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# FRAMING THE POTENTIAL OF CLIMATE CHANGE INTERVENTIONS TO SUPPORT POVERTY REDUCTION AND PROMOTE EQUITY WHILST REDUCING CLIMATE RISK

Sheona Shackleton, Nadine Methner, Darlington Sibanda, Roger Few, Mark Tebboth

TSITICA Transforming Social Inequalities Through Inclusive Climate Action
ARUA-CD Centre of Excellence Climate and Development
UK Research and Innovation
ACDI African Climate & Development Initiative
UEA University of East Anglia
ACEIR African Centre of Excellence for Inequality Research

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# Framing the Potential of Climate Change Interventions to Support Poverty Reduction and Promote Equity Whilst Reducing Climate Risk

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## *DISCLAIMER*

All opinions, interpretations and conclusions expressed in this Transforming Social Inequalities through Inclusive Climate Action (TSITICA) Working Paper are entirely those of the authors and do not reflect the views of the research funder UK Research and Innovation (UKRI).

## *ACKNOWLEDGEMENTS*

The Transforming Social Inequalities Through Inclusive Climate Action (TSITICA) project investigates how climate change action can be socially transformative in three contrasting African countries: Ghana, Kenya and South Africa. The research agenda addresses the nexus between climate change, sustainable livelihoods and multidimensional poverty and inequality to tackle the overall question: how can climate actions be deliberately targeted to improve livelihoods and lead to equitable benefits for the most vulnerable and poor – especially for women and youth? With the goal of inspiring climate actions that also reduce poverty and inequality, based on evidence and insights from the research, TSITICA aims to contribute the Agenda 2030 ambition of leaving no one behind.

The project team comprises researchers from two African Research Universities Alliance (ARUA) Centres of Excellence hosted by the University of Cape Town (UCT); researchers from the centres' regional nodes at universities in Ghana and Kenya; and collaborators from four universities in the United Kingdom:

- ARUA Centre of Excellence in Climate and Development, hosted by UCT's African Climate and Development Institute
- African Centre of Excellence for Inequality Research, hosted by UCT's Southern Africa Labour and Development Research Unit, School of Economics
- ARUA-CD and ACEIR nodes convened respectively by the Institute for Environment and Sanitation Studies and the Institute of Statistical, Social and Economic Research, University of Ghana
- ARUA-CD and ACEIR nodes convened respectively by the Institute for Climate Change and Adaptation and the School of Economics, University of Nairobi
- Grantham Research Institute on the Environment and Climate Change, London School of Economics and Political Science
- Townsend Centre for International Poverty Research, University of Bristol
- International Inequalities Institute, London School of Economics and Political Science
- Tyndall Centre for Climate Change Research, University of East Anglia
- Tyndall Manchester, University of Manchester

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# 1. Introduction

Chapter 5 of IPCC 1.5 special report (Roy *et al.* 2018), stresses that there can be no accelerated and scaled climate response unless we alleviate poverty, reduce inequality, and manage wasteful, unsustainable consumption. Climate change has been shown to exacerbate poverty and existing inequalities and vulnerabilities, as well as have the potential to reverse development gains. Persons who face intersecting inequalities due to discrimination based on gender identity, disability, race, ethnicity, economic status, age, among others, are among those groups least likely to be able to withstand the inevitable effects of climate change (Paul n.d.). Addressing poverty, inequality/inequity and climate risk must therefore go hand in hand; without this it is unlikely the vulnerability of the world's most marginalised social groups will be reduced (Eriksen *et al.* 2021). Many argue that climate change (linked to other forms of global environmental change), poverty and inequality are the greatest challenges we face in the world today. Poverty and inequality are rising (Leach *et al.* 2018), a situation that has been substantially worsened by the on-going COVID-19 pandemic (World Bank 2020c). The World Bank recently estimated that the COVID-19 pandemic could push as many as 100 million people globally into extreme poverty (World Bank 2020c). Simultaneously, each year the observed impacts from climate change related risks and threats are increasing (Roy *et al.* 2018). A sustainable future depends on securing the well-being of all humanity while operating within our planetary limits, including those related to climate change (Leach *et al.* 2018).

The last decade has seen the implementation of a growing number of place-based climate change adaptation and mitigation interventions that aim to deliver both climate resilience and multiple sustainable development goals (SDG) benefits. These interventions provide a window of opportunity for in-depth empirical research to assess their impacts on multidimensional poverty, inequality (MDPI), adaptive capacity and vulnerability amongst marginalised groups (Eriksen *et al.* 2021). If interventions are to target people who are disproportionately vulnerable to climate change, then it is critical to unpack the contexts and processes that result in both positive and negative (often unintended) outcomes for different social groups. A recent paper by Eriksen *et al.* (2021) highlights how many adaptation interventions have not necessarily benefited the most marginalised members of communities and how some interventions ``inadvertently reinforce, redistribute or create new sources of vulnerability". Since our research focuses on the ability of adaptation projects to reduce poverty, inequality, and inequity, as well as climate risks, we have used social justice as our entry point (Roy *et al*. 2018, Malloy and Ashcraft 2020) and concerned ourselves primarily with how selected interventions impact both positively and negatively on marginalised households and members of local communities in direct and indirect ways. Drawing on the words of Eriksen et al. (2021, pg. 8), through using a social justice lens we recognise that "adaptation actions are embedded within the exercise of power in socio-environmental contexts". This interpretation suggests that the focus needs to be on reducing

climate related risks and their social production and unequal outcomes across groups while shifting the socio-political relations that marginalise groups in decision-making. We discuss this further in the last sections of this document.

In the framing and conceptualisation of our study, we worked through the various literature and conceptual thinking that has emerged over the last 10-15 years on the human and social dimensions of climate change focussing in on the links between climate change and development, poverty, inequality and, more recently, equity, social justice, and transformation. The climate change and development literature generally integrates reference to poverty and inequality, although thinking specifically about the links between climate change and poverty at a microlevel received more attention after the report published by Hallgatte and Rozenberg (2017). These authors raise the importance of understanding climate change at household level, using a bottom-up approach. This was a significant move away from top-down understandings where aggregate impacts were estimated first, while the microlevel consequences were considered afterwards (Hallgate and Rozenberg 2017). The literature on climate change and inequality emerging around the same time often focussed on specific dimensions of inequality such as gender inequality, although the issue of intersectionality emerged strongly in the fifth IPCC report. More recently we are seeing a growing literature on the equity and justice dimensions of climate actions, linked to the need for transformative social change. Development, poverty and inequality and their links to climate change are closely entangled in the literature, and inequality is often used to include or equate to inequity. Chapter 13 of the AR5 IPCC report highlights the interconnections between all these dimensions of human well-being. The authors mention how inequalities perpetuate poverty to shape both differential vulnerabilities and the differentiated impacts that climate change has on individuals and societies (Olsson *et al*. 2014). Throughout this background paper, we provide definitions of key concepts and illustrate the linkages between these closely entwined dimensions of human well-being, vulnerability, and sustainable livelihoods.

