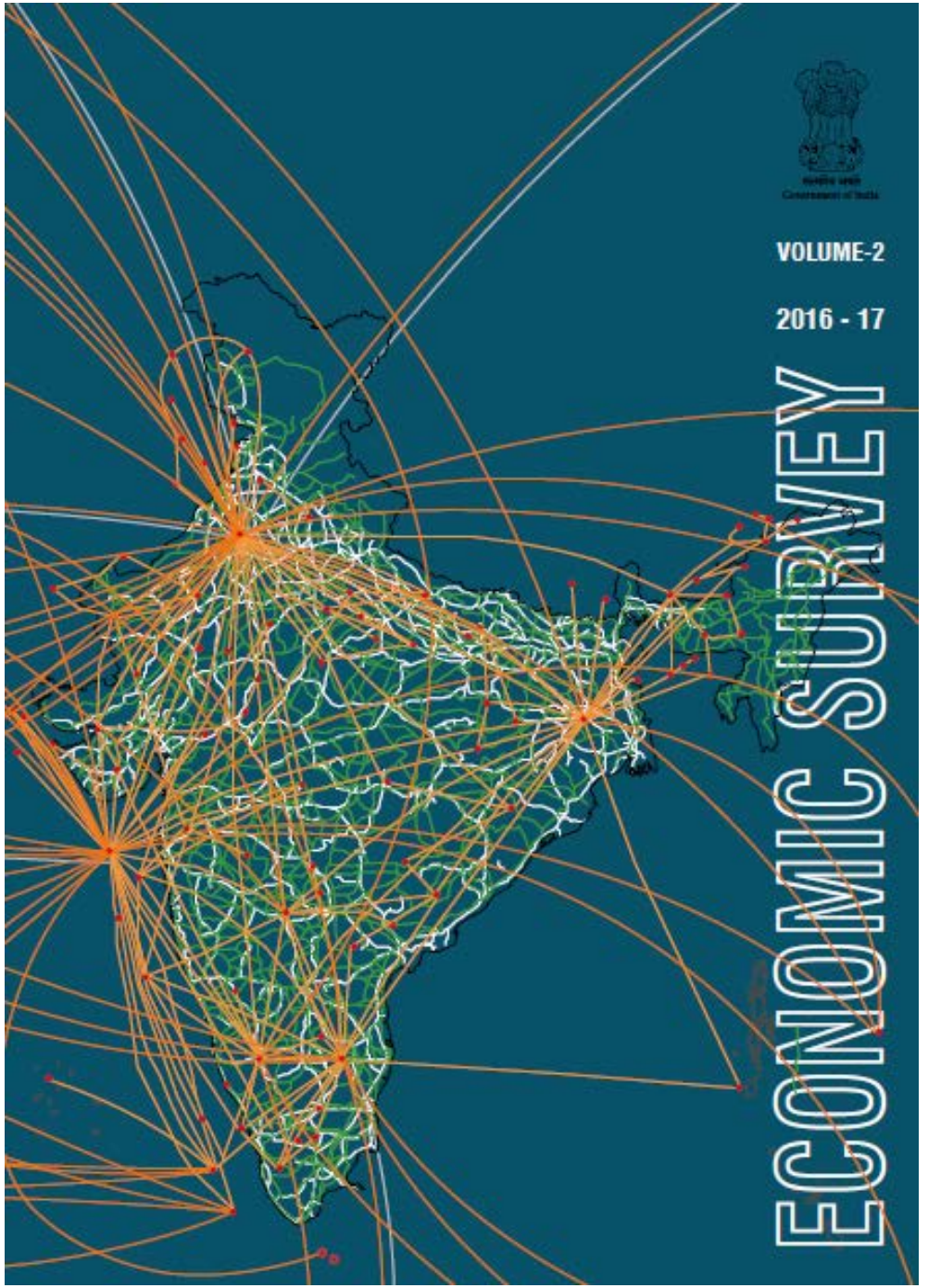
Climate Smart Agriculture:
Asking the Climate Question

Assam, Two Weeks ago
Photo Credit: Rizwan Zaman

Economic Impacts

- India incurs losses of US $9-10 billion annually die to extreme weather events.
- Of these, nearly 80% are uninsured losses.
- Productivity of major crops could decrease by as much as 10-40% by 2100 unless farming adapts to climate change-induced changes in weather.

