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REDD+ Policy Preferences in Ethiopia: Developing Controls for Attribute Non-Attendance in Choice Experiment Data

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Abstract Summary

REDD+: Reducing Emissions from Deforestation and Forest Degradation

- A payment for ecosystem services system created under the UN to reduce deforestation and degradation in developing countries
- **Payments**
  - From: UN-FCCC Annex 1 countries (developed countries)
  - To: non-Annex 1 (typically developing countries)
- Focused on community managed forests
- Limited knowledge and information on preferences or true costs to households in communities with community managed forests toward programs like REDD+

Choice Experiment Surveys: allow the researcher to elicit preferences/tradeoffs for characteristics of the good/policy

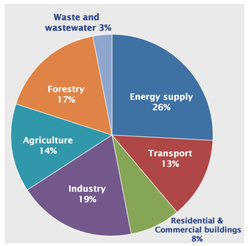
- 504 households in rural Ethiopian communities
- Characteristics: payment levels, how payments are split, commitment term, and restrictions on land use

Preliminary results: respondents care about how REDD+ programs are structured with regard to:

- How payments are divided between the households and the communities
- Restrictions on using grazing land
- Level of payments received for the program
- **Contrary to expectations:** Firewood gathering reduction does not impact some households' choice of REDD+ contracts

Currently testing new methods in attribute non-attendance (ANA) to better explain findings

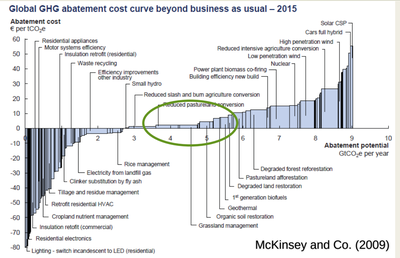
Background



Source: IPCC (2007)

Emissions Reductions

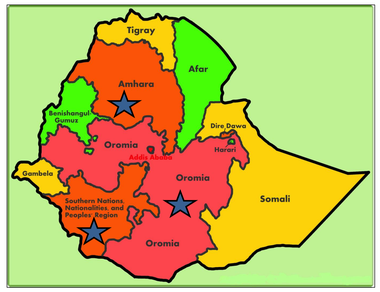
- 12-20% of global emissions are from deforestation (more than transportation)
- Reducing deforestation is among the cheapest methods of reducing emissions beyond "business as usual"
- 25% of the world forests are Community Controlled Forests (CCFs)



Case Study: REDD+ in Ethiopia

The UN's **Reduce Emissions from Deforestation and Degradation (REDD+)** can improve livelihoods in low-income areas in return for reduced forest use.

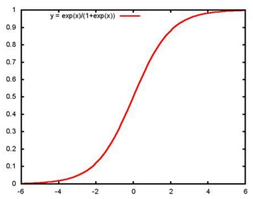
- Many forests in Ethiopia are CCFs.
- Not much is known about the true costs borne by REDD+ area households
- Surveys conducted in 3 agricultural regions: Amhara, Oromia, and SNNP



Choice Experiments and Non-market Valuation

Preferences are not revealed in a market, thus we rely on CEs to gather Stated Preferences. These are analyzed via:

- Conditional Logit regression (if preferences are the same across people)
- Mixed Logit regression (if preferences vary across people)



$$P_i = \frac{\exp(v_i/\tau)}{\sum_{j=1}^{J}\exp(v_j/\tau)}$$

Choice Survey Example

Attributes	Alternative 1	Alternative 2	Status Quo
Monthly total REDD+ payment to your community (per household).	2000 birr	3000 birr	0 birr No payment
The portion of REDD+ payments that go to communities for community projects and /or equally divided between households in your group	100% to community	100% to household	No payment
REDD+ commitment period in years	1-5 years	11-15 years	No commitment
Required fuel wood reduction measured as a portion of your current use	25% fuel wood reduction	25% fuel wood reduction	No reduction
Open grazing is prohibited	100% Reduction (No grazing)	100% Reduction (No grazing)	No grazing restrictions
Please tick/mark (V) only one	❐	❐	❐