In the sections that follow, we select out those aspects of this literature that we believe will be useful in developing a comprehensive framework and approach for assessing the poverty, inequality and equity outcomes of placed-based climate change interventions. We work to expand on approaches and criteria currently used to evaluate climate change projects, which often pay scant attention to the inequality and inequity dimensions of the intervention and the possible unintended outcomes (Eriksen *et al*. 2020). Eriksen *et al*. (2021) argue how assessments of climate change adaptation interventions have often narrowly focussed on technical or economic outcomes and/or project design and cost effectiveness, rather than the broader social impacts on different community groups and what this means for vulnerability, poverty and inequality and inequity. In our research, we are most interested in how projects can reduce inequality/inequity, benefit and build the adaptive capacity of marginalised members of communities, provide more secure livelihoods, and move beyond the 'status quo' towards the more transformative,

systemic change that is needed to enhance justice and fairness (Roy *et al.* 2018). Thus, drawing on Singh *et al.*'s (2021) typology of effective adaptation, in this research we view effective adaptation to be just and equitable as well as transformative (Box 1).

**Box 1:** Types of 'effective' adaptation framing applicable to this research (Source Singh *et al.* 2021)

Effective adaptation as just and equitable: A justice and equity framing of effective adaptation is normative and people-centred and explicitly focusses on winners and losers from both climate change impacts and adaptation action. Effective adaptation is about redressing imbalances in order to achieve more equitable adaptation and reduce socially unjust outcomes. It makes the case for ensuring that the most vulnerable are shielded from climate impacts and that their well-being is not compromised through actions to address climate change. This framing sees all three dimensions of equity as described below as important in implementing climate change actions.

Effective adaptation as transformation: A transformation framing of effective adaptation recognises adaptation as a process that fundamental changes human thinking and practices in the face of climate change and overtly challenges the power structures that generate vulnerability.

## 2. Key Insights from the Climate Change and Development Literature

"*Climate change and sustainable development must be a two-way street*" - (https://www.theafricareport.com/53604/africa-climate-change-and-sustainable-development-must-be-a-two-way-street/)

Some of the early thinking on the links between climate action (both mitigation and adaptation) and inequality emerged from efforts to conceptualise the nature of the convergence between climate change and development and what this means for both development and climate change policy and action (see Schipper 2007, McGray *et al.* 2007).

Development is a highly contested concept, which over the years has undergone significant metamorphosis. Early understandings of development were based on themes of social change, evolution, and progress (Bernstein 1972). Influenced by evolutionists, theories of modernisation shaped early thinking of development as 'progress' from traditional societies to modern societies, often demonstrated by Rostow's stages of economic growth (Rostow, 1965). In contrast, current dominant thinking views development as a "steady progress toward improvement in the human condition; reduction and eventual elimination of poverty, ignorance, and disease; and expansion of well-being and opportunity for all" (Esman 1991: 5). This

view places emphasis on societal transformation, and not necessarily Westernisation. Other opposing views have mainly been dominated by the causes of underdevelopment, often explained in the form of the exploitation of "third world' countries by the developed countries" (Graaf and Venter 2001). For Sen (1999: 3) development "requires the removal of major sources of unfreedom; namely poverty as well as tyranny, poor economic opportunities, systematic social deprivation, neglect of public facilities as well as intolerance or over activity of repressive states". This view embraces reducing poverty and inequality as a necessary component of development.

In our research we acknowledge that the concept of development is itself complex and often entangled in ideological constellations, but this complexity, if embraced, can provide a starting point to understanding poverty, inequality, inequity, and climate change. Recent work by Leach *et al*. (2018) suggests the use of 'Anthropocene' thinking to demonstrate the intertwined nature of human development and the co-evolving fates of sustainability and equity. Development, or the lack of development, and for whom, is a critical component of marginalisation and climate change vulnerability, and thus of climate change adaptation (Fankhauser and Burton 2011). Importantly, in the context of climate change, there has been increasing use of the concept of development pathways. Development pathways are "trajectories based on an array of social, economic, cultural, technological, institutional and biophysical features that characterise the interactions between human and natural systems and outline visions for the future, at a particular scale" (IPPC 2018: 555). Other scholars such as Leach *et al*. (2018) prefer to use the concept of transformative pathways as interventions which seek to address the challenge of solving sustainability problems and creating conditions for good and just lives for people today and in the future. The recently released IPCC AR6 WGII report emphasises the notion of climate resilient development pathways, i.e., development trajectories that successfully integrate mitigation, adaptation, and sustainable development to achieve the sustainable development goals (SDGs).

Thinking more specifically about the links between climate change and development from the perspective of climate change mitigation, development and inequality issues primarily relate to the fact that Africa has contributed little to greenhouse gas emissions yet is one the regions in the world most impacted by global warming. This has consequences for energy choices, but, at the same time, should not compromise opportunities for sustainable growth and economic development (Olsson *et al*. 2014). From the perspective of adaptation, it is well known that low levels of development can hinder adaptation across scales, while at the same time the accelerating impacts of climate change will have immense consequences for the economy and all dimensions of development, undermining achievement of most of the SDGs. These mutually dependent linkages are essential to understand in order to build long-term resilience to the impacts of climate change and other interacting non-climatic stressors in Africa.

Africa is often regarded as having an 'adaptation deficit' due to its constrained adaptive capacity linked to low levels of development and insufficient livelihood assets, often the result of poor access to services related to, for example, education, health, water, and finance (Shackleton *et al*. 2015). Furthermore, differential access to such assets results from unequal power relations and discrimination that marginalises some groups further (see the next sections). Consequently, climate change action that does not consider development issues simultaneously with poverty and inequality may not achieve the goals desired for a more resilient society going forward, as well as miss opportunities for significant development co-benefits. Particularly, addressing development or more specifically sustainable development is essential to tackling the underlying drivers, structures and processes like persistent poverty and inequality that make people vulnerable to climate change in the first place and that prevent them from adapting (Lemos *et al*. 2016).

The United Nations Agenda 2030 - the sustainable development agenda - specifically emphasises the importance of "leaving no-one behind" and advocates addressing poverty, inequality, and climate change (amongst 15 other goals) as specific goals essential for a more sustainable future. It is now widely accepted that much more attention needs to be given to issues of justice and fairness when tackling climate change and other SDGs. Improving equality and equity thus lie at the heart of the sustainable development agenda (Leach *et al*. 2018). Conceptualising sustainable development as "eradicating poverty in all its forms and dimensions, combating inequality within and among countries, preserving the planet, creating sustained, inclusive and sustainable economic growth and fostering social inclusion" indicates the essential role of climate change action in poverty and inequality reduction (UN 2020). According to Hope (2009), policies for sustainable development need to address the multiple challenges of supporting sustainable, climate-resilient growth, along with good governance, better jobs, better infrastructure, and better basic public services. Furthermore, adapting to climate change affords governments the ability to implement and/or scale-up appropriate plans for sustainable development, and with available international assistance (Hope 2009). Indeed, the IPCC emphasises that incorporating climate change into sustainable development strategies will result in win-win solutions (Roy *et al*. 2018).