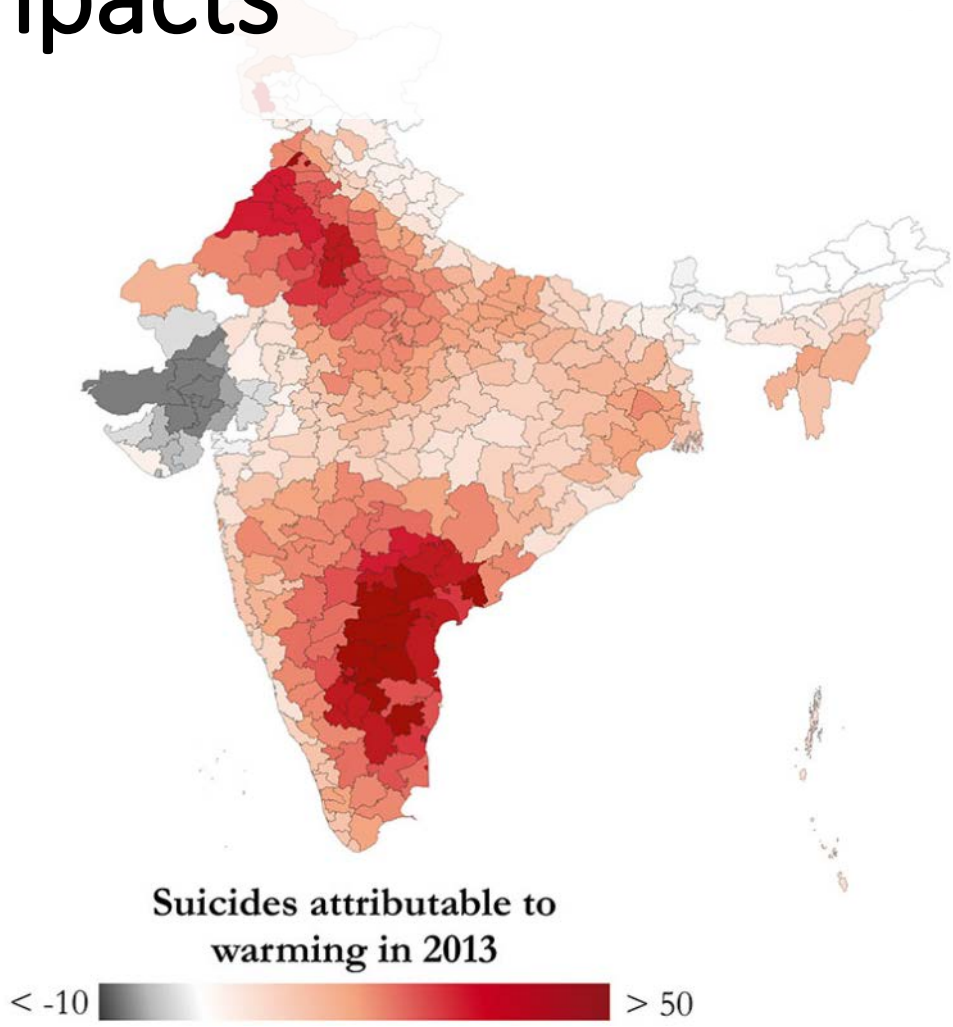


Economic Service of India; Volume 2; August, 2017

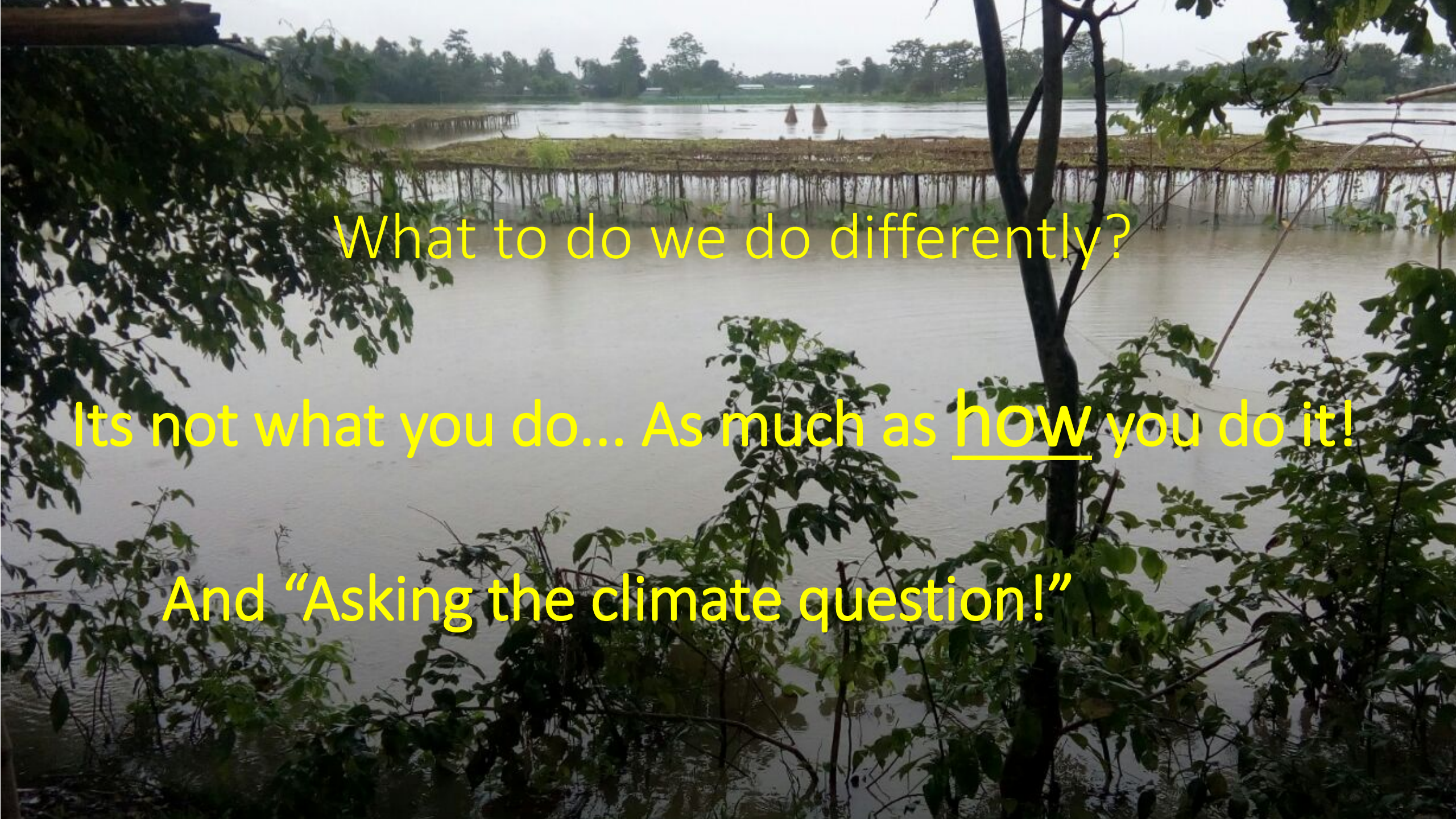
Livelihood & Food Security Impacts

In addition to yield decreases, Climate Change related extremes may:

- Increase post-harvest losses
- Disrupt food access (transportation and distribution)
- Affect nutritional quality (Macronutrients & micronutrients)
- Affect food absorption
- Affect farmer health & productivity
- Affect farmer suicides



Carlton, T.A., Proceedings of the National Academy of Sciences, August 15, 2017 vol. 114 no. 33


What to do we do differently?
Its not what you do… As much as how you do it!
And “Asking the climate question!”

Introduction to Action on Climate Today

- UK funded initiative managed by Oxford Policy and Management
- Provides Technical support to national and subnational governments to mainstream climate change resilience into sectoral policies, programmes, plans and budgets.
- Known as Climate Change Innovation Programme in India. Operates in Bihar, Assam, Chhattisgarh, Maharashtra, Kerala, and Odisha.
- Main outcome areas are increased capacity, systems and policy enhancements, knowledge generation, and budgets shaped and finance accessed.

