



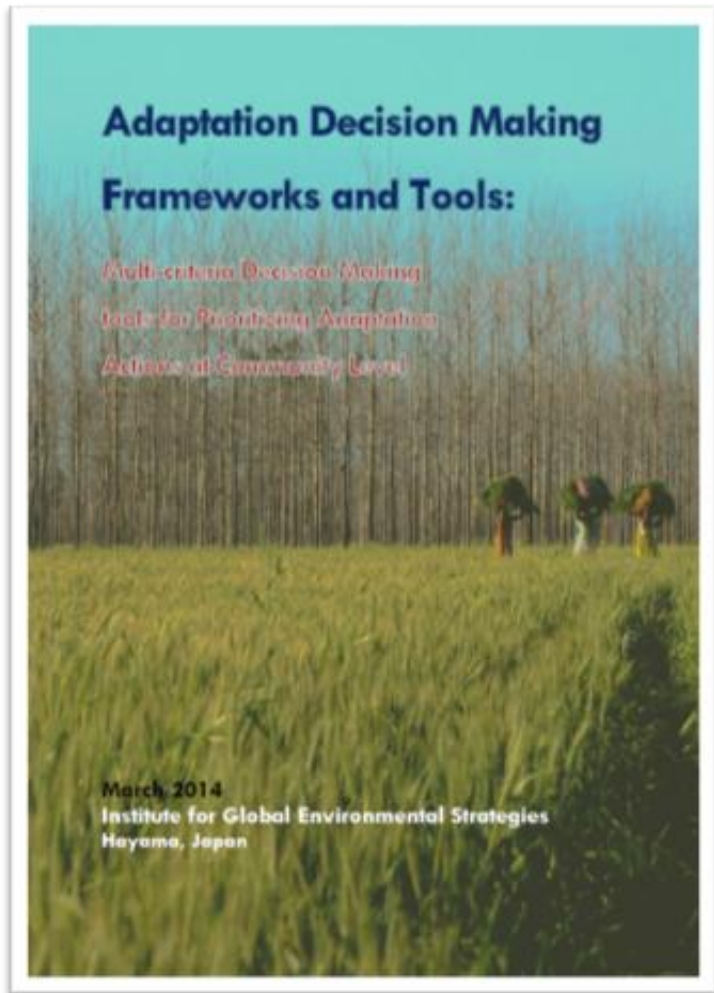
Analytical tools to identify priority actions for climate- resilient communities

SVRK Prabhakar et al. and Kenta Usui
IGES

13 May 2014

at Central Asia Climate Knowledge Forum,
Almaty Kazakhstan

This presentation is based on the work presented in:



Prabhakar, S.V.R.K (Ed.). 2014.

Adaptation decision making frameworks and tools: Multi-criteria decision making tools for prioritizing adaptation actions at community level
Hayama, Japan: Institute for Global Environmental Strategies.

<http://pub.iges.or.jp/modules/envirolib/view.php?docid=4969>

This work is funded by the "Environment Research and Technology Development Fund" of the Ministry of the Environment, Japan

Community decides

- **Appropriate decision-making at the community level is critical for adaptation**
 - Adaptation is highly context-specific and no one-size-fits-all.
 - Adaptation require engagement of local community
- **But how do communities decide?**
 - Community members have varying understanding on climate change and adaptation measures
 - What criteria underlies their decisions?
 - What factors influence their decisions?

