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***How to prioritize adaptation
options using economic methods***

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Overview

- ✓ The role of cost-benefit analysis and the NAP process
- ✓ Economics of Climate Change Adaptation (ECCA) and the NAP
- ✓ The ECCA Methodology
- ✓ Case Studies (Sri Lanka and Mongolia)

The role of cost benefit analysis in adaptation planning

- When making a decision, esp. in the public sector, trade-off analysis is inevitable. Costs and benefits of an action and / or inaction need to be understood for policy decisions.
- Add up costs and add up benefits; if net benefits are positive: do the project!
 - Simple, right?
 - Not quite! Issue of measurement of costs and benefits.

The role of cost benefit analysis in adaptation planning

- Often times, costs are simpler to calculate— tend to be one-off and are market transactions e.g. one time cost of constructing an irrigation system
- Benefits can be trickier e.g.: How do we calculate the market (e.g. wealth) and non-market (e.g. health) benefits over time?

Objective ways to know we are maximizing benefits

- Evaluating distinct but equally plausible adaptation options (or measures) requires a CBA of each alternative option
- This will allow an objective comparison to be made between the options.
- For adaptation options that have implications on entire sectors, a market analysis is required to see how entire economic systems are affected. This can be done at two levels – a sector by sector or an inter-sectoral approach

When to to do Cost-benefit analysis?

NAP process typically involves four elements:

- (A) Laying the groundwork and addressing gaps
- (B) Preparatory elements
- (C) Implementation strategy
- (D) Reporting, Monitoring and Review.

Cost-benefit analysis is an important tool in helping countries at (B) and (C) stages and helps to narrow down gaps in (A), especially the stocktaking

When to do cost-benefit analysis

Some of the areas where CBA becomes valuable in the process include:

- Assessing climate vulnerabilities and identifying adaptation options at different levels
- Prioritizing Adaptation in national planning
- M&E – theories of change and impact evaluation

Appraisal Tools and Methods

Tool/Method	General thrust
Cost Effectiveness Analysis (CEA)	Measures cost in relation to an isolated outcome. Defines least-cost way to get result. More suitable to CC mitigation.
Risk and Vulnerability assessments	RA – probability or likelihood of occurrence of climate hazards multiplied by potential impacts VA– analysis of sensitivity, exposure and adaptive capacity
Cost Benefit Analysis (CBA)	Overall economic rationale, weighing both costs and benefit streams and effects on all outcomes.
Climate Change Benefit Analysis (CCBA)	Help identify and appraise public investment projects having positive climate change benefits.
Financial Analysis	“Bankability” in financial viability terms, i.e., investment return, debt-serviceability, pay-back time
General Equilibrium Analysis (CGE, IAM ...)	Macro-economic effects
Multi Criteria Analysis (MCA)	Supports decision-making with broad view of impacts, often participatory application



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Economics of Climate Change Adaptation (ECCA)

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- ✓ Planning and Line Ministries
- ✓ Sectoral Analysis & Project Appraisal
- ✓ Cadre of trained professionals in participating countries



Partners: USAID, Yale University, the Asian Development Bank and the Global Water Partnership



Countries: Bangladesh, Cambodia, Lao PDR, Indonesia, Maldives, Mongolia, Nepal, Philippines, Sri Lanka, Thailand, and Vietnam





The ECCA Methodology

Sri Lanka

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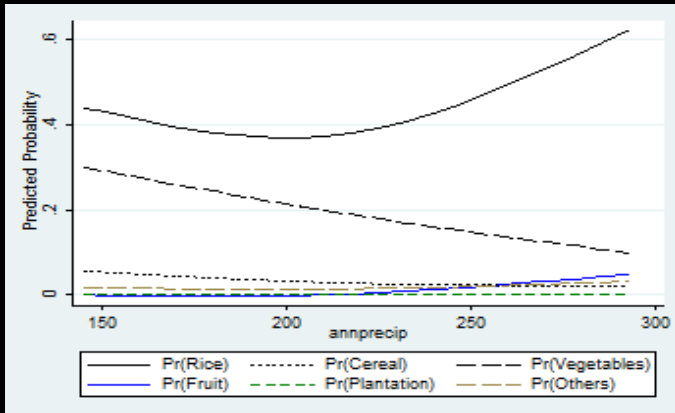
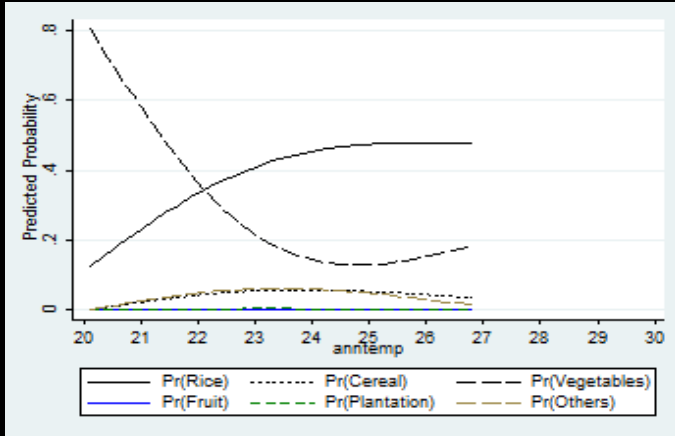
- ✓ Three hundred and twenty-one households were interviewed spanning the agro-ecological zones of the country, resulting in 321 households detailed data.
- ✓ A whole farm approach based on the **Ricardian method** has been used, named after David Ricardo's 1815 work.
- ✓ The **marginal impacts** of climate (temperature and precipitation) is estimated to give an indication of changes in net revenue when there is a unit change in climate.
- ✓ By changing the values of the climate variables to levels predicted by **climate change projections** and by comparing the projected net revenue to the current net revenue scenario, the impact of climate change on the agriculture sector is estimated.



