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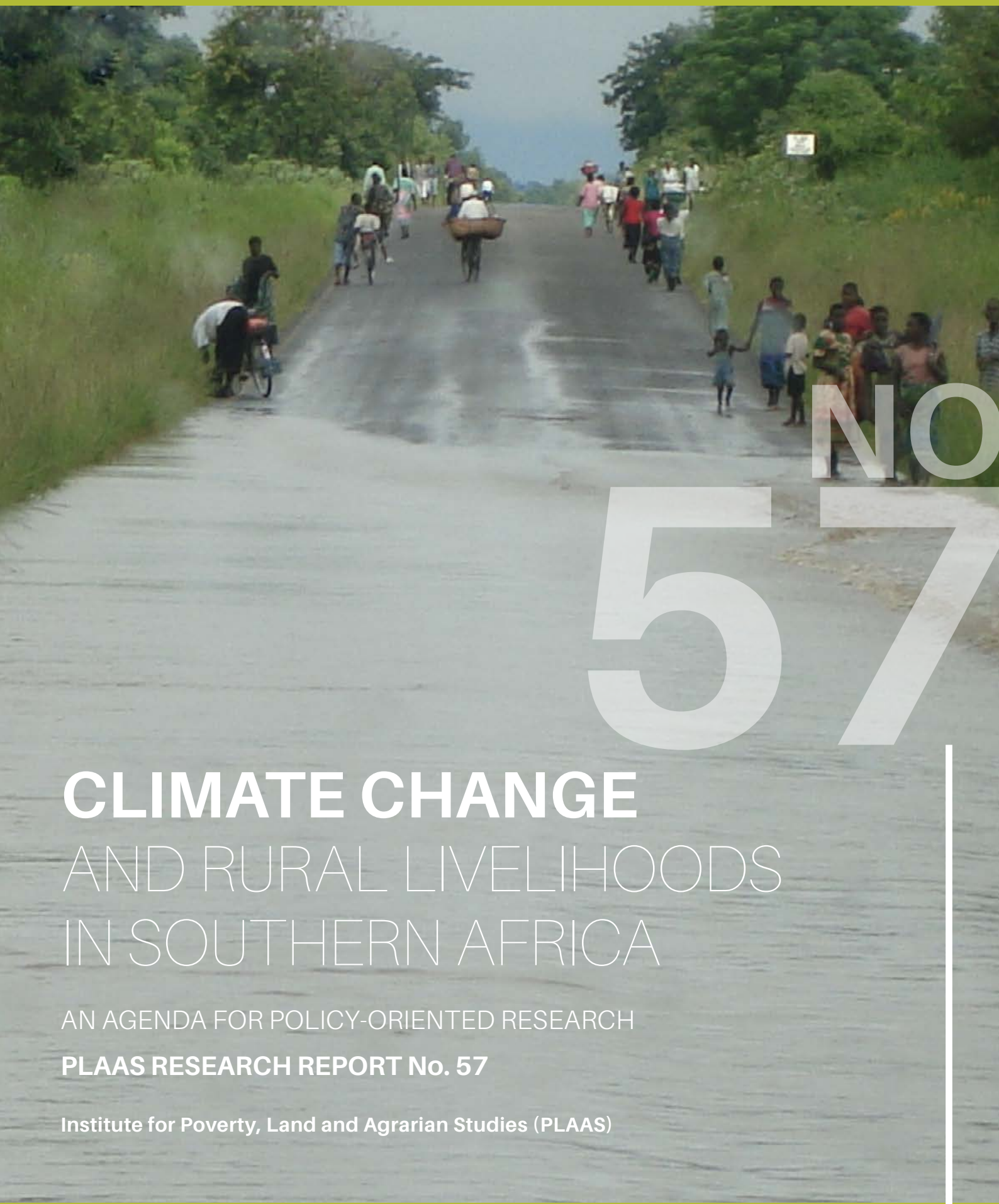

NO 57

CLIMATE CHANGE AND RURAL LIVELIHOODS IN SOUTHERN AFRICA

AN AGENDA FOR POLICY-ORIENTED RESEARCH

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EXECUTIVE SUMMARY

This report is the outcome of an extensive review of the literature and the debates on climate change and land-based livelihoods in Southern Africa.