Analysing decision-makings

- A decision-making process on adaptation has been analyzed through Analytical Hierarchy Process (AHP)
 - Bangladesh, India and Nepal
 - Drought-prone and flood-prone communities
 - Male and female group



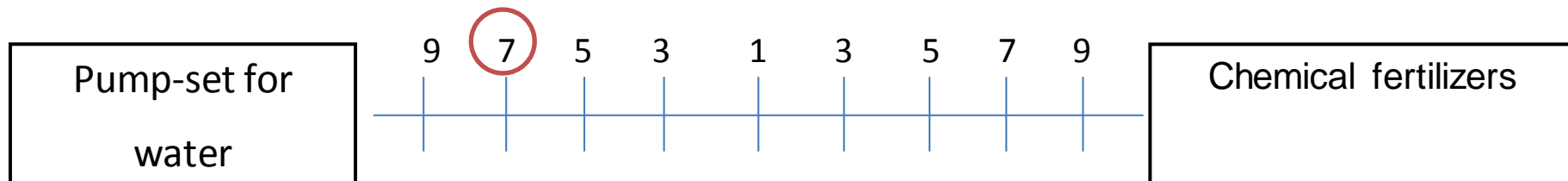


	Drought-prone ●	Flood-prone ●
Bangladesh	Chapainawabganj district	Rajbari district
India	Kanpur Dehat district	Udham Singh Nagar district
Nepal	Birganj district	Bardiya district