(ECCA) case studies

Sri Lanka

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- Using climate projections, it is possible to predict the type of crops that farmers will choose to invest by 2030, 2050 and 2070, based on changes in precipitation and temperature.
- As temperature rises, farmers would focus on annual crops such as rice, cereals and vegetables and would not invest in fruits, plantation and others.
- As precipitation increases, farmers would invest in fruit, cereal and plantation and would move away from rice, vegetables and other crops.
- By 2030, farmers will choose cereal and other crops, whereas by 2050 and 2070, farmers will invest in rice and cereal.

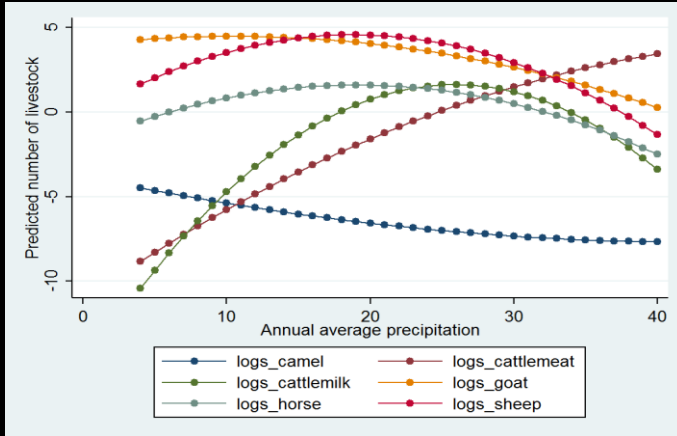


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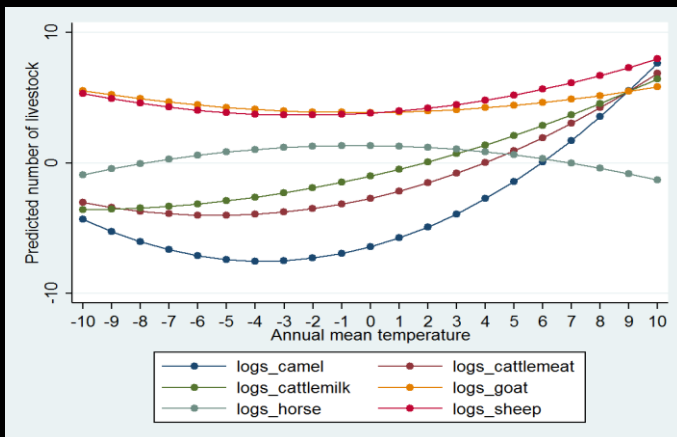
(ECCA) case studies

Mongolia

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- The analysis sheds light on the vulnerabilities of the livestock sector in Mongolia to climate change.
- Herders will require support to maintain livestock density during periods of increased precipitation (above 25 mm), especially for species such as horse, sheep and cattle.
- Possible policy support responses that will allow herders to build resilience of their livestock system to climate change vulnerabilities could include: providing stronger extension support, improving natural resources management, improving meteorological services, and ensuring that information is timely and accurately provided to farmers, particularly in rural areas.



Economics on Climate Change Adaptation (ECCA)



- The ECCA reports provides evidence-based policy insights that are targeted towards supporting policymakers involved in the National Adaptation Plan (NAP) process to better understand the impact of climate change on the agricultural sectors.
- By separating the analysis on irrigated vs. rainfed farms, the report provides evidence on the agriculture sector with implications for the water sector.



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Economics of Climate Change Adaptation (ECCA) II



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- ✓ Planning and Line Ministries, Researchers and Climate Practitioners
- ✓ Economic tools necessary to design and implement climate-resilient projects and to formulate National Adaptation Plans
- ✓ Accessing international funds such as the Green Climate Fund, the Adaptation Fund, and LDCF/SCCF resources

Partners: Asian Institute of Technology (AIT)

*Countries: Bangladesh, **Bhutan**, Cambodia, Lao PDR, **India**, Indonesia, Maldives, Mongolia, Nepal, Philippines, Sri Lanka, Thailand, and Vietnam*



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Economics of Climate Change Adaptation (ECCA) II



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THANK YOU!

A range of tools for ranking and prioritization of adaptation options