ACT
ACTION ON CLIMATE TODAY

Climate Smart Value Chains

- Identify crops with high resilience and high growth potential
- Identify crops relevant to target population
- Analyze value chain using traditional approaches to identify blockages in the value chain and opportunities to over come them
- Higher potential for scaling through the market

Multi Criteria Decision Analysis:

Crop Selection Criteria:

✓**PRODUCTION BASE OF THE CROP [20%]**

1. **Water Requirement**
2. **Nutrient Requirement**
3. **Crop Management Practices**
4. **Tillage**
5. **Fodder**

✓**INCOME TO THE HOUSEHOLD [30%]**

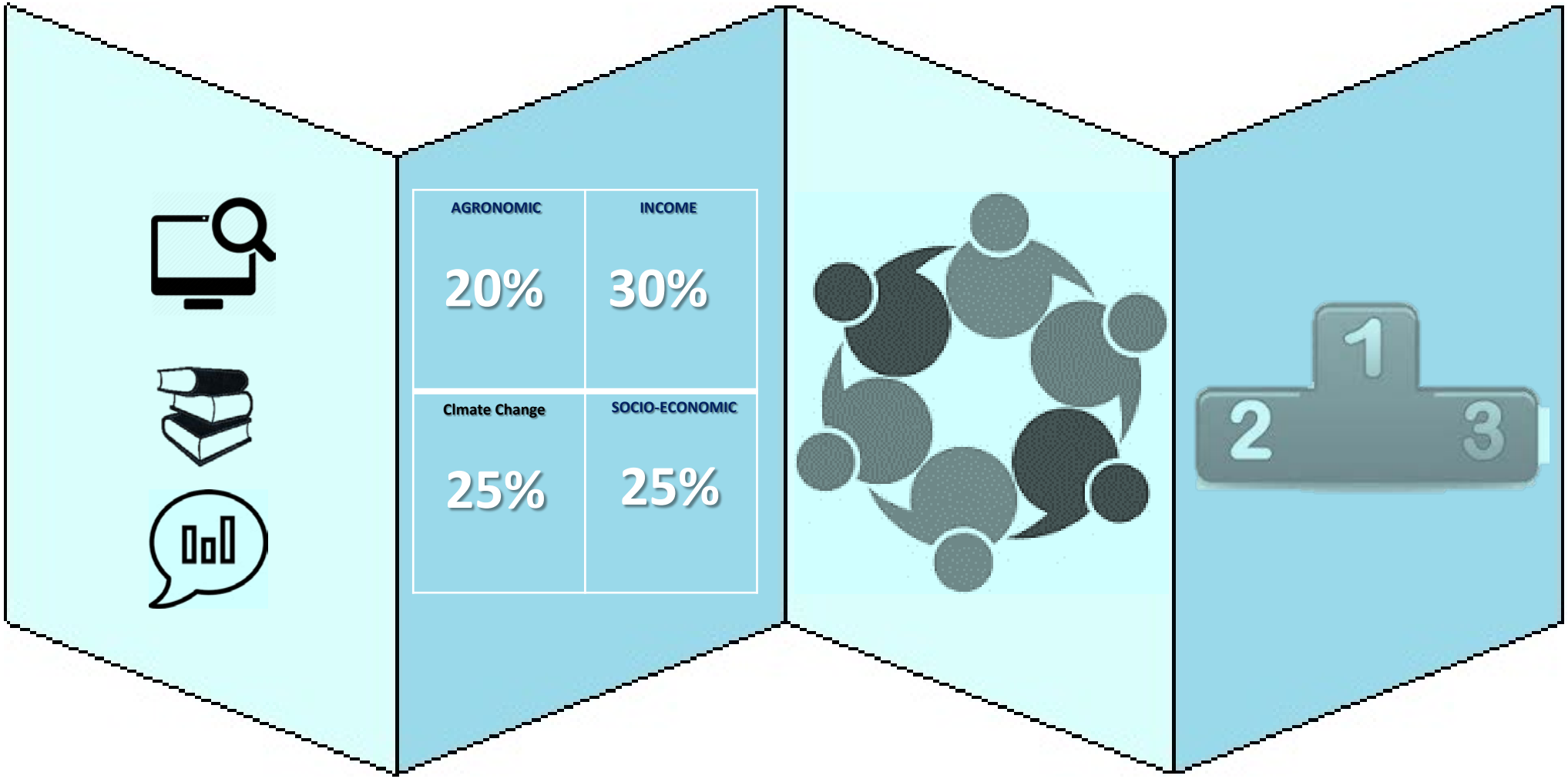
1. **Net Income**
2. **Credit Potential**
3. **Risk**