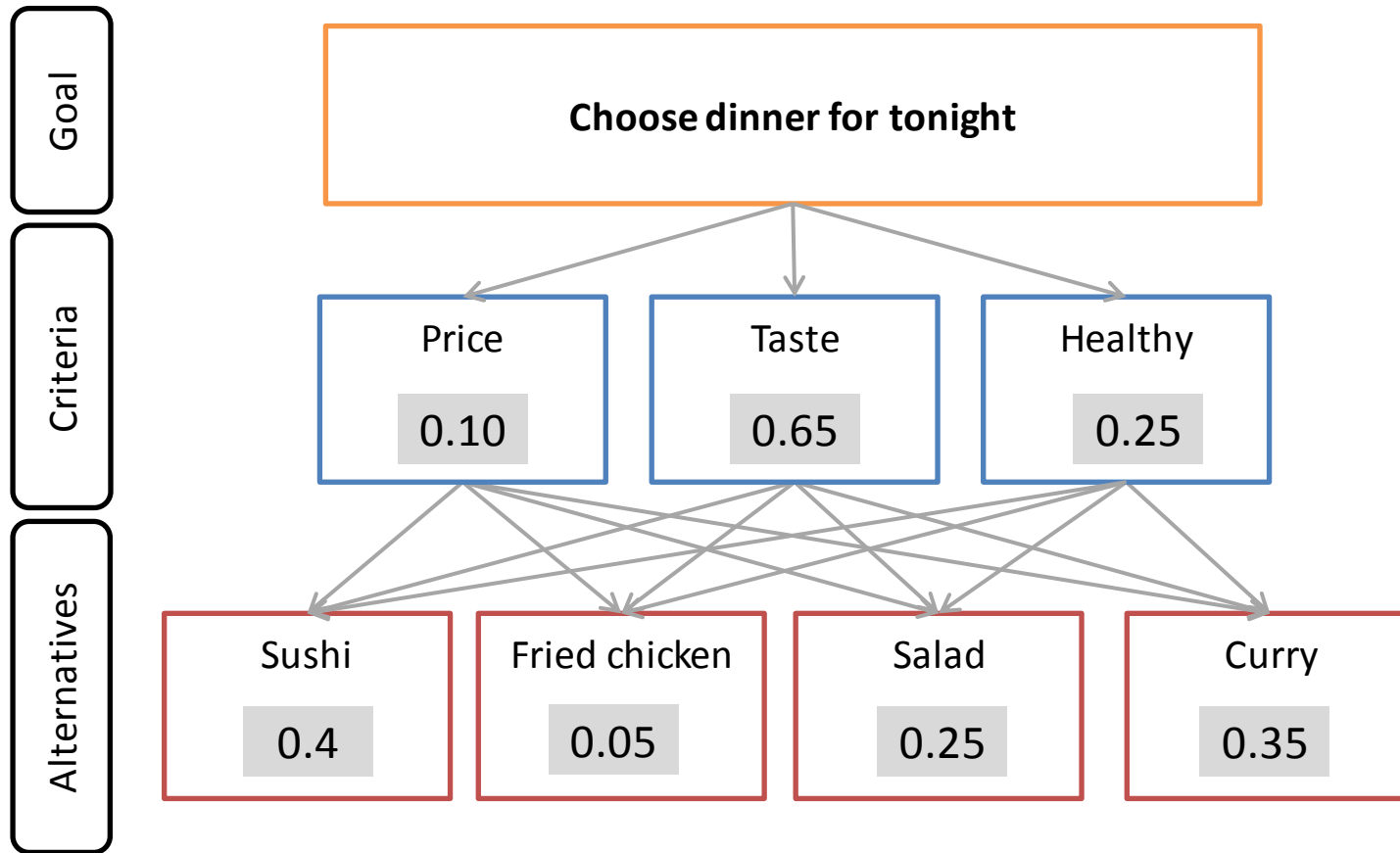
Methodology: AHP

- Analytical Hierarchy Process (AHP)
 - AHP allows users to employ multiple criteria to assess and compare various alternatives
 - Each criteria is weighed (each criteria has different importance)