Survey conducted:

- 504 randomized households
- 7 choices per survey
- Follow-up questions on attendance

Model and Preliminary Results

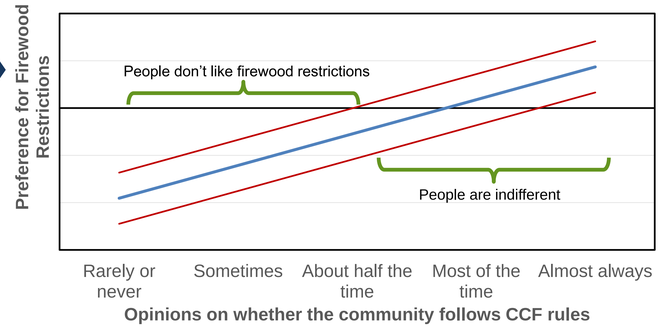
$$U_j = \sum_{k=1}^{K} \beta_k x_{kj} + \beta_p p_j + \beta^*_{firewood,j} x^*_{rules} + \varepsilon_j$$

1) Regression Results

Variable	Cond. Logit	Mixed Logit	W/ Interaction
Share to Community	-0.00460***	-0.00607***	-0.00598***
Commitment Length	0.0151**	0.0148*	0.0168*
Firewood Restrictions	-0.0000493	-0.000000443	-0.0130*
Grazing Restrictions	-0.00448***	-0.00521**	-0.00671***
Payment Level	0.000249***	0.000297***	0.000316***
ASC	2.435***	10.08***	7.961***
Firewood/Rules Interaction			0.00347*
Heterogeneous Preferences		Yes	Yes
Observations	8946	8946	8802

- Results suggest people do not consider restrictions on firewood, their main source of cooking fuel, a cost.
- Further investigation suggests preferences for firewood restrictions depend on opinions of whether the community will follow the rules.

2) Firewood Restrictions



3) Marginal Willingness to Pay

$$MWTP_k = -\beta_k / \beta_{cost}$$

Policy Attribute	Willingness to Pay (in Birr)
Share to Community	-18.9
Commitment Length	53.2
Grazing Restrictions	-21.2
Firewood Restrictions	-30.2 to 13.8

- Interpreted as the monetary cost of each unit of the policy attributes.

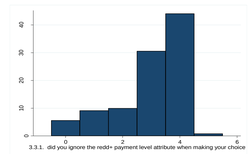
Example: individuals are willing to give up 21 Birr for a 1% decrease in grazing restriction

4) Attribute Non-Attendance (ANA)

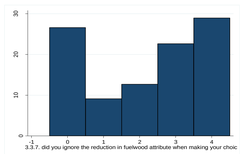
Choice experiment analysis may be biased (incorrect) if attributes are ignored.

- Patterns in attention paid to attributes in the survey suggest ANA may be a problem:

Normal attendance: Payment Level



Abnormal attendance: Firewood Restriction



Average Difference in Attendance

	Grazing	Firewood	Term	Community
Payment	.476 (1.95)	.825 (1.66)	.865 (1.54)	.083 (1.69)
Community	.393 (1.95)	.742 (1.96)	.782 (1.79)	
Term	-.389 (2.05)	-.040 (2.04)		
Firewood	-.349 (1.65)			

- High numbers indicate the row attribute is given more attention than the column attribute.
- Standard deviations in parenthesis.

Conclusions and Next Steps

Preliminary results are largely as expected:

- **Firewood and Grazing restrictions are perceived as costs.**
- **Payment level, distribution, and commitment are perceived as benefits.**
- **ANA patterns seem widespread.**

Next Steps

- Recently, a vast literature has arisen on methods of controlling for ANA. A thorough review of literature is necessary.

References

Dissanayake, Sahan T.M. et al. (WORKING PAPER). "Preferences for REDD+ Contract Attributes in Low-Income Countries: A Choice Experiment in Ethiopia".
Bello, Muhammad and Awudu Abdulai (2016). "Impact of Ex-Ante Hypothetical Bias Mitigation Methods on Attribute Non-Attendance in Choice Experiments".