



## The Regressive Effect of Climate Change on Social Inequalities: Analysis and Policy Recommendations

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### Abstract

Climate change and within country inequalities (or social inequalities) have traditionally been studied independently. This paper aims to put two of the most pressing global challenge of contemporary times in parallel and reflect on their relationship. Climate change impact tends to be regressive, falling more heavily on most marginalized and stigmatized groups in society, thus exacerbating existing inequalities. Besides, it includes an analysis of three ways through which climate hazards impact more vulnerable groups: greater exposure, higher susceptibility to damages, and less ability to cope and recover. These three channels trap climate change and social inequalities in a vicious cycle difficult to overcome. Empirical evidence on recent climate hazards is employed to support theoretical assumptions. The paper concludes with policy recommendations to break the vicious cycle and build resilience to climate hazards and ultimately reduce social inequalities. The pack of policies suggested goes from localized tailored actions to global engagement and multi-stakeholder initiatives.

Keywords: Social inequalities, within country inequalities, climate hazards, resilience

### Introduction

Climate change and growing inequalities are two of the most pressing challenges of contemporary times. The mentioned pitfalls have been traditionally approached from two independent angles. However, recent findings demonstrate the relational nexus that traps climate hazards and inequalities in a vicious cycle difficult to break.

The international discussion on climate change has been dominated by inequalities *across countries*. Mainly, the responsibility for causing climate change versus the responsibility from mitigating efforts. While *within country* or *social inequality* has received less attention. In this sense, the notion of climate justice relies upon the idea that higher income countries (HICs) produce more CO<sub>2</sub> and damages more the environment, while lower income countries (LICs), for their geographical location and less financial capacity to develop resilient territories, are more exposed to the adverse effects of climate change (Islam & Winkel, 2017). In this context, policies embracing climate justice have been designed to reduce the gap between countries.

For a long time, the discussion on the *impact* of climate change focused on the *physical* side (nature); with time, it paved the way towards the analysis on the *social* impact (the relationship with *poverty*) (Islam & Winkel, 2017). The study of the linkage between climate change and within-country inequalities took longer.

The IPCC's fourth periodical Assessment Report (AR) (2007) determined that socially and economically disadvantaged and marginalized people are disproportionately affected by climate change. This was one of the firsts reports advocating for such a novel perspective. It came to the conclusion that climate change exerts uneven impacts among countries and population groups. Further research drove experts like Skoufias to determine that "climate change impacts tend to be regressive, falling more heavily on the poor than the rich" (2012, p.6).

Nevertheless, the study of climate change's implications on social inequalities has been scattered and limited by spatial and categorical considerations. This paper seeks to overcome this weakness by assessing the regressive effects of climate variability on existing inequalities from a holistic approach.

Examining inequalities and draw conclusions for policy recommendations is rather challenging. It is therefore important to define which groups that will be under the umbrella of the study.

Multiple inequalities exist within countries and the term *social inequalities* are the category under which they are agglomerated. Figure 1 illustrates the breakdown of categories and groups that constitute the term *social inequalities*. In this sense, horizontal inequalities are those related to factors that determine the group's identity, such as ethnicity, race, caste, indigeneity or gender. While vertical inequalities are associated with income and wealth. Political inequalities are defined as the uneven representation and participation in decision-making most of the time based on status that is at the same time derived from horizontal and vertical inequalities within countries (Dalton, 2017). Needless to say, these various categories of discrimination are interrelated and intersectional. Socially and geographically disadvantaged people are exposed to various dimensions of discrimination (Islam & Winkel, 2017; IPCC, 2014, p. 796).