 - The weight of each criteria is determined by pairwise ranking process (comparing two criteria to see which one is more important)

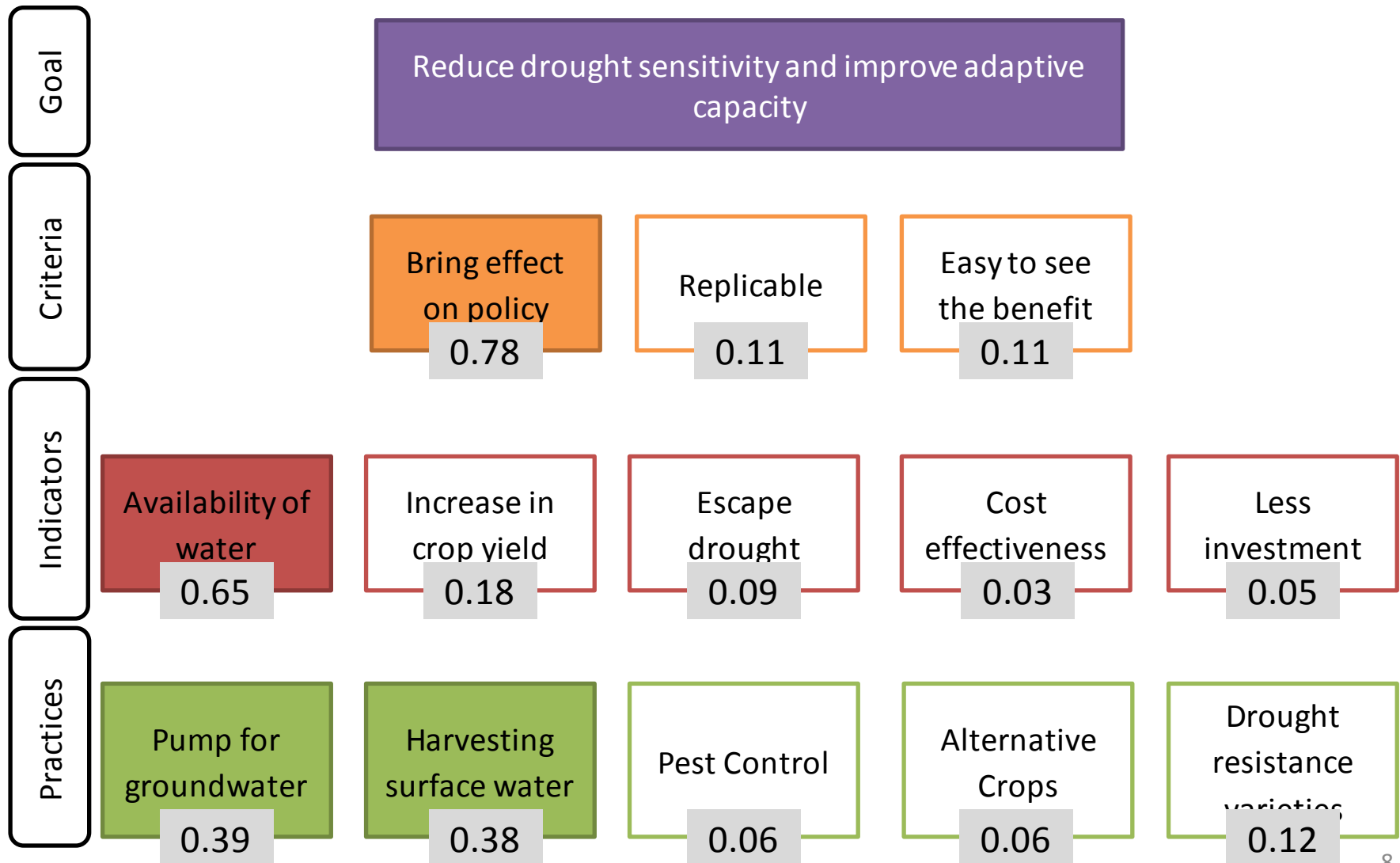
e.g. Which is better for Improving water availability for irrigation?