The well-known work of McGray *et al*. (2007) (Figure 1) on linking climate change and development separates 'vulnerability to' and the 'impacts of' climate change along a spectrum or continuum. The left-hand side (LHS) of their continuum is orientated towards drivers of vulnerability, which are essentially seen by McGray and co-authors as related to broader sustainable development concerns, including tackling poverty alleviation and structural inequality. The right-hand side (RHS) relates to addressing the immediate and specific risks and impacts of climate change. These two sides of Figure 1 can be related to the notions of generic and specific adaptive capacity as conceptualised by other authors (e.g., Lemos *et al*. 2016, Box 2). Both forms of adaptive capacity (AC) are required to respond to

climate change risks and threats especially as these threats interact with other non-climate stressors like disease, conflict, and economic instability, for example. Similarly, both sides of the McGray *et al*. (2007) continuum are considered essential – "it is not enough to address only the drivers of vulnerability as climate change is so advanced in many areas that other types of adaptation are also needed. Likewise, confronting climate specific impacts alone will not change the drivers of vulnerability" (Funder et al. 2020). Despite this recognition of these inevitable linkages, Lemos *et al*. (2016) argue that "the relationship between building AC, development policy (especially anti-poverty programmes) and climate risk management has remained critically under-theorized and studied" (pg. 70).

In WP4 we plan to explore some of these linkages in our case studies through considering how climate actions or project interventions at the local level, and across different social groups, can address both development related issues as in Figure 1, as well as support generic AC, and climate risk or specific AC (Box 2). Ultimately development and climate action need to be synergistic to ensure climate resilience.


**Figure 1**: Climate change adaptation/development continuum (Source: McGray *et al*. 2007).

**Box 2:** Defining generic and specific adaptive capacity and their relationship to development and climate change action

Lemos *et al*. (2016) define specific capacities as manifestations of the ability to respond to and manage an identified climate hazard (e.g., drought emergency response plans, hurricane warning systems, climate forecasting, design and construction of protective infrastructure such as irrigation and public works such as reservoirs). In contrast, generic capacities refer to the ability to respond to more general social, economic, political, and ecological stressors (e.g., income, access to education and health, physical assets, social capital). There is an explicit two-way relationship between generic and specific capacities that needs to be explored empirically (Eakin *et al*. 2014). A minimum of generic capacity will be necessary to support risk management (specific capacity). Indeed, if levels of generic capacity are too low, systems could be trapped in a vicious cycle of exposure, sensitivity and coping rather than adaptation (Lemos *et al*. 2013).

Another important consideration at the nexus of development and adaptation are the governance arrangements from national to local level that influence how adaptation is implemented. We need to ask: who decides what policies to adopt, what interventions to make, and how are democratic debate and inclusion ensured in this process (Scoones 2015, Funder *et al*. 2020)? Without this it may not be possible to build resilience and adaptive capacity across all groups in society nor address the underlying causes of inequality and inequity. This is something that we discuss further under the section of climate change and social justice and equity and is an important part of our conceptual framing for this research but also for the TSITICA project as a whole.

Under this section on climate change and development, it is also useful to explore the linkages between livelihoods and climate action. The livelihoods framework was initially popularised by the UK's DFID as a way to consider development from a more integrated and bottom-up perspective that gives space to local needs and voices (Scoones 2015). The livelihoods framework sees access to and stores of assets (natural, physical, social, human, and financial) as underlying a person's or household's ability to cope with and adapt to stressors and to pursue their livelihood choices and desired outcomes. Bebbington (1999) takes this one step further and refers to assets not simply as resources to build livelihoods, but as also providing the capability to be and act. Access to these assets is influenced by policies, institutions, governance systems, and interventions, such as climate actions, that in turn affect the livelihood activities households or individuals employ and their outcomes (Scoones 2015). Differential access to assets, as mediated by processes and structures, can thus affect specific and generic adaptive capacity for different social groups as described above. Climate change can also directly impact assets, and the use of assets in responding to climate impacts can erode these same assets affecting future ability to respond. Moser (2011) has emphasised the value of asset-based approaches for considering adaptation. Despite some criticism of the livelihoods approach, for example lack of attention to power and politics, authors such as Scoones (2015) argue that it can still be a very valuable integrating approach that reflects people's lived realities, especially if it is linked into the political economy and more analytical questions are asked about why livelihood assets and options (bringing in ideas of capacity and capability) are like they are rather than merely describing them.

While above we have highlighted a view of development that is normative and that addresses Sens 'unfreedoms', sustainability and societal transformation, often the reality is that development is stuck in the old neoliberal model of economic growth at all costs. In this context, Eriksen *et al*. (2021) warn about the potential negative outcomes of 'retrofitting' climate interventions to fit with dominant growth orientated development agendas. They argue, as also described by McGray *et al*. (2007), that, while climate change action and development are not the same thing, they overlap and are interdependent. Addressing current and future climate risk without considering the broader transformations that are required to address

underlying structural concerns, exacerbates vulnerability and even provokes maladaptation (Eriksen *et al*. 2021). Retrofitting climate action without considering poverty and inequality can perpetuate those paradigms, discourses, and socio-political relations that produce poverty and inequality/inequity in the first place. This undermines the potential for transformative change and fair and just adaptation (Barnett and O'Neill 2010 in Olsson *et al*. 2014) (this is discussed further in the sections below on equity and transformation).

## 3. Key Insights from the Climate Change and Poverty Literature

*"Climate change can generate a vicious cycle of increasing poverty and vulnerability, worsening inequality and the already precarious situation of many disadvantaged groups"* - (World Social Science Report 2020).

There is consensus that climate change directly impacts the ability of countries to reduce poverty and achieve the SDGs. Further, as pointed out in earlier sections, climate change will worsen existing poverty and exacerbate inequalities, especially for those disadvantaged in different and multiple ways (Olsson *et al*. 2014). For example, poor children, the elderly, and women are particularly vulnerable to climate change (Kaijser and Kronsell 2014, Vinyeta *et al*. 2015). Poverty and other factors such as weak capacity, burden of disease and high population density have compounded the climate change threat in Africa (Hope 2009). Furthermore, in the African context, research shows that climate change will cause more harm to poor countries because poor people rely more heavily on natural resources for survival, and these natural resources are susceptible to destruction by floods, droughts and other changes caused by climatic change (Hope 2009). Murombedzi (2016) supports this argument, but he also adds that climate change not only exacerbates challenges faced by the communities, but also creates new competition amongst and between communities leading to social conflict. Bailey (2009) further argues that people's vulnerability is closely linked with poverty, as poor people tend to live in poorly constructed homes, often in communities exposed to environmental hazards such as floods, landslides, or droughts, and in areas lacking basic health services or infrastructure. Poor people tend to have fewer or no assets to cope with shocks, such as climate hazards and COVID-19, which can result in a 'new poor'. In the context of COVID-19, the 'new poor' are 'those who were expected to be non-poor in 2020 prior to the COVID-19 outbreak but who now fall into the poor category (World Bank 2020). According to the World Bank (2020), the COVID-19 pandemic will erase any poverty alleviation progress over the past three years and could potentially push 176 million more people into poverty (using the US$ 3.20 poverty line). Similarly, the increasing impacts of climate change could do the same;

vulnerability to climate change and poverty are thus deeply entwined as is their relationship to inequality and equity.