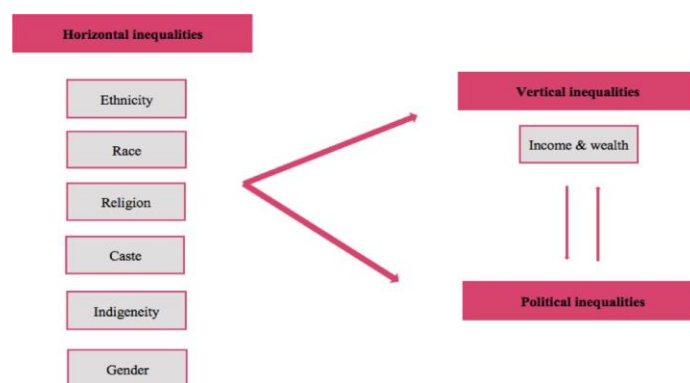


Figure 1 "Social inequalities": composition of categories and their relation. Figure elaborated by author.

Vertical inequalities are the easiest to identify and monitor, but they are the result of horizontal and political inequalities. For instance, marginalization and social exclusion are transformed into a reduction of social capital and access to community resources. In the same line, the consequential damages of an extreme event tend to be measured in monetary terms.

The term 'minority' is employed in this paper to refer to groups that are usually numerically

smaller, and who share a common religious, ethnic or linguistic identity different from the national majority (Baird, 2016). The aim of this paper is to center the scope on the effects suffered by the most marginalized groups in society. In this sense, enough evidence proves that ethnic minorities tend to live in the more marginal and exposed areas to climate impacts because they are often neglected by governments (Baird, 2014). Moreover, a study conducted in West Africa shows an interesting association of the concentration of ethnic (also religious) groups and the rural-urban split (Cavero, 2020). Employing a Civic Republican analysis of the case would show that the most vulnerable groups experience multiple types of dominations associated with the multiplicity and coexistence of inequalities they hold.

The relationship between climate change and social inequality is characterized by a vicious cycle. Initial inequality makes disadvantaged groups suffer *disproportionately* from the adverse effects of climate change, resulting in greater subsequent inequality.

Likewise, social inequalities result in more environmental degradation (Matin et. al., 2014). So we can affirm that inequalities harm climate change as well. The degree of exposure to climate hazards, susceptibility to damages driven by climate hazards, and capacity to cope and recover from climate hazards in many cases is determined by ethnicity. Of course, not exclusively on the ethnic group *per se* but for their conditionality on social and economic status. A greater understanding of the links between climate change impacts and inequalities within countries help to better tailor the design and implementation of policies able to simultaneously address climate change hazards and social inequalities. After an exposition of the different channels of the vicious cycle, the paper addresses policy recommendations to break the cycle, ranging from localized tailored responses up to global actions and cooperation to mitigate the disproportionate impacts towards marginalized groups and adapt to climate variations. The paper is global in scope since it approaches a challenge global in nature as climate change, but also because it considers the relationship between climate change and social inequalities in developing and developed countries.

### **The Vicious Cycle**

Climate hazards tend to have regressive effects, hurting disadvantaged groups more than others. The scheme in Figure 2 illustrates the dynamic of the climate change-inequality vicious cycle. The underlying relationship that determines the cycle is the following: the *initial* inequality makes disadvantaged groups suffer *disproportionately* from the adverse effects of climate change, resulting in greater *subsequent* inequality (Islam & Winkel, 2017).

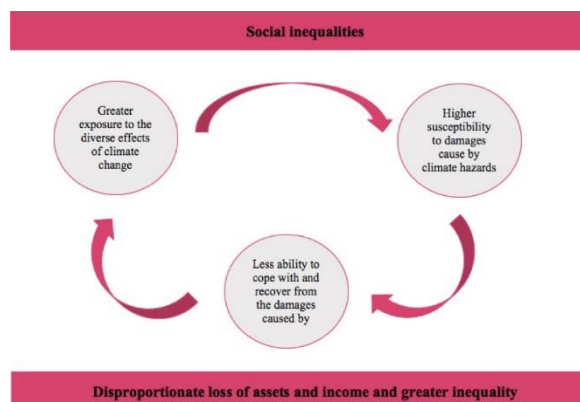


Figure 2. The dynamics and channels of the vicious cycle conformed by climate change and social inequalities.  
Figure elaborated by author