AHP application: An example

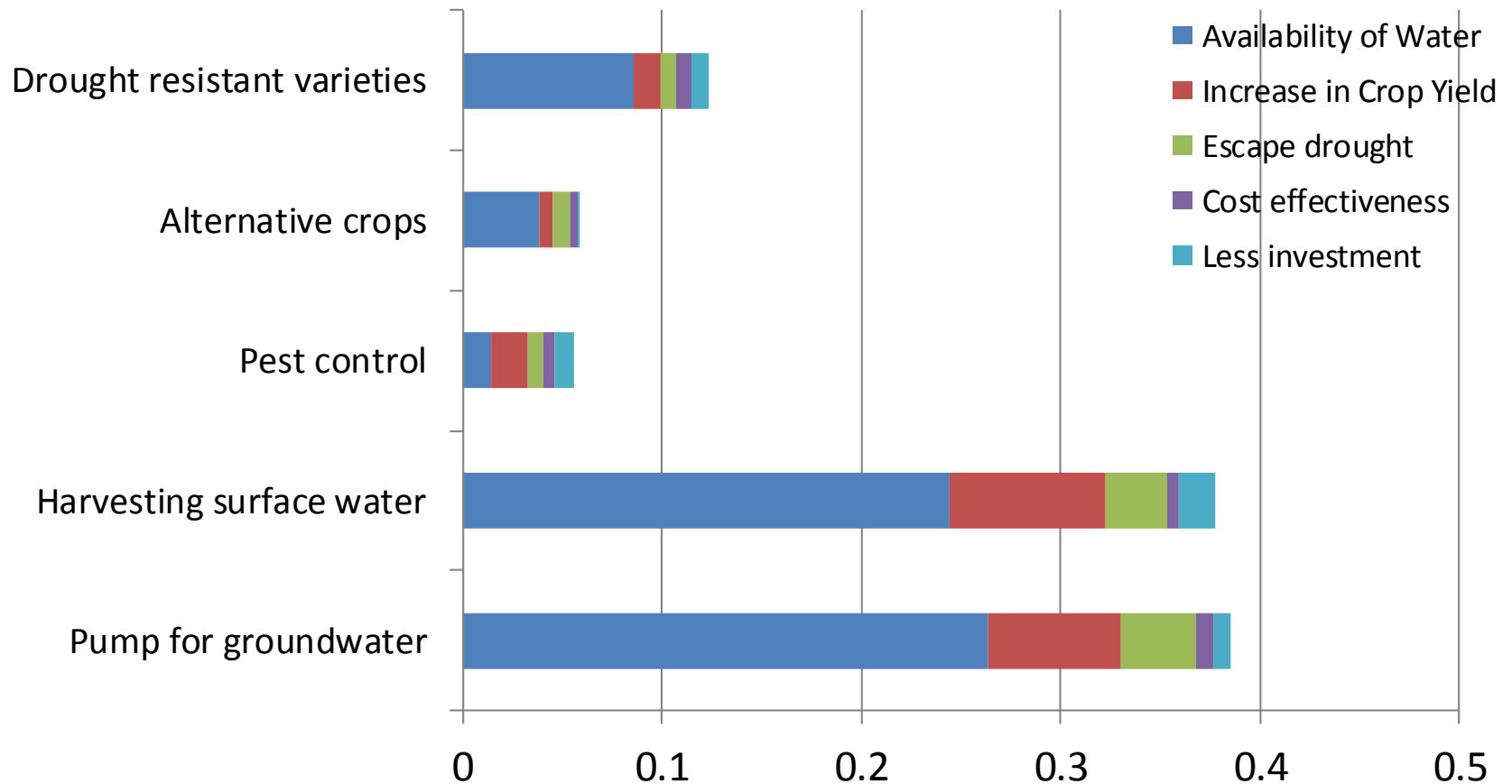


Case 1: Nepal – drought -male

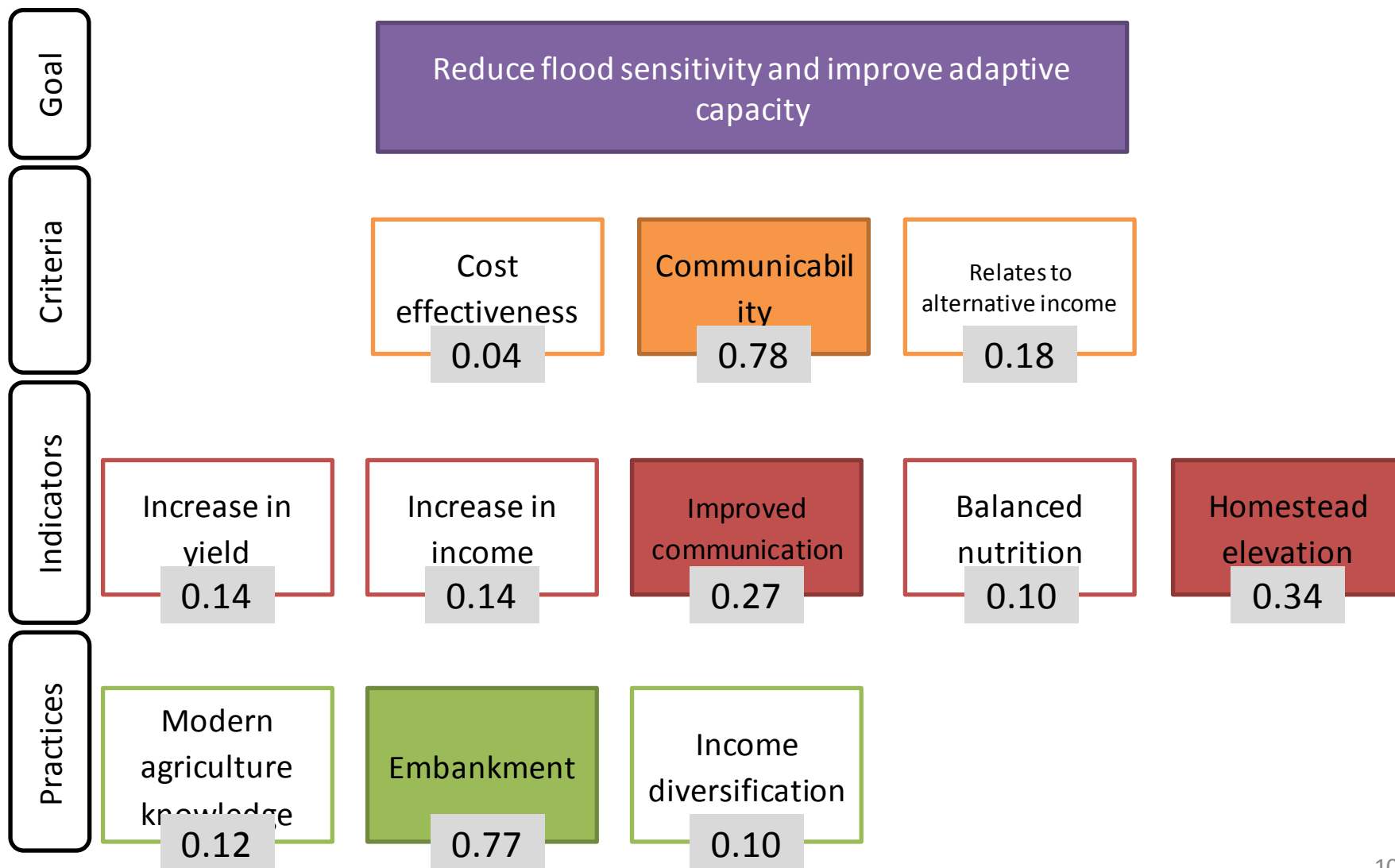