In the context of the converging climate and food crises, it provides an overview of the politics of climate change, its impacts, and responses in Southern Africa, and sketches the outlines of PLAAS's research agenda on the intersections of climate change, agrarian change and rural livelihoods. As such, it is an open-ended document, intended to identify and formulate questions, not to present answers. The purpose of the report is to set out in broad terms the way in which seek to connect our work on agrarian change and rural livelihoods to the questions raised by the climate crisis currently facing our societies.

The report shows that *while Southern Africa is a climate change hotspot, it is a blind spot for responses.* Critical and impact-oriented social science research is urgently needed to inform responses in the region. Many Southern African states have low technical, institutional, and financial capacities to respond, and specifically to support adaptation. This is in no small part as a result of historical global inequalities, including the structural adjustment policies of the 1980s and 1990s. Between 1990-2019, climate research on Africa received only 3.8% of global climate-related research funding, 78% of the institutions receiving funding are situated in the European Union and North America, and only 14.5% are African institutions. This has implications for the priorities for research, the kinds of research carried out, the extent of research, and the locus of climate change leadership on the continent. It also reflects the inequalities of global capitalism and the consequent lack of coherent and implemented policy approaches to supporting southern African rural populations in the context of the climate crisis.

Instead of being informed by a detailed understanding of the nature of rural livelihoods and farming systems in Africa and the workings of the societies they are part of, *the global discourse on climate change in response (including for Africa) is shaped by the predominance of corporate power and the assumptions and paradigms of Northern donor agencies and NGOs.* These narratives have been hotly contested, both by voices from the Global South, and by heterodox economists and activists in the North. As a result, global debate about climate change response is heavily ideological in character. The warring ideological commitments and positions through which responses to the climate, food and biodiversity crises are being framed, enacted and contested, can broadly be sorted into three groups: namely *corporate-driven, developmentalist/reformist, and structural transformation* narratives. Institutionally-organised responses to climate change in Southern Africa are to a large extent shaped by the ideological contention between these competing narratives, regarding the desirable or likely directions of adaptive change in the region.

But actual outcomes cannot simply be deduced from the ideological framings and organisation of proposals. Rather, they are produced by the responses and dynamics that unfold within existing societies and ecologies, to produce variable elaborations and outcomes. What the plans and proposals of policymakers and development agencies actually mean in practice for situated rural livelihoods is powerfully shaped by context - by the messy and complex interactions of existing histories and processes, modes of governance and social differentiation, gendered power relations, cultural practices, local knowledge, and politics. The impacts of climate change and dominant responses are not shaped in a linear way, but by the agency of different actors intersecting in sometimes contingent and unpredictable ways in the context of multiple inequalities and power relations. How this happens in terms of livelihoods, responses from 'below' and rural politics is poorly understood. But such an understanding is essential for crafting fit-for-purpose policy responses.

Our take on what needs to be done is a situated one. It is based on our identity as a university-based research institution in the Global South, and it seeks to identify the most important places where we believe an energetic and imaginative programme of critical enquiry and engagement can make a difference.

However, answers to research questions are not enough. As the overview below shows, *one of the critical challenges in the way of adequate climate change response in the region is the fragmentation and dislocation of social and political agency*. The problem is not only the content of climate change policy. The weakness and sometimes the dysfunction of institutions of government undermine the ability of local social actors and stakeholders to integrate and drive adaptive change at local level. This leads to fragmented and disconnected implementation.

Dealing with these realities is a daunting task. The climate crisis needs to be confronted on many levels and requires many courses of action. Our take on what needs to be done is a situated one. It is based on our identity as a university-based research institution in the Global South, and it seeks to identify the most important places where we believe an energetic and imaginative programme of critical enquiry and engagement can make a difference.

We believe that conceptually rigorous, empirically meticulous critical social science can contribute in at least four ways:

- It can help us to better understand the actual dynamics of adaptive (or maladaptive!) change on the ground.
- It can help us test and ground-truth some of the narratives and assumptions that currently drive debates.
- It can support the agency of small farmers and other vulnerable groupings, highlighting their agency, local knowledge, technical know-how, and adaptive resourcefulness.
- It can be part of a process of the building of institutional, social and political agency at local scales and co-creating - in partnership with organisers, practitioners, decisionmakers and policymakers - situated understandings of problems to be solved and challenges to be met.