In the context of climate change, development and poverty reduction have been predominantly defined through economic lenses and climate policies that favour market-based responses using sector-specific and economic growth models of development (Olsson *et al*. 2014). Less attention has been paid to relational poverty, produced through material social relations and in relation to privilege and wealth (Sen 1976, Alkire and Foster 2011, UNDP 2011a). Townsend (1979) contends that poverty can best be understood as being relative rather than absolute and is not so much about a shortage of income but more to do with the inability of people with low incomes to actively participate in society. He describes 'the poor' as people who lack the resources to choose the diet they want, participate in community activities, and enjoy the living conditions and amenities which are customary, or widely encouraged or approved, in the societies in which they belong" (pg. 31). From Townsend's conceptualization of poverty one can argue that it is a sociological phenomenon which can only be meaningfully measured relative to the society in which individuals or households are based. O'Brien (2008) similarly argues that viewing poverty through a relational lens addresses the social and political contexts that generate and perpetuate poverty and structural vulnerability to climate change. A relational approach stresses the needs, skills, and aims of poor people while tackling structural causes of poverty, inequalities, and uneven power relations (Olsson *et al*. 2014). From a climate change impact perspective, it is also important to view poverty as a process rather than a state, with rapid and sometimes large fluctuations in incomes and needs adding an often-unpredictable dynamic that causes most spells of poverty to be brief but others long (Jenkins 2011).

In addition, the conceptualisation of poverty as being multidimensional (MDP) has become more common in the past few decades and is useful with regards to understanding how poverty and climate change interact. Poverty is influenced by social, economic, institutional, political, and cultural drivers, and its reversal requires efforts in multiple domains that promote opportunities and empowerment and enhance security (World Bank 2001). It is thus not just about income. Sen (1999) postulates the importance of 'capabilities and functionings' to bring out the actual experience of poverty and argues that multidimensional poverty analysis indicates what people can do and be rather than what they can purchase or what they have purchased. Aguilar and Sumner (2020) add to this and pose that multidimensional poverty analysis captures the actual experience of those living in poverty rather than the potential experience that purely monetary poverty measures may capture. For Statistics SA (2014: 2), a multidimensional measure seeks to incorporate a range of indicators to capture the complexity of poverty, and thus provides a more robust tool to better inform programmes and policies designed to fight it. For TSITICA WP4, some of the Alkire and Foster's (2011) dimensions and indicators (Table 1) linked to understandings of livelihood assets could be a useful approach to assess the poverty reduction outcomes of climate change interventions. Such an approach

can capture the complexity of poverty and how this may vary across localities and households.

**Table 1:** MDP indicators based on Alkire and Foster (2011) and the UNDP

| DIMENSIONS | INDICATORS | DESCRIPTORS |
|---|---|---|
| Health | Nutrition | Any adult or child in the household (for whom there is nutrition information) is malnourished |
| | Child Mortality | Any child has died in the household within the five-year period preceding the survey |
| Education | Years of Schooling | No household member has completed 6 years of schooling |
| | School attendance | Any school-aged child in the household is not attending school up to class 8 |
| Standard of living | Electricity | The household has no electricity |
| | Sanitation | The household's sanitation facility is not improved, or it is shared with other households |
| | Water | The household does not have access to clean drinking water, or safe water is further than a 30-Minute walk round trip |
| | Floor | The household has a dirt, sand, or dung floor |
| | Cooking Fuel | The household cooks with dung, wood or charcoal |
| | Assets | The household does not have at one information-related asset (radio, TV, telephone) and does not have at least one mobility-related asset (bike, motorbike, car, truck, animal cart, motorboat) or at least one livelihood-related asset (refrigerator, **arable land**, **livestock)** |
| Housing | | The floor is of natural materials, or the roof or walls are of rudimentary materials |
| Economic Activity | Unemployment | If all adults (aged 15 to 64) in the household are unemployed |
| Safety from Crime & Violence | | Individuals or communities are unsafe from crime and violence |

In addition to thinking about poverty as relational and multidimensional, it is useful, in the context of climate change, to distinguish how different types of shocks relate to poverty. One needs to understand if the shocks create a temporary decrease in income—but without irreversible impacts— or do they bring people into poverty for extended periods of time or have irreversible impacts on children's development and prospects (Hallegatte and Rozenberg 2017). Such an understanding of poverty helps to develop insights into differential approaches to designing climate adaptation interventions. As mentioned above, some commentators are starting to

view 'adaptation as development', where development is regarded as the foundation to adaptation (Olsson et al. 2014). In terms of assessing the links between climate change and poverty, most climate change studies do cover distributional impacts of climate change within countries or the impacts on poverty at a national or sub-national level (Hallegatte and Rozenberg 2017). However, there is less on the assessment of climate change impacts at the household level (Hallegatte and Rozenberg 2017). Using a bottom-up approach, Hallegatte and Rozenberg (2017) found that poor people may be heavily affected by climate change even when impacts on the rest of the population remain limited. This approach is based on assessing individual or household vulnerability rather than macro-level aggregates and estimates based mainly on gross domestic product of a particular country. Hallgatte and Rozenberg (2017) also found that because poor people already live in multi-stressful environments, they tend to lose more relative to their wealth when they are affected by a shock than those who are more well off, and poor people receive less post-shock support from friends and family, the financial system, and social safety nets. In the same study, as mentioned above, they also found that poor people are more often exposed to floods, droughts, and extreme heat. Further, climate-related shocks often keep poor people trapped in poverty by regularly wiping out their assets and by making it difficult to re-acquire these assets (see Sallu *et al.* 2010).

## 4. Key Insights from the Climate Change and Inequality Literature

**"***We cannot deliver sustainable development without tackling climate change, and we cannot tackle climate change without tackling the root causes of poverty. Gender inequality is a root cause of poverty. It will only worsen if the injustices of climate change and gender inequality are not tackled together, and fast*" - (Otzelberger 2014).

An improved understanding of the complex linkages between climate change and development and climate change and poverty have led to the question of what underlies the dynamics observed. It is now well established that climate change affects poverty, but less is known about the mechanisms and processes, or root causes, through which this happens.