Case 1: Nepal – drought -male

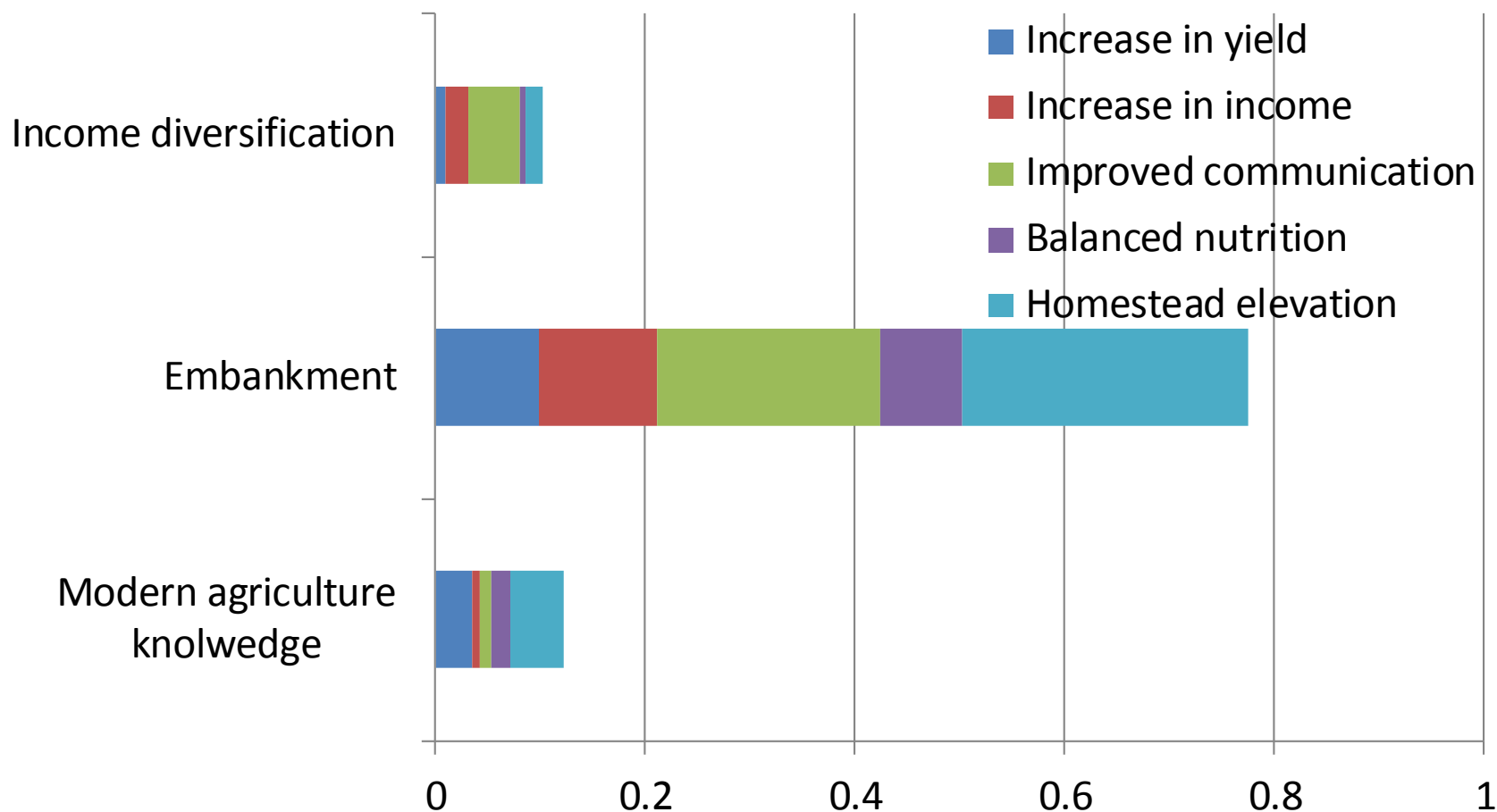
Aggregated score of adaptation practices and their composition