For us, four areas of research are particularly important:

- Examining the central issue of the direct and indirect impacts of climate and ecological crisis on vulnerable rural livelihoods
- Tracing how these disruptions and changes reshape the nature of rural and urban politics in the region, leading to new conflicts (and new opportunities for solidarity), to the remaking of states and state institutions, and to the reinvention and the reform of citizenship
- Linking this understanding of local and regional change to a critical analysis of the political economy of global climate change response
- Charting and describing the new politics of emergency and disaster response that is swiftly becoming the 'new normal' across the region

However, more is needed than academic research. Our research on these issues will be closely linked to our academic teaching and training programme, and to vigorous public debate and policy engagement. In addition to findings in the field, the agenda for change sketched out below, prioritises processes of institutional learning, situated reflection on practice, and the co-creation of knowledge in partnership with social actors and change agents. This work, in other words, cannot be done alone, but must be shaped by the energies and commitments of a wide range of institutions and organisations working together to help bring about climate justice in South Africa – a shared mission in which we can only play a small part.

INTRODUCTION

Climate change, caused primarily by greenhouse gas emissions (GHGs) from the burning of fossil fuels, has come to be considered the most urgent crisis facing humanity, and intersects with multiple other social, economic and political crises. Between November 2021 and April 2022, the Intergovernmental Panel on Climate Change (IPCC) released the three parts of their 6th Assessment Report on the latest science of climate change. The report confirmed the severity of the climate crisis, the lack of political action and will over the last few decades in lowering emissions, and the need to drastically reduce emissions in the next few years, to have any chance of maintaining global warming to somewhere in the region of 1.5°C above pre-industrial levels (Harvey, 2022). Southern Africa – rural areas in particular – is acutely vulnerable to the impacts of climate change, posing urgent questions around the relationship between climate change and responses to it, rural populations and agrarian change in the region.

This discussion paper aims to provide a critical, grounded analysis of the distributional politics, political economy and political ecology of climate change and responses in Southern Africa, particularly as it relates to land-based livelihoods and the issues faced by marginalised and vulnerable populations created by landlessness. The paper shows that prominent responses to the climate crisis relevant to southern African rural landscapes and livelihoods are shaped by dynamics between global governance, capital accumulation imperatives and the real politics contestation at various levels. A key theme in the paper, emerging from a review of the literature, is therefore the role of inequality and prevailing distributional patterns between national, local and global levels in shaping the course and impacts of climate change and responses. It also highlights how these impacts are shaped by the context of multiple inequalities and power relations, and how the agency of different actors is exercised at varying scales in contingent and contextual ways to shape responses and impacts.