Climate hazards affect vulnerable groups of society disproportionately by (1) increasing the exposure to climate hazards; (2) increasing their susceptibility to damage; (3) decreasing their ability to cope with and recover from the damages stem from climate hazards. Previous studies on the inequality- climate change nexus also evidenced that various forms of economic, political and social inequalities are critical to exacerbate the impact of climate change on most vulnerable communities (UNDESA, 2016). This section examines each of the three channels by combining theory with empirical evidence of recent climate hazards.

### Higher Exposure

The World Economic and Social Survey prepared by UNDESA (2016) found out that exposure to the adverse effects of climate change is ascertained by the location where people choose or are forced to live. When narrowing the scope to ethnic minorities, we find an interesting yet disturbing association of the concentration of ethnic groups in certain regions within countries that coincides with the urban-rural split (Cavero, 2020). Particularly in countries of the global south, ethnic minorities either reside in rural areas that usually are neglected by central authorities in a country or in informal settlements of big megacities. Likewise, it is important to note that another determinant of the degree of exposure is the occupation and type of tasks performed (Islam & Winkel, 2017). In this sense, workers who rely more on weather conditions and the climate to perform their tasks or manufacture their products will be far more exposed to the effects of environmental degradation.

The research conducted by Braun and Abheure (2011) in Dhaka (Bangladesh) on the conditions of poor slum dwellers living in the megacity indicates their vulnerability to climate change. Most of the urban poor are forced to live in “extremely flood-prone areas” and the situation is likely to deteriorate by the effects of climate change on flood hazards (p. 772). In Vietnam, the agricultural sector has experienced the biggest losses, which is the largest income source for the most vulnerable people. Rural and ethnic households<sup>1</sup> register the greatest income reduction as a

<sup>1</sup> Particularly those living in Central Highland, Southeast and Mekong Delta regions are the hardest hit since these regions have historically most vulnerable to El Niño.

consequence of seasonal climate variability (Armando & Laderach, 2020).

The numerous reasons that push them to live in areas prone to climate hazards are usually associated with the cost of housing, which in some contexts combines with political and administrative restrictions arising from discriminatory policies (UNDESA, 2016). For instance, Mutter (2015) describes how the combination of economic and racial factors led to the higher concentration of low-income African American communities in the low-lying districts of New Orleans before Hurricane Katrina.

In sum, those who are the most exposed and vulnerable to climate variations are also the ones who are economically and socially disadvantaged and the least likely to have access to support system (UNDESA, 2016).

### **Susceptibility to Damages**

Even if diverse communities are exposed to the same level of exposure, the disadvantaged and more marginalized groups are more susceptible to suffer greater damage from climate hazards (Islam & Winkel, 2017). The IPCC report (2014) stands that, in Latin America, Afro-Latinos and indigenous groups suffer from disproportionate climate effects compared to 'white' persons. Two reasons are considered in the analysis of susceptibility to damages: flimsy infrastructure and lack of diversification of assets in contrast to those of the majority and wealthier groups.

Very often, heterogeneous groups live in the same area where the natural hazard strikes. As mentioned in the introduction, low income status intertwines with ethnicity (and racial) status. Their low economic status evidence that ethnic minorities' private infrastructure is highly vulnerable to the effects of natural disasters since their houses were built with considerable flimsier materials than those of wealthier households. During the severe monsoon flood that took place in India in 2007, Dalit's housing had suffered tremendous damage compared to those of higher casts (Baird, 2016). Furthermore, extreme temperatures and heat waves and their effects also impact unevenly on marginalized groups. Despite the effects of heat being less evident than the effects of more extreme events, they are as lethal and detrimental. A report of the International Labour Organization (2019) (Oficina Internacional del Trabajo in Spanish) shows that workers who works outdoors and are exposed to the sun while performing physical activities are more susceptible to damages from climate variability. This prognostic applies to undocumented migrant working as seasonal workers in fruit picking in South-Western Spain. In fact, a seasonal worker original from Nicaraguan died of a heat stroke while working during the summer 2020 in Lorca (Murica). The effects of extreme temperatures are also present in the informal settlements where they live which makes them more susceptible to the damages of extreme heat than other inhabitants of the region.