This initiated an exploration of the climate change-inequality nexus (see Boxes 3 and 5 for definitions of inequality). Most work to date has focussed on between-country inequality in relation to GHG emissions and climate change mitigation, with much less on the links between social inequality and climate action within-countries or at the local level (Islam and Winkel 2017). As is the case with poverty, climate change will likely exacerbate existing inequalities (IPPC 2014: 769, Islam and Winkel

2017, UN World Social Report 2020), while at the same time growing inequality is likely to undermine the ability of some social groups to cope with and adapt to climate change. Olsson *et al.* (2014) in the AR5 IPCC report stress that specific livelihoods and poverty alone do not necessarily make people vulnerable to weather events and climate. People who are socially and economically disadvantaged because of structural inequalities related to class, race, ethnicity, gender, religion, etc. are often at more risk to the impacts of climate change and extreme events (Eriksen *et al.* 2021). Marginalised people are typically poorer, have fewer assets and little voice in decision-making and therefore may be more vulnerable and have lower adaptive capacity than those who are less disadvantaged because of their identity or where they live. Consequently, there is a need to look more closely at 'who can adapt and who cannot and why' paying attention to underlying structural factors. For this reason, inequality in the climate change space is often linked to and reflected in work that considers vulnerability; for example, differentiated vulnerability to climate risk is often seen as the result of inequality and marginalisation. In pursuit of a unifying framing, Islam and Winkel (2017) advance a framework for understanding the links between inequality and climate risk that aligns closely with the concept of vulnerability. They propose that certain inequalities may increase the exposure of disadvantaged social groups to climate hazards, while at the same time increasing their susceptibility to the impacts of these hazards and decreasing their ability to cope, adapt and recover. Basically, inequality makes certain groups of people more vulnerable. This framework has also been adopted in the climate change chapter of the recently released UN World Social Report (2020) that focuses on inequality in a changing world.

While there is enhanced recognition of the need to understand the climate change-inequality nexus better through moving beyond just income inequality (Box 3), there is scant research at a local level, particularly considering within community or between household inequality across multiple dimensions (although gender has received more attention as discussed below). Inequality, like poverty, is also multi-dimensional. The 2016 World Social Science Report (SC, IDS, UNESCO 2016) highlights seven dimensions of inequality - economic, political, social, cultural, environmental, spatial and knowledge-based - as provided in Box 3. These dimensions can be related to having limited access to the five livelihood capitals that are so important for adaptive capacity. Similarly, the Multidimensional Inequality Framework (MIF) (Knight *et al.* n.d.) that draws on Sen's capability approach rejects a focus on income and defines people's lives in terms of a set of valuable things that they can be or do, emphasising capability-inequality rather than the capability deprivation. The domains covered include life and health, security, education and learning, living conditions, voice and social life (Box 3).

**Box 3**: Intersecting dimensions of inequality used in the 2016 World Social Science Report and MIF report

Much inequality research has focused on income inequality. However, there are other important aspects of inequality to consider in relation to climate action. These different dimensions are covered in two frameworks below. The ability to achieve the capabilities listed in the MIF will be partly determined by the types of inequalities listed in the 2016 World Science Report. Inequalities in capabilities will be determined by who you are, where you live and what you know and the structures that underly this. A lack of MIF capabilities will likely make one more susceptible and vulnerable to climate risks.

**2016 World Social Science Report dimensions of inequality**

**Economic inequality**: differences between levels of incomes, assets, wealth and capital, living standards and employment.

**Social inequality**: differences between the social status of different population groups and imbalances in the functioning of education, health, justice and social protection systems.

**Cultural inequality**: discriminations based on gender, ethnicity and race, religion, disability and other group identities.

**Political inequality**: the differentiated capacity for individuals and groups to influence political decision-making processes and to benefit from those decisions, and to enter into political action.

**Spatial inequality**: spatial and regional disparities between centres and peripheries, urban and rural areas, and regions with more or less diverse resources.

**Environmental inequality**: unevenness in access to natural resources and benefits from their exploitation; exposure to pollution and risks; and differences in the agency needed to adapt to such threats.

**Knowledge-based inequality**: differences in access and contribution to different sources and types of knowledge, as well as the consequences of these disparities.

**MIF domains of inequality**

**Life and health**: inequality in the capability to be alive and to live a healthy life.

**Physical and legal security**: inequality in the capability to live in physical safety and legal security.

**Education and learning**: inequality in the capability to be knowledgeable, to understand and reason and have the skills to participate in society.

**Financial security and dignified work**: inequality in the capability to achieve financial independence and security, enjoy dignified and fair work, and recognition of unpaid work and care.

**Comfortable, independent and secure living conditions**: inequality in the capability to enjoy comfortable, independent and secure living conditions.

**Participation, influence and voice**: inequality in the capability to participate in decision making, have voice and influence.

**Individual, family and social life**: inequality in the capability to enjoy individual, family and social life, to express yourself and to have self-respect.

These different aspects/dimensions of inequality interact to shape people's lives by creating a vicious cycle of inequality. Understanding these interactions and how they affect vulnerability and adaptive capacity as well as what might be needed to support adaptation amongst groups disadvantaged by these inequalities is crucial for reducing the impacts of climate change. Chapter 13 of the IPCC AR5 report (Olsson *et al.* 2014) highlights that socially and geographically disadvantaged people – including people facing discrimination based on wealth, gender, age, race, class, indigeneity, and disability – are particularly vulnerable to and affected by climate change hazards. Figure 2 below is useful in that it highlights various other dimensions of marginalisation, and its antonym namely privilege, such as level of education, sexual orientation, status in society, and language amongst others already mentioned and what this means for power relations in a particular space such as an office or community. While it is critical to focus on the most vulnerable, the other side of the coin is to also understand who is privileged and why and what this might mean for fair and just climate change interventions. Elite capture, due to say political power, is an issue that has been reported in adaptation studies as well as other community-based approaches (e.g., Kita 2018) and is important to explore in this research.

While there is limited research on the intersecting dimensions of inequality and what this means for adaptation to climate change, gender inequality (Box 4) has received much more attention (e.g., Otzelberger 2014, Shackleton *et al.* 2014). However, most of this work is quite binary and does not explore the intersection of gender with other social differences nor what the gender structure and composition of households may mean in terms of inequality, vulnerability, and the ability to adapt. Such evidence is required to understand whether and how climate change interventions can increase generic and specific adaptive capacity, the adaptation options for people and ultimately the livelihood security of all community members involved in a project, or at least for those without the capacity to adapt. Understanding these aspects is a key part of our research. Indeed, since inequality shapes adaptation outcomes, it must be accounted for in project design, implementation and evaluation. Without this, interventions may be ineffectual or create new vulnerabilities (Eriksen *at al.* 2021).

**Box 4**: Gender inequality

"Gender inequality is a long-standing and pervasive social injustice. Gaps in gender in life chances, opportunities, resources and rewards between women, men, girls and boys continue to exist worldwide. In some countries these gaps are growing, while in others they are shrinking, but nowhere in the world have they yet been fully overcome. True, the global community has in recent years made great strides when it comes to signing agreements and conventions that promote gender equality. But real and tangible action lags far behind the rhetoric. For example, men continue to hold the vast majority of top positions in political and economic spheres. And violence against women and girls continues to be endemic worldwide" (Oxfam website).

"Gender inequality is not perpetuated exclusively through differential access to and control over material resources. Gender norms and stereotypes reinforce gendered identities and constrain the behaviour of women and men in ways that lead to inequality" (UNDP, 2013, Humanity Divided: Confronting Inequality in Developing Countries, Chapter 5).