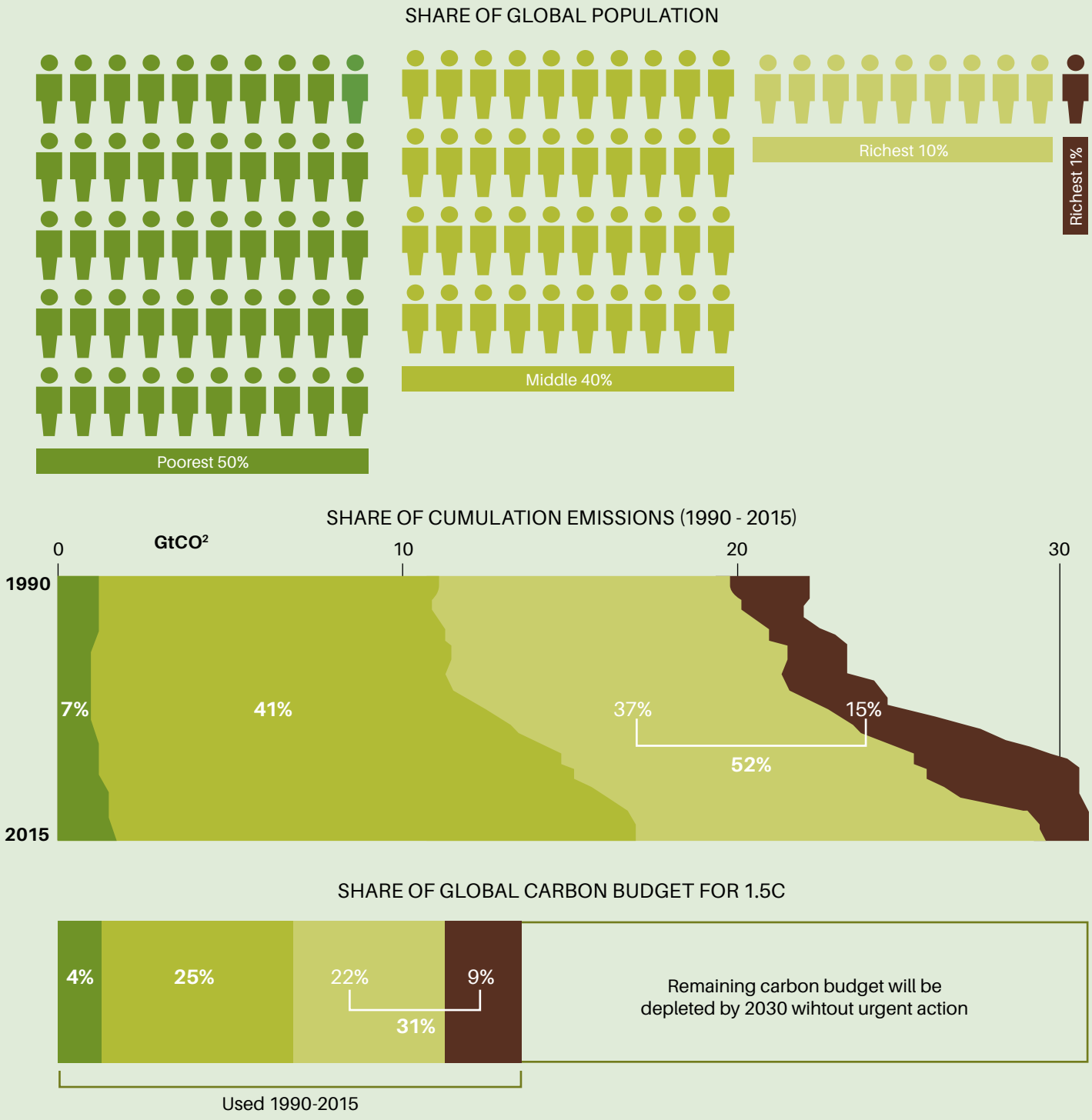
Climate change has been produced through global human relations of historical, resource and power inequalities: the fossil fuel-based industrialisation that was led by the north exponentially expanded capitalist accumulation in those regions, raised the consumption levels of its populations that underpin climate emissions, and was built on slavery and the exploitation of the labour and ecologies of the South (Foster and Suwandi, 2020). Capitalism's endless need for economic growth is a key factor to interrogate in considering the drivers – and alternatives to – the ecological crisis (Kovel, 2007; Hickel, 2020). It is historically the production and consumption patterns of the populations of the capitalist centres of the world that have fuelled the climate crisis. The richest 10% of the world's population are responsible for over 50% of emissions between 1990 and 2015, while the poorest 50% are responsible for only 7%, what Oxfam (2020) calls 'carbon inequality' (see Figure 1). The impacts of climate change, how they are experienced, and by whom, are also shaped by these inequalities: while countries of the south and low-lying island states have contributed the least to the emissions causing climate change, they have been and will continue to experience the worst impacts, both because of their location and financial shortages in the context of global inequality. Africa is a case in point – the continent has historically contributed the least climate emissions and still has the lowest GHG emissions per capita, but it has already experienced widespread impacts from climate change (Ayanlade et al, 2022). One of the most vulnerable sectors is agriculture, on which 60% of the sub-Saharan African population still depend for at least a part of their livelihoods (IFAD, 2021).

Power and resource inequalities are similarly shaping the global responses to climate change. In particular, transnational capital, often in alliance with rich northern

Figure 1

CARBON **INEQUALITY**

Share of cumulative emissions from 1990 to 2015 and use of the global carbon budget for 1.5C linked to consumption by different global income groups.



Source: Oxfam (2020).

While countries of the south and low-lying island states have contributed the least to the emissions causing climate change, they have been and will continue to experience the worst impacts

governments, maintains a significant hold on the dominant solutions being proposed to the climate crisis at the global level (see Global Forest Coalition, 2021). This contrasts with the poor capacity of most sub-Saharan African states to enact national responses to climate change and support their populations, seen in the fact that the region has some of the lowest levels globally of state policy response to climate change (Ayanlade et al, 2022). This poor response is rooted in several intersecting factors, but is evident in the poor capacity of many states to define effective responses at local level where the impact of climate change occurs (for example, see Mdee et al, 2021; Mickels-Kokwe and Kokwe, 2015). This opens the way for private sector actors to be at the centre of responses in Southern Africa – already most continental AU and donor programmes on areas like agriculture, green economy and climate change promote the private sector as the panacea, raising further questions about inequality and distributional issues.