The second variable is the limited diversification of assets. For example, the rural poor tend to have their savings in the form of livestock, which is vulnerable to droughts (Nkedianye, et al., 2011). Low-income farmers in Uganda lost greater shares of income due to rainfall than the average farmer (Islam & Winkel, 2017). Also in Vietnam, ninety-six percent of rural poor

households derive their assets from agriculture (Armando & Laderach, 2020). Therefore, they are more vulnerable to economic damages in the aftermath of climate disasters which in the end enlarges the economic gap between groups.

Gender is an added variable in the susceptibility to damage that cannot be neglected in this analysis. Several reasons make women more susceptible to impacts of climate change than men. Dickin et. al. (2020) showcases the link between gender vulnerability and water availability in Burkina Faso. The collection of water for the household is a practice associated with women. In dry seasons this collection requires up to 70 minutes. Besides, water stress is increasing and the quantity is not sufficient to cover drinking needs and hygienic practices, in which the latter is usually given up in satisfying the former. The study reports as well that vulnerability to unsafe water has an ethnic component: ethnic Peul women are located further away from boreholes and, if available, they tend to get surface water. Likewise, conflicts are habitual in water collection points.

### **Less Ability to Cope and Recover**

The ability to cope and recover is the third channel through which inequalities intensify the impact of environmental hazards on disadvantaged groups. While the two previous channels –exposure and susceptibility –refer to situations that are *ex ante*, the situations that apply in the ability to cope and recover are *ex post* (UNDESA, 2016). Resources to recover take the form of (a) household resources; (b) community resources; (c) resources provided by non-governmental organizations (NGO), private companies or citizens; (d) public resources provided by the government (UNDESA, 2016). The existence of multiple and interlinked inequalities results in less access to assets necessary to cope and recover from the adverse impacts of climate change. From the four mentioned sources, particular attention is placed on (c) resources provided by NGOs, private companies or citizens and (d) public resources to better address the policy recommendations exposed in the following section.

Disadvantaged groups experience slower recoveries from climate hazards, in part because they endure the disproportionate loss of life, assets and income source. All of that leads us to conclude that, in the wake of climate hazards, different communities live different recovery trajectories; being those more marginalized the most painful and hardest.

One of the options that determine the recovery trajectory is the household's resources and capacity to diversify assets. Insurances are as well another key aspect in shaping the diverging paths in the recovery phase. However, not all groups have the same access to insurance and the more economically deprived groups are not able to buy insurance.

It has been argued throughout the paper that marginalized communities –especially the defined by ethnic differences –have constricted access to social and basic services. Leichenko & Silva (2016) argue that these groups also receive relatively fewer public resources to respond to climate hazards. Figure 3 illustrates three possible scenarios in which the degree of economic inequalities varies after a climate hazard struck. Inequalities might remain on the same level



(panel A), benefit wealthier households (panel B), or the impact on the poor might be so disproportionate that reaches a point where economic growth is very unlikely to happen (panel C).

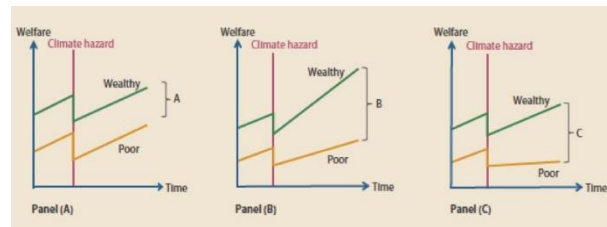


Figure 3. Differential rates of recovery from climate hazards of wealthy and poor households. Source: UNDESA, 2016 based on Mutter (2015) technical appendix

Following civic republicanism ideas, state intervention through public resources would be justified and necessary to bridge the gap economic gap.