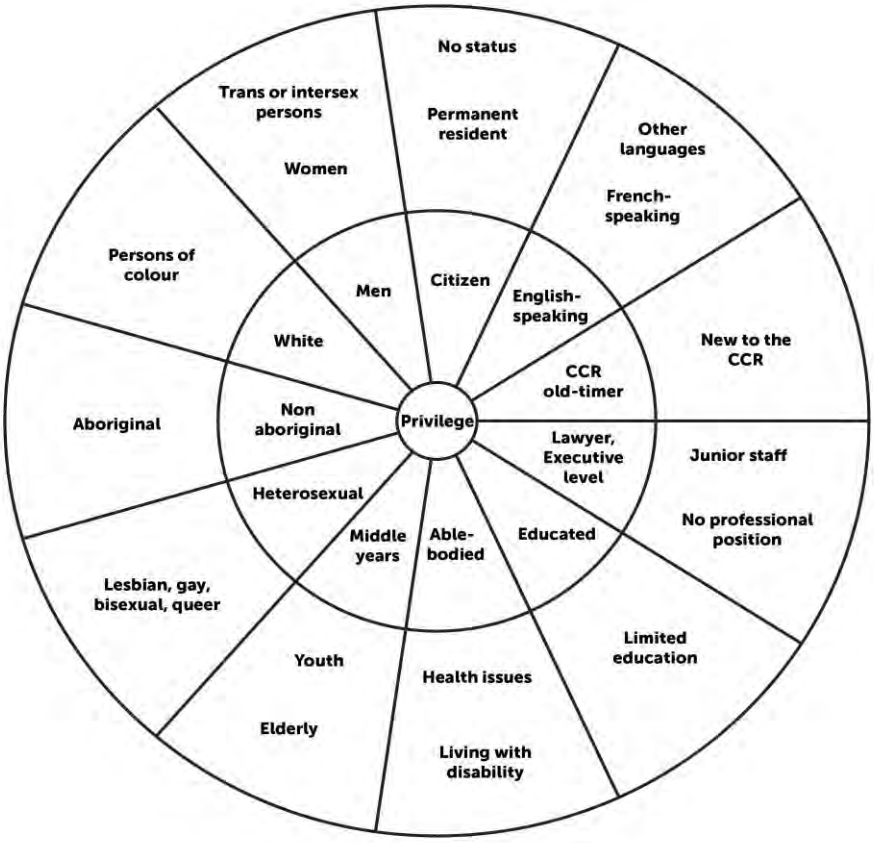


**Figure 2**: Power Wheel – this provides an effective illustration of how multiple dimensions of inequality can play out in any given space in relation to power (Source: CCR Web).

While related to inequality (Box 5), interestingly, there appears to be more research in the climate change adaptation space that takes a social justice and equity framing often in relation to vulnerability and transformative adaptation. This is probably a consequence of the more recent focus on the underlying structural causes of differentiated adaptive capacity linked to the transformation discourse (e.g., Fazey *et al*. 2018).

**Box 5**: Equality versus equity

Equality and equity are often treated as synonyms (see World Social Science Report 2016), but they are not necessarily the same. Equality strictly refers to treating everyone in the same way and giving them the same resources and opportunities, while equity recognises individuals' different circumstances and ensures that everyone has what they need for wellbeing and livelihood security in a given context – i.e., this means providing more for those that need it (Leach *et al*. 2018). In our research we will focus on equity

since the most vulnerable groups to climate change, who face many barriers and lack assets, may need more to adapt (see next section). However, like the World Social Science report (2016) we do recognise equality, equity and justice as closely related and part of the same coin. We use the following definition of inequity from Leach *et al*. (2018). The concept of equity embodies the notion of fairness and justice from a material (means and capacities) and moral (representation and treatment) perspective as well as recognises individuals' different circumstances. What is viewed as equitable, and fair is strongly influenced by the accepted social norms and values in a given society. Hence, what is equitable may vary across cultures, contexts and times.

## 5. Key Insights from the Climate Change, Vulnerability, Social Justice and Equity Literature

*"Social justice and equity are core aspects of climate-resilient development pathways for transformational social change"* - (Roy *et al*. 2018)

As has been highlighted above, vulnerable and marginalised groups have been shown to be disproportionately impacted by climate change (Olsen *et al*. 2014, Mummery and Mummery 2019). Malloy and Ashcraft (2020) caution that failure to account for justice and equity considerations in climate adaptation planning and implementation limits the overall success and sustainability of climate adaptation efforts and reinforces existing vulnerabilities among already marginalised groups. Indeed, it has been argued that for the most part climate change adaptation and mitigation interventions have reinforced existing inequality and inequity, often benefitting the most powerful actors (e.g., Eriksen *et al*. 2021).

One of the issues highlighted by Malloy and Ashcraft (2020) is that adaptation scholarship and practice has until now placed too much emphasis on outcomes, neglecting the adaptation process and the role of agency. As a consequence, issues of power and links to inequity often remain unacknowledged. For example, many climate change interventions are implemented through existing planning processes and regulatory mechanisms that favour elite interests and that are inaccessible to poor and marginalised groups. It is therefore not surprising that for the most part marginalised members of communities have almost no say in adaptation decisions that affect them.

Eriksen *et al*. (2021) in a recent study that assessed the impacts of internationally funded adaptation interventions on social vulnerability, highlighted several mechanisms that undermine equitable vulnerability reduction. These included insufficient understanding of contextual vulnerability, inequitable participation in planning and implementation of interventions, and the retrofitting of adaptation into dominant, neoliberal development assistance and processes. These mechanisms can reinforce, redistribute, or create new sources of vulnerability. The authors point out the need to acknowledge vulnerability as relational state or

concept i.e., socially differentiated vulnerability is created through socio-political relations, such as gender and race relations as has been discussed in the previous section. Hence, to reduce the vulnerability of marginalised groups requires a deep understanding of the root causes of vulnerability, including how the vulnerability of marginalised groups is related to inequities in resource access, uneven power and to structural biases at a higher level. The inadequate participation of marginalised groups in the planning and implementation of projects also contributes to the lack of a deeper understanding of how multiple causes of vulnerability affect groups differently. In instances where climate change projects are co-opted into unsustainable development agendas, limited opportunity for addressing future climate risk and the socio-environmental causes of vulnerability exists, since the conditions and factors that contribute to existing vulnerability are not questioned or contested (Moser *et al*. 2021).

Given the importance of understanding how climate change interventions address equity to reduce the vulnerability of the most marginalised members of society there is a need to further unpack what is meant by equity. Leach *et al*. (2018) and other researchers (e.g., Zafra-Calvo 2017, Bennett 2020), drawing on theories of justice (Rawl 1971, Schlosberg 2009, 2012) and the earlier work by Fraser (1995, 2009), recognise several dimensions of equity that need to feature in any intervention to ensure fair and just outcomes. These authors provide a useful framing which we intend to operationalise for assessing how climate change projects impact both positively and negatively on marginalised individuals and households. The framework from Leach *et al*. (2018) (Figure 3) highlights the need to distinguish between 'equity of what' referring to different types of means and capacities and 'equity between whom', i.e., how disparities are distributed and experienced based on various dimensions of difference (reflecting the two inequality frameworks mentioned in the previous section). They differentiate between three types of equity, namely distributional, recognitional and procedural equity. **Distributional equity** "refers to how resources, costs and benefits are allocated or shared amongst people and groups", while r**ecognitional equity** "refers to acknowledgement of and respect for identity, values and associated rights". **Procedural equity** highlights "how decisions are made, and the extent to which different people and groups are able to influence these or have their perspectives represented or incorporated. It relates closely to political inequity and to broader debates on power and voice, and the ways these operate through both formal and informal institutions and spaces at local, national and international scales". While recognitional and procedural equity are overlapping, the former is concerned with social recognition and the latter with political participation.