These inequalities in the climate change response are also indicated at the level of research. According to the IPCC, between 1990-2019 climate research on Africa received only 3.8% of global climate-related research funding, and while 78% of the institutions receiving funding are situated in the European Union and North America, only 14.5% are African institutions. Furthermore, the number of climate research publications with African-based authors are amongst the lowest globally (Ayanlade et al, 2022: 4).

Of the research on climate impacts in Africa, most have focused on terrestrial ecosystems and water, with far less focusing on topics like agriculture, marine resources, and human health and wellbeing (Callaghan, 2021), let alone from a social science perspective. These factors have significant implications for the priorities for research, the kinds of research carried out, the extent of research, and the locus of climate change leadership on the continent. Responses to climate change are dominated by techno-fix, private sector solutions. It is vitally important to fill this research gap with critical agrarian and political ecology research that can unpack the dynamic ways in which climate change and responses to it are reshaping and remaking rural Southern African landscapes, as well as their implications for agrarian politics (see Borras et al, 2022).

The next section of this position paper provides contextual framing, showing the links between climate, biodiversity and food crises, and how changing global governance architecture shapes dominant responses. It also proposes a categorisation of dominant narratives and responses to the interlinked climate, biodiversity and food crises and their key actors. It identifies some key elements that shape the relationship between Southern African ecologies, livelihoods and the global capitalist economy.

The third section unpacks some of the key projected impacts of climate change in Southern Africa, including the social and distributional impacts.

The fourth section provides a brief overview of the main framings of responses in terms of the green economy, climate finance, agriculture and food systems, and conservation and biodiversity protection as relevant to southern Africa, by exploring key proposals, actors and points of contestation. However, what these overarching proposals mean for situated rural livelihoods is shaped more by their interactions with a host of factors related to context, existing histories and processes, modes of governance and social differentiation.

The fifth section draws out some of the key themes from perspectives of critical agrarian theory and political ecology to emerge from grounded research across these areas, drawing mainly from research in Southern Africa but also from wider research that holds relevance for the region. These themes show how while narrative framings are useful for understanding the key outlines of proposals and their political implications, ongoing situated research is required related to these issues in southern Africa to better understand their impacts and local dynamics, and to unpack implications and proposals for more just agrarian futures.

CONTEXTUAL FRAMING

The global effort to coordinate the response to climate change was initiated with the launch of the UN Framework Convention on Climate Change (UNFCCC) at the Rio Earth Summit in 1992. Since then, there has been a flurry of attempts to address the environmental effects of economic development, incorporating the notion of sustainable development, to the adoption of the Kyoto Protocol in 1997 (an agreement binding signatory countries to emissions reductions based on historical and differentiated responsibilities), and the elaboration of the green economy concept (see Figure 2). However, despite these formal processes, emissions have continued to rise alarmingly, with corresponding worsening occurrence and intensity of weather changes and climate disasters. However, global processes have also increasingly recognised the links between the climate crisis and other crises related to biodiversity and food systems (Immovilli and Kok, 2020).