Nevertheless, natural disasters have been perceived as an opportunity to force minority groups or less advanced economic groups out of their places of residency. These types of decisions are driven by the willingness to convert the territory into a more ethnic homogenized or to undertake a gentrification process. In the aftermath of the 1997 severe flooding that occurred in the Czech Republic, Roma families were treated very differently from 'white' families. While evacuating the affected area, white families were given flats outside the flood-affected district, Roma families were sent to makeshift cabins, or even back to homes that had been flooded (Bukovska, 2002). The other classical example used is New Orleans after Hurricane Katrina, where the African-American got less public resources to cope with and recover from the damage caused compared to that received by wealthier and white populations (Islam & Winkle, 2017). Discouraged by inadequate recovery efforts, many African Americans displaced by Katrina did not return, thus the share of African Americans decreased from 66.7 to 59.1 (Islam & Winkle, 2017).

Despite states having the obligation to protect the rights of minority groups, other agents also have a role to play in the aftermath of climate disasters. In this sense, international relief organizations are one of the most reliable sources of assistance after a disaster has devastated a territory. The World Report of Human Rights Watch (2009) establishes that after Cyclone Nagris struck Irrawaddy Delta in 2008 the government controlled and obstructed the disaster relief and international aid. Employing actions such as denying visas to disaster relief experts and aid workers, to discourage or co-opt civil society efforts. Only pro-government associations like the Myanmar Red Cross or the Union Solidarity and Development Association were allowed to operate in the Irrawaddy Delta. While denying the entrance of relief operations, reports have shown that Burmese authorities did undertake land confiscations, forced labour and forced evictions of displaced people.

Overall, the combined effect of these three factors – greater exposure, greater susceptibility to damage and less ability to cope and recover – trap climate change and inequality in a vicious

cycle in which the former aggravates the latter. The next section presents policy recommendations to break the vicious cycle of social inequalities and climate change.

### **Policy Recommendations to Break the Vicious Cycle**

The vicious cycle proves that social inequalities exacerbate the vulnerability and exposure of disadvantaged groups to climate hazards. Nevertheless, vulnerable groups are often overlooked in integrated climate impact assessments (UNDESA, 2016, p. 54). As has been presented above, access to essential services is inexistent in remote rural areas or territories where large concentrations of ethnic minorities are concentrated. Further governmental intervention would, in the first place, promote human dignity and reduce the unequal impact climate hazards have in each of the three identified channels.

Failure to reduce horizontal inequalities can have political consequences in the long run. A report conducted by SIDA (2018, p. 9) established that there is no *direct* relationship between the two variables, but there is a clear *indirect* linkage because the factors that play a role in increasing conflict are usually reinforced by climate change. In the case of inequalities and vulnerable groups, resource scarcity might fuel ethnic tensions, leading to violence, civil war, or genocides (UNRISDP, 2009).

To prevent such terrible prospects and adapt to climate change in an integrative manner, governments and other stakeholders could get engaged through different policies. Reducing inequalities is the most effective way to fight against social disparities. However, this is such an ambitious and optimistic goal to pursue in the short run. To provide an immediate response to the imminent threat, the mitigation of social inequalities should be promoted alongside development policies and adaptation to climate change. Building resilience to climate change is an essential component of sustainable development, yet a challenge with multiple dimensions. To fulfill this aim, multilevel governance and effective coordination among tiers of governments should be endorsed. The pack of development policies proposed in this paper compiles local and global policies.

