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Climate Change and Consumption Inequality

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Introduction

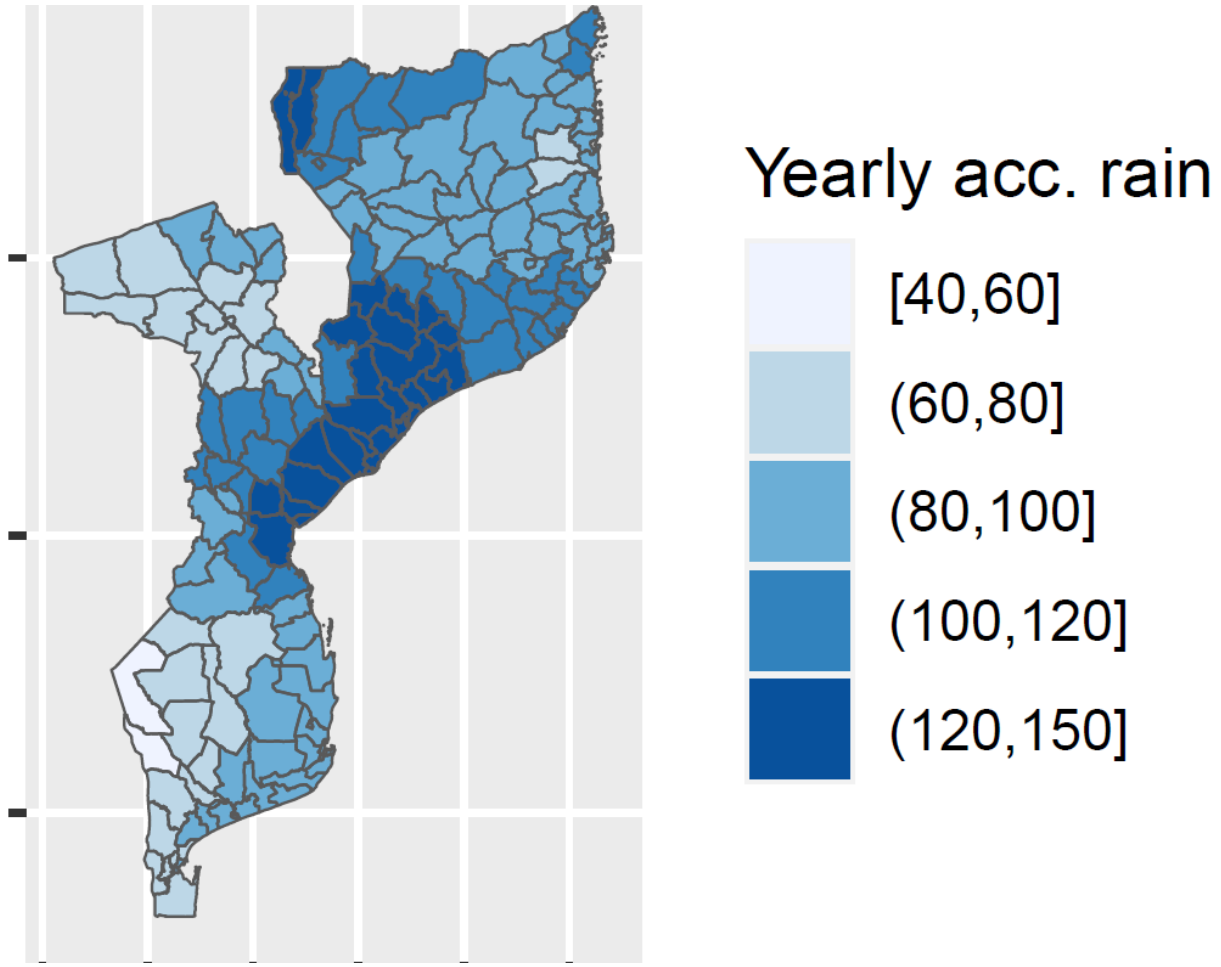
- Over the last decades, the world has experienced **more frequent and intense extreme events.** Yet, we lack adequate knowledge about the tools and mechanisms necessary for a transition to climate-neutral economies, especially in the developing world.
- Enabling **just energy transitions** would spread the knowledge which would ensure fairness in the distributional effects of energy transitions, not exacerbate poverty and economic vulnerabilities, and ensure no one is left behind.
- Policy-makers must have **information** on who is likely to gain, and who is likely to lose, as climate change intensifies. This is neither conceptually, nor empirically, straightforward, and will require the creation of considerable analytical capacity supported by data collection.
- **Mozambique** is usually placed as one of the main countries at risk with the intensification of the climate change