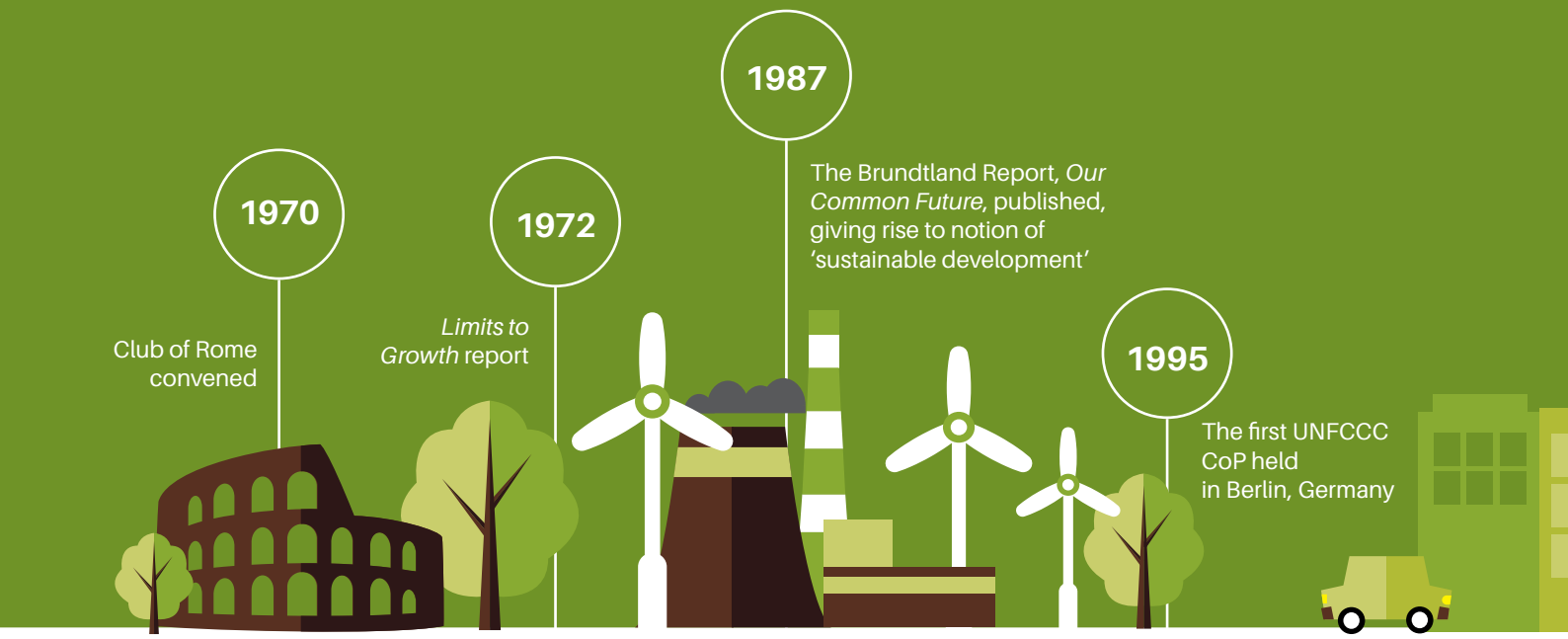
Climate change impacts and biodiversity loss are closely connected. As a result of human activities, 83% of the world's wild mammal biomass has been lost and 50% of plant biomass; more animal and plant species are threatened with extinction than ever before (Pörtner et al, 2021). Biodiversity in land and ocean ecosystems has an important impact on the levels of greenhouse gases in the atmosphere, mainly through its role in the nitrogen, carbon and water cycles. Biodiversity in natural and managed ecosystems (such as farming systems) are also important in the ability of those systems (and the humans that depend on them) to adapt to changing weather patterns resulting from climate change (Pörtner et al, 2021). At the same time, biodiversity is threatened by a changing climate, with plant, vertebrate, insect and fish species and coral reef loss resulting in shifting habitat conditions (Ayanlade et al, 2022). The degradation of ecosystems and associated biodiversity loss through land use changes such as forest clearing for agriculture, are also a major contributor to GHG emissions causing climate change, as they destroy natural carbon stocks and the previous ability of those ecosystems to sequester carbon (Pörtner et al, 2021). This means that despite a long-standing disciplinary disconnect between respective research and policy on climate change and biodiversity, there are growing calls and efforts to address them synergistically in the multilateral system, through interventions like nature-based solutions that see biodiversity protection as simultaneously, a climate solution and linking biodiversity protection to carbon markets. There has also been an attempt to include climate mitigation in the post-2020 Global Biodiversity Framework of the Convention on Biological Diversity (CBD) (Stabinsky, 2022; King, 2022). The proposed solutions to the climate and biodiversity crises are also structured by similar forces and contestations. This extends to the global food system, a major driver of climate change and biodiversity loss.

Globally, food systems are one of the largest single sources of the greenhouse gas emissions causing climate change (Tubiello, 2021). They are also the largest driver of biodiversity loss (Benton et al, 2021), which many have put down specifically to the *industrialised* and globalised food system due to its intensive energy use, land clearing, and monoculture requirements (GRAIN, 2012; Patel and Moore, 2020). Food systems are also deeply vulnerable to