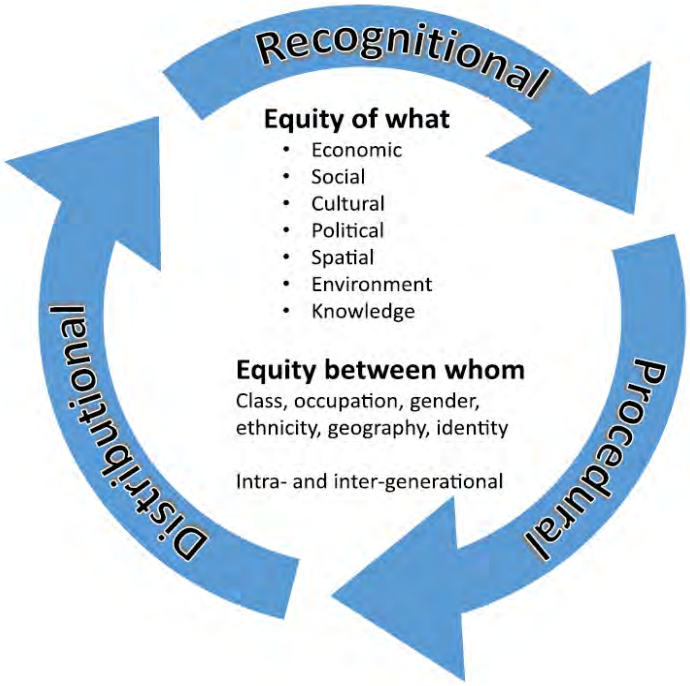


**Figure 3:** Different forms of equity which need to be considered in the context of social difference (equity btw whom) and the different types of means and capacities (equity of what) (Source: Leach *et al*. 2018).

This framework recognises that until now equity has been largely discussed in relation to distributional equity in terms of outcomes. However, it is important that individuals are recognised in terms of their rights and beliefs and as full participants in decision-making processes (Schlosberg 2012, Fraser 2014). This is covered by recognitional and procedural equity. Recognitional equity is critical for acknowledgment of existing rights and values but also an important prerequisite for groups and individuals to determine for themselves how resources, opportunities and institutions are best utilised for developing future climate resilient pathways. Yet recognition of one's place and rights in society is not sufficient. Only when vulnerable and marginalised groups are given real decision-making powers, e.g., through procedural processes rather than just 'a symbolic seat at the table' are they able to shape the decisions that affect them, including the distribution of cost and benefits of specific actions. Hence, all three types of equity reinforce each other and together play an important part in CC adaptation and mitigation planning.

Yet, as Malloy and Ashcraft (2020) point out even when mitigation and adaptation is framed around equity it still lacks a substantive connection to sources of injustice. Working towards equitable climate interventions can help prioritise the needs of vulnerable and marginalised groups and promote the redistribution of resources, as well as increasing adaptive capacity. But they often fail to address the large structural causes of inequity. Hence the focus often remains on assessing and addressing local level vulnerability rather than addressing the underlying root causes of this. The authors continue to say only when adaptation is framed as transformation, i.e., challenging and dismantling existing structures which form the

root causes of inequality and injustice, can real change happen. This requires working across scales.

## 6. Key Insights from the Climate Change and Transformation Literature

*The heart of transformation "involves going beyond our current ways of being and doing and embracing the unfolding of humanity's collective capacity and potential to collectively shift systems and cultures, while also ensuring that transformations are equitable, inclusive, and not the least, sustainable"* - (Vogel and O'Brien 2021)

The term transformation in sustainability research and practice "is often described as significant reordering, one that challenges existing structures to produce something fundamentally novel" (Blythe *et al.* 2018: 1207). It is associated with radical change in structural, functional, relational and cognitive aspects of a social-ecological system (SES) or socio-technical system (STS) leading to new patterns of interactions and outcomes (Patterson *et al.* 2017, Scoones *et al.* 2020). Others have described it as opening spaces to restructure and reimagine radically different futures. In more recent years, calls for deliberate transformation from a social justice lens have intensified. Fazey et al. (2018: 205), for example, point out that "many contemporary challenges are deeply rooted in, and reinforced by, massive global inequalities which are particularly emphasised in the context of climate and development." They continue to argue "addressing issues of social justice is therefore critical when thinking about transformation" (Fazey *et al.* 2018: 205).

The concept of transformation has been of interest to climate change researchers and has also gained traction in the global climate change policy debates. The fifth IPCC assessment report dedicated an entire chapter on transformation pathways (Clarke *et al.* 2014). Chapter 20 in the 5th IPCC assessment report highlights that to "promote sustainable development within the context of climate change, climate-resilient pathways may involve significant transformations" (Denton *et al.* 2014: 1105). The IPCC AR5 defines transformation as "a change in the fundamental attributes of natural and human systems. Transformation could reflect strengthened, altered, or aligned paradigms, goals, or values towards promoting adaptation that supports sustainable development, including poverty reduction" (Field et al. 2014:5). In climate science and policy, transformation is often contrasted to adaptation, with the former being seen as radical and fundamental change and the latter as incremental change (O'Brien 2012, Pelling *et al.* 2015). Within the field of climate change adaptation, transformative adaptation has been highlighted as "an opportunity to reconfigure the meaning and trajectory of development" (Pelling 2011: 167). Eriksen *et al.* (2021: 3) emphasise that "transformative adaptation

requires shifting inequitable socio-political relations as well as the worldviews and paradigms within which they are (re)produced (Eriksen *et al.* 2021: 3)". While the term transformational and transformative adaptation are often used synonymously, Few *et al.* (2017) find it helpful to differentiate between the two. They refer to transformational adaptation as adaptation that takes the form of transformation (transformation of adaptation practice) and transformative adaptation as adaptation that generates transformation (transformation of broader aspects of development through adaptation activity) (Few *et al.* 2017: 5).

Ambiguity in the framing, justification and practice of the concept exist in the field of climate change (e.g., Few *et al.* 2017) as well as in broader sustainability science (e.g., Ziergvogel *et al.* 2016). Blythe *et al.* (2018) point out that in comparison to adaptation and resilience, transformation does not yet build on well-developed theory or accepted practices and strategies. They highlight several latent risks that may arise when attempting to translate the academic concept into sustainable development prescriptions i.e., moving from describing to prescribing. They caution that viewing transformation as apolitical and not paying attention to these risks might undermine the intention (creating desirable and sustainable futures) and create more harm to already vulnerable groups.