Several case-studies have been introduced throughout the paper to empirically demonstrate the regressive effect climate hazards have on social inequalities. This broad portfolio of events demonstrates that there is no one-size-fits-all remedy for the complex emergency that menaces the world as a single unit. In line with this argument, national and local policies must be adapted to integrate the specificities of each territory. Following the philosophical standpoint of “civic republicanism” defended by authors like Pettit (2010) states have the obligation to intervene in order to reduce the resounding social inequalities persistent in their societies. Otherwise, inequalities will perpetuate over generations. Following this theory of justice, correcting horizontal inequalities is an obligation states must promote since this is the first sign of domination. It relates to the cultural identity of the state and evolves in exclusionary legislation associated with certain cultural groups. The desired society would be reached in the presence of cultural inclusivity and equal visibility (UNRISDP, 2009). Immediate and comprehensive adaptation actions that target with a particular emphasis ethnic minorities living in rural areas. Cavero (2020)



indicates three concrete policies to this end. Firstly, invest in essential services such as health and education targeting most remote rural areas and marginalized groups. Two conditions should be met. On the one hand, listening to local experts to identify pressing local needs. On the other, ensuring proper management of funds. As it has been proved, agriculture is a strategic sector for most of the vulnerable groups and it is also an area where climate hazards have a stronger impact. Hence, public spending should be dedicated to agricultural policies to provide: dignified work and assistance in the face of climate hazards, but also to strengthen the resilience capacity of the population most affected by ongoing disruptions by issuing mitigation and adaptation policies. Conversely, reforming tax systems is highly recommended. Ensuring sufficient and sustainable revenues to redistribute and better fund basic social services (Cavero, 2020, p. 106).

To be successful, nevertheless, these specific policy responses must become part of a broader development framework that sets the enabling conditions for the empowerment of disadvantaged groups. This will result in transformative change and sustainable development (UNDESA, 2016).

Climate change is a global challenge with local implications. This means that all the efforts dedicated by a single state to mitigate and adapt to its effects should be designed by a higher coordinating level. Although a coordinated global response would be difficult, the reduction of vulnerability towards climate hazards by most vulnerable groups must be a collective effort. The lack of a global government or higher supremacy leaves a power vacuum in which state and non-state actors should join forces to alleviate the effects of extreme events and assist those communities that are more exposed and vulnerable to its effects.

The 2030 Agenda for Sustainable Development offers a roadmap to build a sustainable future in which no one is left behind. Efforts to achieve SDG 11 “reduction of inequalities between and within countries” and SDG 13 “mitigation of climate change” would provide the right path to break the vicious cycle. A vicious cycle may replace the current devastating vicious cycle since the reduction of social inequalities would help to mitigate climate change and the other way around. Rather than following traditional notions of direct intervention, multi-actor dialogue at different levels is perceived as the most convenient channel. Partnerships among different actors to provide knowledge and resources sharing on more resilient territories and enhancing sustainability. In the same vein, it would be desirable to have enough data and indicators on the level of inequalities within countries and punish state practices that raise inequalities.

For better or for worse, global forces are now a major factor in the movement of inequality within and between countries. Climate change is a global challenge with local implications. Getting back to the idea of environmental justice and considering that the people who pollute the least are the ones paying the ones suffering the most the consequences of environmental degradation, could we call upon the international community to intervene to reduce the damages?

Shifting the scope to more localized responses, one issue remains clear: one-size-fits-all policies are not suitable to solve the equation. Still, there are several measures that different tiers of

government can adopt to reduce social inequalities and the exposure to climate hazard, susceptibility to damages, and improve the capacity to recover. Investing in essential services such as healthcare or education, listening to the needs

The magnitude of the problem urges for prompt action before reaching the tipping point in which the vicious cycle becomes a never-ending spiral. No single country is safe of the regressive effect climate degradation exerts on social inequalities. Equality should be a prime concern in climate policy. The vulnerability of certain groups derived from their position in society should be recognized and reversed by social policies at the national level and with the support of multiple stakeholders. The theory has proved that it is possible to fight inequalities by building sustainable societies, time is running to put it into practice.

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