Figure 2

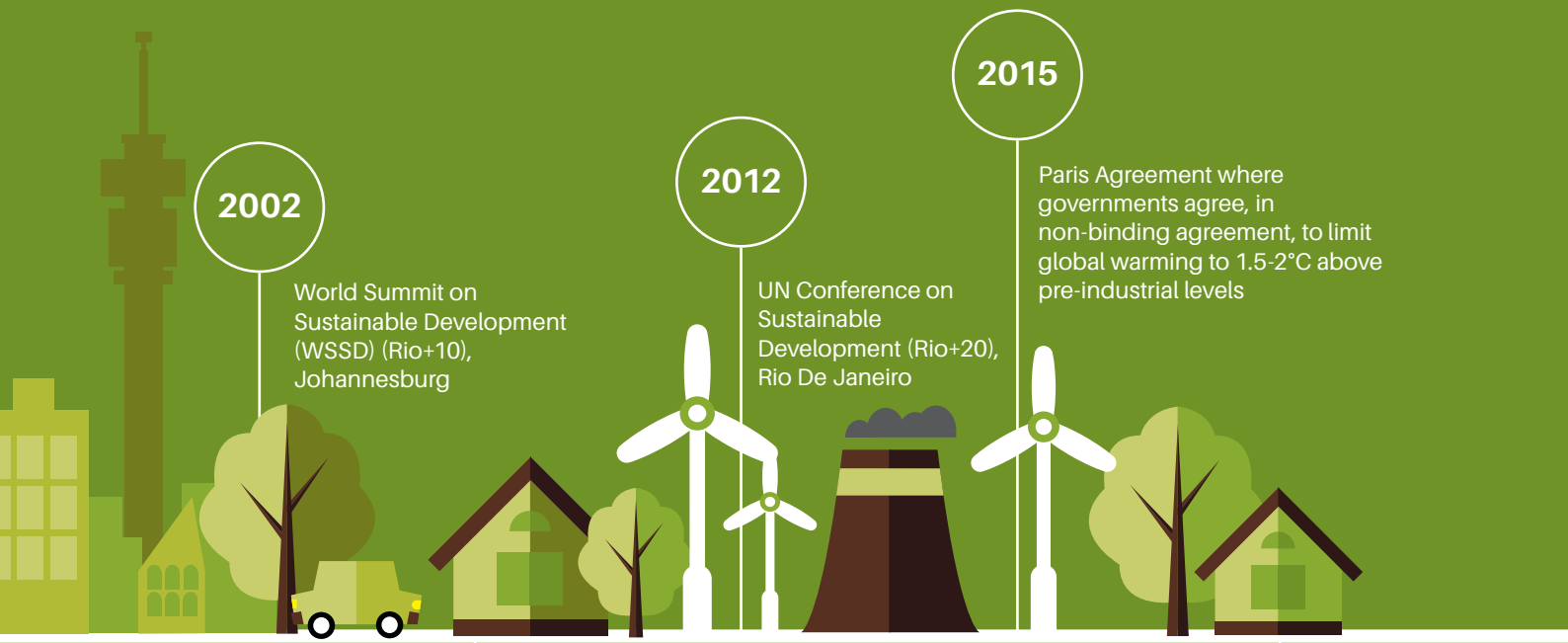
HALF A CENTURY OF DITHERING

A timeline of global responses to the ecological crisis



1992

UN Conference on Environment and Development (the 'Earth Summit') held in Rio De Janeiro aims to reconcile worldwide economic development with protection of the environment. Established the 3 UN Conventions: on climate (UN Framework Convention on Climate Change), biodiversity (Convention on Biodiversity) and desertification (UN Convention to Combat Desertification).



2002

World Summit on Sustainable Development (WSSD) (Rio+10), Johannesburg

2011

UN Environment Programme report *Towards a Green Economy* published

2012

UN Conference on Sustainable Development (Rio+20), Rio De Janeiro

2015

Paris Agreement where governments agree, in non-binding agreement, to limit global warming to 1.5-2°C above pre-industrial levels

2022

The 28th CoP to be held in Sharm El Sheikh, Egypt. Emissions continue to rise, making staying within the 'safe' limit of 1.5 degrees temperature rise above pre-industrial era increasingly unlikely.

the impacts of climate change in terms of rainfall, drought, temperature changes and associated pests and diseases (Hoegh-Guldberg et al, 2018). This has spurred a focus on 'solutions' in the food system to reduce its emissions and impacts on biodiversity and build food system resilience to climate change. Solutions range from justifications for drought-tolerant GM seeds and hybrid varieties (ACB, 2017), climate smart agriculture (FAO, 2010), research and advocacy on dietary shifts necessary for lowering emissions (LANCET-EAT Commission, 2018), to proposals and advocacy for deeper structural shifts and agroecological transformation of food systems (IPES-Food, 2016). The relationship between climate change and biodiversity extends to food systems in terms of agricultural biodiversity (seed and genetic diversity). The importance of biodiversity in farming systems to provide greater flexibility and adaptability in the contexts of climate shifts, as well as bolstering human nutrition, is widely acknowledged. Also, declining biodiversity in food systems poses a threat to nutritional security and the potential of food systems to adapt to climate shifts (FAO, 2019; 2021a). The global politics of food systems are closely entwined with the politics of climate change (Clapp and Newell, 2018).