✓**SOCIO ECONOMICS [25%]**

1. **Food security**
2. **Livelihoods**

✓**CLIMATE RESILIENCE POTENTIAL[25%]**

1. **Water Use**
2. **Temperature Sensitivity**
3. **Heartiness (wind / drought tolerance)**
4. **Pest management**



Data Collection
Review & Analysis

Multi Criteria Decision
Analysis for Crop Selection

Stakeholder Consultation

Prioritized List of Climate Resilient
Crops for Value Chain Study

1 → 2 → 3 → 4

EXAMPLE RECOMMENDATIONS

HIGH IMPACT – SHORT TERM

1. **Increase Seed Replacement Ratios** adopting a **Seed Village Concept** for higher penetration of HYVs in Very Low, and Low Productivity districts (7 districts).
2. Establish block-level, **women-managed, single-window Agri-Business Centers (ABCs)** to increase access to; low-cost credit, HYV seeds, custom hiring of machines (direct seeders for SRI, transplanters and weeders) with low-cost, efficient technologies (Slow Release Fertilizers).
3. Strengthen and **enhance paddy procurement** across the states using FPO/PACS machinery, current uptake stagnant @4%

HIGH IMPACT – MEDIUM TERM

1. Promote a **FPO-centric market infrastructure/linkage model** with financing facility (*low institutional credit penetration in Bihar threatens institutional viability*).
2. Increase **capacities of farmers/groups** to undertake processing, moving up the value chain (PACS are unable to handle aggregation and product diversification).
3. Promote **FPOs and FPO aggregation**, combining credit, technology and market linkages for shorter, direct-to-mill/consumer models for min. transaction costs.

PADDY

LOW IMPACT – SHORT TERM

1. Capacity building of producers to improve the knowledge on primary processing
2. **Capacity building of extension staff on climate resilient agriculture**

LOW IMPACT – MEDIUM TERM

1. **Integration of Automatic Weather Stations (AWS) to Market Information**
2. Adoption of disease management and improved varieties will impact yield and net returns

Key Take Aways:

- Climate Smart Agriculture may look like “normal” agriculture but includes:
  - Asking the Climate Question
  - Looking for options to build resilience in the farming & livelihood system
  - Focuses attention on the most vulnerable

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Thank You!

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	VALUE CHAIN PHASES				NON-FARMING OPTIONS
	PRE-PRODUCTION	PRODUCTION	POST HARVEST	CONSUMPTION	
TECHNOLOGY	Climate Change Ready Rice Climate Smart Feedstock/ fodder Water Soluble Fertilizer Seed banks	Irrigation technology, rain water harvesting Sustainable Ag practices Crop Diversification Adjust sowing dates Crop contingency plans	Technology to reduce loss and spoilage		Manage supporting ecosystem services (watersheds, wetlands, afforestation, etc.) Maintain agriculture infrastructure (e.g. irrigation canals)
INFO, KNOWLEDGE	Research on climate resilience practices	Dissemination of weather information, Soil Knowledge Extension / skilling / farmer learning groups/ lead farmers/ apps / call center Early warning Systems	Information on post harvest value chain diversification	Marketing for resilient crops.	Integrated water and soil management planning (planning for all uses) DSS and planning tools Community resources centres / SHG
POLICY & INSTITUTIONS	Create favourable policy environment/ incentives for resilience/ resilient crops (ag, trade, market, water management policies). Climate proof existing agricultural , water policies.	Strengthen institutions providing services for agricultural adaptation and resilience.	Policies & institutions to support food storage and distribution capacities/ market development for resilient crops Minimum support price	Promote policies that encourage climate resilient food choices/ market pull factors	policy options for reducing dependence on agriculture / support diversification. Policies for soil and water conservation.
FINANCIAL	Financial services to farmers, producer organizations.	Safety nets, Weather risk insurance Products to re-risk ag investment Building cash reserves	Private sector models with shared value. Financial instruments to reduce economic losses in value chain such emergency relief schemes, price control.	Fair Trade / BCI certification and price premium	Incentives to facilitate livelihood diversification / transition. Village Climate Risk Management Committees/ risk pools