Case 2: Bangladesh – flood-female



Case 2: Bangladesh – flood-female



Key findings

- Considerable variation from community to community



- **In drought-prone areas**, boring wells were generally preferred over surface water. Water-saving activities such as change in cropping pattern and organic farming were also preferred.



- **In flood-prone areas**, saving assets/lives through embankment, as well as access to alternative employment also preferred.



- Limited but visible difference identified between male and female groups

Role of AHP to identify priority actions



- AHP can reveal the decision-making process, identify priority actions, and also suggest adaptation indicators.
- However, pairwise ranking process can be time consuming and difficult to be understood.
- AHP more understood in relatively well-educated community.
- Clear incentives (e.g. possibility of project funding) desirable to engage community members



Criteria

	Hazard		
India	Drought	Male	Easy to understand (0.5), easy to observe (0.5)
		Female	Easy to understand (0.5), easy to observe (0.5)
	Flood	Male	Prior experience (0.9)
		Female	N/A
Bangladesh	Drought	Male	Cost effectiveness (0.76)
		Female	Relates to production (0.5), Relates to economic well-being (0.31), cost effectiveness (0.30)
	Flood	Male	Communicability (0.76)
		Female	Communicability (0.78)
Nepal	Drought	Male	Bring effect on policy (0.78)
		Female	Easy to see benefits (0.71)
	Flood	Male	Easy to see impacts (0.79)
		Female	Easy to see effect (0.76)

Indicators

Country	Hazard	Gender	Indicators
India	Drought	Male	Reduction in soil erosion (0.36), Water availability (0.33)
		Female	Water availability (0.75)
	Flood	Male	Reduction in erosion (0.60)
		Female	N/A
Bangladesh	Drought	Male	Availability of irrigation water (0.56),
		Female	Irrigation water availability (0.36), increase in income (0.19)
	Flood	Male	Improved communication (0.4), increase in yield (0.38)
		Female	Homestead elevation (0.34), improved communication (0.27)
Nepal	Drought	Male	Availability of water (0.65)
		Female	Availability of water (0.52)
	Flood	Male	Land saved (0.37), property saved (0.24)
		Female	Human lives saved (0.44)

Practices

Country	Hazard	Gender	Practices
India	Drought	Male	Land levelling(1.0), Bore well (0.83)
		Female	Water availability (1.0), Land levelling (0.47)
	Flood	Male	River embankment (1.0),
		Female	N/A
Bangladesh	Drought	Male	Groundwater (1.0)
		Female	Groundwater (1.0)
	Flood	Male	Embankment (1.0)
		Female	Embankment (1.0)
Nepal	Drought	Male	Pump for groundwater (1.0), Harvesting surface water (0.98)
		Female	Pump for groundwater (1.0), Harvesting surface water (0.94), Green manures (0.84)
	Flood	Male	Early warning (1.0), Embankment (0.67)
		Female	Evacuation of livestock (1.0), Evacuation of assets (0.82)