Literature and Research Question

- Climate change and inequality (Castells-Quintana and McDermott, 2023)
- Floods and consumption poverty (Salvucci and Santos, 2020)
- Weather shocks and cropland decisions (Espinoza et al., 2015)
- Weather shocks and spatial market efficiency (Salazar et al., 2019)
- Cyclones and manufacturing firms (Berkel et al., 2021)
- We also know about the patterns of inequality in Mozambique (Gradin and Tarp, 2019a,b; Gradin, 2020)

What are the impacts of climate change on poverty and inequality measured by consumption?

Average rainfall in Mozambique in the last 10 years



Methodology

$$lnC_{id} = \beta_1 Rain_{td} + \beta_2 Rain_{td-n} + \theta_i + \epsilon_i$$

$$lnC_{id} = \beta_1 Rain_{td} + \beta_1 Rain_{td-n} + \beta_2 Rain_{td-n} - \beta_1 Rain_{td-n} + \theta_i + \epsilon_i$$

$$\ln C_{id} = \beta_1 (Rain_{td} - Rain_{td-n}) + (\beta_1 + \beta_2) Rain_{td-n} + \theta_i + \epsilon_i$$

$$lnC_{id} = \beta_1 D_1 + \gamma_1 Rain_{td-n} + \theta_i + \epsilon_i$$

Where:

- lnC_{id} is the consumption of unit *i* in district *d*
- $Rain_{td}$ is the rainfall in level in month t and district d
- θ_i is a household fixed effect

Climate change effects on consumption

	Everyone (1)	Women (2)	Men (3)
Panel A: Household Consumption			
Effect	-0.0246***	-0.0134	-0.0255***
	(0.00286)	(0.012)	(0.00327)
HH FE	√	√	√
Observations	24068	2097	18887
Panel B: individual consumption			
Effect	-0.0287***	-0.0256***	-0.0316***
	(0.00148)	(0.00212)	(0.00207)
HH FE	√	√	√
Observations	126624	60767	65857

Climate change effects on consumption per quantiles using RIF-regressions

	Quantiles								
	10	20	30	40	50	60	70	80	90
Effect	-0.0175**	-0.0323***	-0.0324***	-0.0322***	-0.0338***	-0.0348***	-0.0267***	-0.0213***	-0.0130*
	(0.00873)	(0.00789)	(0.00727)	(0.00635)	(0.00582)	(0.00545)	(0.00540)	(0.00586)	(0.00692)
Household FE	√	√	√	√	√	√	√	√	√
Obs	24902	24902	24902	24902	24902	24902	24902	24902	24902

Climate change effects on inequality using RIF-decomposition

$$\ln(C_{id,t} - C_{id,t-1}) = \beta_1 D_1 + \gamma_1 Rain_{td-n} + X_i\delta + \rho_d + \epsilon_i$$

	Quantiles								
	10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**
Panel A: household consumption									
Consumption Before	1.19	1.74	2.16	2.54	2.88	3.2	3.49	3.81	4.25
Consumption After	1.19	1.72	2.15	2.53	2.84	3.15	3.46	3.78	4.22
Effect	-0.002	-0.017	-0.007	-0.013	-0.047**	-0.049**	-0.036*	-0.033	-0.024
Panel B: individual consumption									
Consumption Before	3.58	4.32	4.8	5.23	5.6	5.92	6.23	6.58	6.96
Consumption After	3.58	4.29	4.8	5.22	5.58	5.9	6.2	6.51	6.89
Effect	0	-0.026*	0	0	-0.019*	-0.023**	-0.032***	-0.065***	-0.065***

Next steps:

- Estimate the effect on a pooled sample using the IOFs 02/03, 08/09, 14/15 and 19/20
- Incorporate a model of climate predictions
- Study the mitigation effects of social protection policies
- Scale-up the project to as many African Countries as possible

Thank you

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