

Research Proposal for a bachelor thesis in Economics, Tim Dass

Motivation and research question:

Climate change threatens human wellbeing through a variety of channels, including an increase in extreme weather events, increasing temperatures and rising sea levels. Many of these effects disproportionately affect low-income, marginalized, and indigenous communities. Even though substantial amounts of development aid with adaptation and mitigation purposes go to middle- and low-income nations, low-income nations often face significant financing constraints when it comes to climate mitigation and adaptation. Low-income nations are not only exposed to the direct consequences of climate change, but also to substantial stranded asset risks, were they to develop in directions that don't align with mitigation goals. GHG emissions have historically been mostly emitted by developed western nations and those nations still tend to have very high per capita emissions. Due to this it can be argued that those nations have some responsibilities in aiding other countries to adapt to the consequences of climate change and mitigate further emissions. In doing this, several conflicting factors must be balanced against each other in a sensible manner.

One potential reason to give development aid to a country might be their ability to mitigate emissions. Today, a large number of climate related aid goes to middle-income countries because money in those places can have large impacts, for example by developing renewable energy sources or conserving large ecosystems. Brazil, for example, is a middle-income country and home to one of the largest forest ecosystems on earth in the Amazon. From a perspective of mitigation, it is very sensible to aid Brazil in protecting and reforesting this huge carbon sink. Another potential reason for development aid might be a countries' susceptibility to the consequences of climate change. Small islands might be especially vulnerable to rising sea levels and aiding them in adapting to this change can make a lot of sense. These two examples show the potential conflicts that can arise in the distribution of climate aid. The aim of this thesis should be to first develop and expand on these reasons for distribution and to secondly explore how development aid is currently linked to vulnerability to the consequences of climate change.

The aim of this project is to determine to what extent climate aid for mitigation and adaptation is given out based on recipient need, characterized by vulnerability. Additionally, it should be discussed which other factors affect the distribution of this aid.

Research design and Methods:

The work should begin with a thorough literature review on the reasons for giving development aid in the context of climate change adaptation and mitigation. Next to the perspectives mentioned above, factors such as countries' political situations, investment risks, trade relevance, media attention and historical dimensions should be considered. It might also be helpful to sort aid recipients into multiple characteristic groups based on this literature review. For example, aid recipients could be sorted into these three groups:

- 1) Especially prone to the consequences of climate change
- 2) Currently heavily expanding energy systems, large mitigation potential by investing into renewable energy over fossil fuels.
- 3) Home to large carbon sinks such as forest systems, large mitigation potential by conserving these systems.

This step should provide relevant context for the second stage of the process.

In the second step, the influence of recipient vulnerability to climate change on the amount of development aid received should be determined through linear regressions. Climate development aid per capita should be regressed on vulnerability and other confounding factors. Confounding variables include income per capita, investment risk, total development aid, population and domestic mitigation and adaption measures. Global climate development aid is relatively well tracked by the United Nations Framework Convention on Climate change ([Home \(unfccc.int\)](https://unfccc.int)). Their data sources on bilateral aid flows go from 2014 to 2022. This data is also often grouped into adaptation and mitigation finance, which could be used to regress only adaptation aid on recipient vulnerability. Alternatively, data from the OECD Creditor Reporting System could also be used. Several indices currently exist to measure vulnerability to climate change. ND GAIN ([Country Index // Notre Dame Global Adaptation Initiative // University of Notre Dame](https://climate.undp.org/country-index/)) measures countries' vulnerability and readiness with regards to climate change and could be used easily. Another potential index to measure vulnerability could be the Germanwatch global climate risk index. Besides a regression that includes all countries, running regressions for subsamples of countries according to the groupings of the previous steps might be able to show that vulnerability is especially important for specific subgroups of all aid recipients.

Key references:

- IPCC, 2023: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, 184 pp., doi: 10.59327/IPCC/AR6-9789291691647.
 - o Low-income countries are especially affected by climate change.
 - o The largest chunk of global development aid goes to mitigation and not adaptation.
- Arndt, C. and Tarp, F., 2017: Aid, Environment and Climate Change. Review of Development Economics, 21(2), 285–303, DOI:10.1111/rode.12291
 - o Today, climate change related aid makes up a significant part of overall flows and this aid is not necessarily only distributed to the poorest countries. Reasons for this are a changing distribution of absolutely poor individuals living more and more in middle-income countries, and the mitigation potentials of middle-income countries.
- Simon D Donner et al., 2016: Measuring and tracking the flow of climate change adaptation aid to the developing world. Environ. Res. Lett. 11 054006
 - o Analyzed data until 2012 for adaptation aid in Oceania and found that more vulnerable countries do receive comparatively more development aid. They also found signs of uneven distribution slanted to give smaller countries more funding per capita compared to larger countries.
- Weiler, F. et al., 2018: Vulnerability, good governance, or donor interests? The allocation of aid for climate change adaptation. World Development, Volume 104(65-77). Doi: <https://doi.org/10.1016/j.worlddev.2017.11.001>
 - o Analysis of data from 2010 to 2015 finding that vulnerability has a strong impact on adaptation aid received. Small island developing states receive the most adaptation aid.
 - o Relatively similar to my idea, although using older data.