>
<tr>
<td>Improve animal cages</td>
<td>38.5%</td>
<td>48.2%</td>
</tr>
<tr>
<td>Forest protection community rules</td>
<td>35.3%</td>
<td>50.6%</td>
</tr>
<tr>
<td>Ask advice from other organizations</td>
<td>32.1%</td>
<td>51.8%</td>
</tr>
<tr>
<td>Preventive vaccination</td>
<td>34%</td>
<td>47%</td>
</tr>
<tr>
<td>Take a loan</td>
<td>14.7%</td>
<td>31.7%</td>
</tr>
<tr>
<td>Plant trees in between crops</td>
<td>14.1%</td>
<td>23.8%</td>
</tr>
<tr>
<td>Improve water storage and irrigation</td>
<td>9.6%</td>
<td>22.6%</td>
</tr>
</tbody>
</table>

12/03/2018
Gender transformative Resilience

[Diagram showing various indicators of gender transformative resilience, including women's agency, division of labor, livelihood recovery rate, state of natural resources, livelihood diversification, farmer long-term planning, M/F household and public decision-making, HH disaster preparedness (incl. low damage), M/F access to agro-weather info and (internal, external) services.]
Combined productivity and resilience of major commodities
Village Adaptation Planning  
*(livelihood diversification)*

1. **Climate Vulnerability Analysis**: Upland rice affected by drought and shifting seasons; Cardamom and coffee by heavy rain, cold spells and drought; NTFPs least affected.

2. **Participatory selection of options**
   1. Cardamom under forest cover
   2. Intercropping fruit trees and cardamom
   3. Sustainable harvesting, marketing, processing of Rattan
   4. Sustainable harvesting, marketing processing of bamboo
   5. Vegetable production
   6. Up-scaling and intensification of paddy rice production (terracing)
   7. Commercial mushroom production
   8. Integrated fishponds
   9. Quality of honey production and marketing
   10. Improving animal health
   11. Up-scaling and quality improvement of organic tea under forest cover

3. **Prioritization**
   1. Sustainable harvesting, marketing, processing of Rattan
   2. Vegetable production
   3. Cardamom under forest cover
   4. Intercropping fruit trees and Cardamom
   5. Up-scaling and intensification of paddy rice production (terracing)
   6. Integrated fish ponds
   
   Bee keeping: only quality improvement. 
   Mushroom: pilot only.
Gender transformative Resilience
Village Adaptation Planning
(Access to Agro-climate Information)

- Weather info useful?
  - Yes, always: 21.7%
  - Yes, usually: 29.9%
  - Usually not: 28.5%
  - No, never: 19.9%

- Weather info timely?
  - Yes, always: 31.2%
  - Yes, usually: 48.4%
  - Usually not: 15.4%

- Weather info easy?
  - Yes, always: 21.0%
  - Yes, usually: 29.9%
  - Usually not: 36.6%
  - No, never: 12.5%
Dynamic Crop Calendar and Participatory scenario planning

- Agro Climate Zone map
- Downscaled seasonal weather forecast + agro-climate info
- Pre-and post seasonal Participatory Scenario Planning
- Agro-Climate Advisories
- Met Stations
- Farmer Learning Networks

WEM Champions
Agro-climate information analysis and development of Climate Inform Cropping Calendar “CLICC”

a) Historical long term climate information

(c) Future climate scenario

Seasonal rainfall forecast
(Climate Prediction Tool-CPT)

A combination of statistical and using sea-surface temperature as predictors and realtime rainfall data as predictors.

(Courtesy Mike Ziegert)

Jun 2014

Jun 2015

Jun 2016
Monthly rainfall Apr- Oct 2017

Forecast: 1504 mm
Actual: 1646 mm
2016: 1633 mm

Source: DMH forecasts
Conclusions and Recommendations

- Provide safe spaces for women to strengthen confidence and other skills;
- Facilitate farmers to lead on promoting adaptation actions (intercropping, seed or fodder storage or banks, flexible seasonal calendars).
- Improve yields/incomes of resilient but low yield crops (rattan, bamboo, yarn, forest mushrooms, galangal, vegetables or broomgrass).
- For crops with higher yields, but low resilience (cardamom or maize) invest in agro-forestry, water/soil conservation.
- For rice production, provide accurate and timely agro-climate forecasts, combined with soil monitoring, seed selection, sloping agricultural land techniques, inter-cropping or elevated rice terracing;
- Provide farmers with decision-support tools;
- Integrate climate change adaptation in food security and nutrition interventions
Thank you