During the last decade there has been an increasing interest in theorising and supporting transformation. In a recent review Scoones et al. (2020) highlight three conceptualisations of transformation. Rather than seeing these conceptualisations as competing, the authors illustrate via examples how these complement each other and provide distinct but overlapping analytical lenses for understanding social processes that generate transformative change. These are summarised in Box 6.

**Box 6:** Scoones *et al.*'s (2020) three interconnected conceptualisations of transformation

**Structural approach**: fundamental changes of consumption and production, key moments, focus is on desired configuration of the system, good understanding of economic and political processes, past transformations, limited acknowledgement of other system components and human agency, causal linkages.

**Systemic approach**: system thinking, complexity and uncertainty, non-linear interactions, emergence and innovation, focus on managing system dynamics in social-ecological (innovation, adaptation, adaptability) and social technical systems (niche, regime, landscape) and social technical studies multiple scales, dominated by Global North and Western ideas, limited focus on agency, reordering of socio-ecological relations.

**Enabling approach**: focus on capacities to take action, process oriented, individual smaller actions over time collectively lead to system shifts, emancipating values, relations, power dynamic new pathways.

These authors highlight that for transformations to be not only ecologically beneficial, but emancipatory for the most marginalised people requires the combination of the three approaches, the consideration of diverse knowledges as

well as the acknowledgment of plural pathways and the political nature of transformations.

Fazey *et al.* (2018) look at transformation through three dimensions: the depth (intensity or quality), breath (distribution) and speed (timeframe) of change in the social, environmental, and technical domain. When considering all three dimensions it becomes clear that making dualistic distinctions between transformation and incremental change is too simplistic if the three dimensions are not considered together in the context of the specific issue under consideration. They also highlight that whether something is considered to have transformed is inherently subjective and relative. Similarly, O'Brien (2018) who discusses transformation in relation to the 1.5℃ target cautions that "often the social complexity of transformation processes is downplayed or ignored in favour of technical solutions and behavioural approaches". She points out that it is important to look at the practical (technical and behavioural interventions), political (structures and systems) and personal (world view, values, and beliefs) spheres of social transformations. Yet until now the focus of climate change science, policy and action has been on the practical dimension and the importance of the political and personal dimension for providing conditions for practical transformation remains largely unacknowledged. While the personal sphere is the most challenging to transform it also provides the biggest leverage points for change. The author argues that reaching the 1.5℃ target requires "less attention to altering or manipulating people's behaviour [their carbon footprints], and more on creating the conditions that promote the development and expression of social consciousness and futures consciousness in all three spheres." This allows individuals and groups to view themselves as agents of change who actively contribute to systemic transformation rather than 'objects to be changed'.

Recognising the need for personal and behavioural change, Fazey *et al.* (2018) highlight the key role of social cohesion and the function and reproduction of community for achieving transformation in both the groups and individuals. The authors go on to say that "transformations in human consciousness involve epistemological changes in how people know what they know, as well as ontological changes in who they understand themselves to be" (Fazey *et al.* 2018: 209). "Humans have a capacity and potential to embrace more inclusive and non-dualistic perspectives in relation to other people and the environment and develop their social and ecological consciousness" (Fazey *et al.* 2018). Ziervogel *et al.* (2016) also highlight strong social cohesion as one of the three elements that underpin transformative capacity. The others are a well-developed sense of one's own agency as well as awareness and reconnecting to natural and human made systems that support daily wellbeing. Transformative capacity (which can be added to generic and specific adaptive capacity – see above) is needed to move from adaptation to deliberate transformation that is intended to disrupt existing power asymmetries which are the root causes of poverty and inequality. The authors argue that together

agency, social cohesion and reconnection to life support systems create the desire to affect change and create alternative pathways.

Important to note is that these different conceptualisations/understandings of transformation will lead to different actions. Few *et al*. (2017), who discuss different ways in which the term transformation is being used in relation to climate change adaptation, show that the conceptualisations range from avoiding environmental limits to those that envision a revolution in socio-political processes of development. They point out that when looking at transformation "as a mechanism for managing situations of environmental or ecosystem change that exceed the ability of human actors and/or natural systems to manage through incremental adjustments" the response/action is primarily focused on the environmental driver (Few *et al*. 2017: 2). Change is sought in adaptation practice i.e., it is about no longer adjusting a practice but adopting an alternative practice to address the so-called adaptation deficit/ limit (e.g., resettlement, new variety of crops). A critical social science perspective, on the other hand, takes a different approach to transformation and highlights the need to address/ challenge the underlying conditions that generate that driver or risk. They argue that this requires one to look closely at the social and political factors that create the underlying vulnerabilities and reduce adaptive capacity. Fazey *et al*. (2018: 210) similarly argue that transformation in relation to climate change is primarily a social process that "will require much deeper engagement with complex social processes, including culture, religion, ethics, values, governance, and ontologies of the future and human consciousness." Eriksen *et al*. (2021: 105383) furthermore highlight that "changes… within existing development paradigms may be required to engender transformation of the unjust development pathways that produce climate change as well as inequality and vulnerability". They therefore make a case that "it is the adaptation of organisations and experts – rather than the marginalised people and their livelihoods – that need to transform." This supports Blythe *et al*.'s (2018: 1209) observation that "common across most framings [in critical social science] is the premise that in order to address the root causes of inequality and environmental degradation, significant systemic changes that challenge existing structures are required". Hence, an important aspect of transformation is to contest underlying social, political, and economic structures that are the causes of marginalisation and inequality. This links the idea of transformation back to earlier sections of this document on the need to address the underlying causes of poverty and inequality and highlights the need for us to explore this as a critical component of our research.

In the case of our research we use a social justice lens on transformation. Social justice is an important ethical check in terms of the motivations for transformation, the participation process as well distribution of cost and benefits (Fazey *et al*. 2018). It also allows one to place more emphasis on existing power relations, underlying social and economic structures as well as global connections. These factors do not only shape current circumstances (including inequalities) but also attempt to restrict how futures can be envisioned and realised. In our research we will both work

towards considering how different climate change interventions could be made more transformative. We use transformation as a lens in terms of strengthening procedural, recognitional, distributional equity and for changing power relations. We see the learning that emerges from the research as critical for progressing towards more transformative, climate resilient development pathways.

## 7. Conclusion

This synthesis and analysis of the literature on the human dimensions of climate change, i.e., the interactions between climate change and development, poverty, inequality, inequity and justice has helped frame what is important to investigate for our research and has provided the basis for the questions we explore in the online survey and the in-depth interviews. Essentially, we focus in on how placed-based climate change interventions can contribute to reducing climate risk, poverty, inequality and inequity by understanding 1) how they impact livelihood assets and generic and specific adaptive capacity, and consequently the vulnerability and livelihood resilience of different social groups; 2) whether and how recognitional and procedural equity have been included in the design and implementation of interventions, thus ensuring that the voices and needs of the marginalised are acknowledged; and 3) who benefits, doesn't benefit, or bears the burdens of climate change interventions and how does this impact on poverty and inequality across different social groups. This understanding can then be unpacked in terms of important learnings for moving towards more equitable, transformative climate change actions that reduce poverty and inequality while simultaneously addressing mitigation and/or adaptation.

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