Marketised logic and the influence of corporate power in global decision-making decisively shapes the global response across these arenas. This raises questions about the nature of the contesting interests and ideas, and the dominant policy narratives and proposals that emerge from them. The role of markets and corporations in the governance of global public issues, has been a consistent feature of the post-World War II multilateral system organised around the United Nations (UN) (McKeon, 2021). However, multilateral institutions have continued to dominate decision making. For a number of years, progressive civil society organisations have been raising the alarm on the increasing efforts by corporate actors to gain the initiative in global decision making on climate change, biodiversity and food systems. Corporate influence can be seen in global conventions in the form of lobbying, their lead role in establishing financial structures and mechanisms for the climate crisis, and the creation of corporate-financed platforms and initiatives by an alliance of corporate bodies (like the World Economic Forum and World Business Council on Sustainable Development), large international NGOs, and the UN. Actions which are underpinned by a multistakeholder approach to global governance. For critics of multistakeholderism, it sidelines ostensibly more democratic and accountable systems of multilateral governance, to maintain corporate initiative on the solutions to global problems (Manahan and Kumar, 2021). Multistakeholderism and the myriad global initiatives being organised and financed by corporations on climate, biodiversity and food systems lead to policy approaches that advance private interests over just food systems, biodiversity protection and effectively addressing the climate crisis (Global Forest Coalition, 2021). An egregious example was the UN Food Systems Summit (UNFSS) held in October 2021, which was initiated by the World Economic Forum together with the UN to create a new global institutional space to shape the agenda on 'food systems transformation' in the context of the climate crisis and hunger and malnutrition (Canfield et al, 2021; McKeon, 2021). This reshaping of global governance – and associated contestations – is a key element of the international context shaping the dominant narratives and policy proposals on the climate crisis, which centre the role of capital.

We need to understand the competing narratives and policy proposals, to interrogate them and position our research in relation to them. Below, we present an attempt to outline a rough categorisation of key proposals as they relate to particular variables. One of the key issues emerging from the above discussion and forming a backdrop to discussions in this paper is that capital plays a dominant role in structuring global climate politics, the associated proposals and contestations, and their local level impacts. On the one hand, capital continues to deepen the extraction and consumption of fossil fuels driving the

climate crisis (Carrington and Taylor, 2022). On the other, capital accumulation shapes dominant mitigation and adaptation responses at the level of global governance, in the aligning of continued extractivism, with climate objectives under the green economy, and in the re-casting of nature and socio-ecological relationships as they are further penetrated by capital (Borras and Franco, 2018). The role of capital is implicitly a key factor around which various disciplinary, ideological, policy and interventions diverge, and with which more localised agrarian dynamics interact.

> **Capital plays a dominant role in structuring global climate politics, the associated proposals and contestations, and their local level impacts**

The table on the next page shows how key responses to aspects of the climate crisis can be categorised into corporate- and technology-centred, reformist/developmental, and structural transformation narratives. This inevitably involves some simplification of complex and messy realities. One aspect to this is to see the categories not as mutually exclusive but, in some sense, as a continuum, where they at times overlap and in practice interact, and can be seen as partly relational as well. For example, Borras et al (2022) suggest four key narratives on climate change and agrarian struggle: corporate-driven, technological narratives, climate emergency narratives, climate justice narratives, and structural transformation narratives. The categorisation here partly draws from these descriptions, but also differs slightly. Firstly, it adds a category between corporate narrative and more progressive climate justice and structural transformation narratives – developmental/reformist. This is to capture some of the key policy proposals that are an important part of the mix in climate and associated discussions. Secondly, it does not treat climate justice and structural transformation narratives as distinct. As Borras et al (2022) note, there are diverging approaches to climate justice. It is suggested here that these approaches can be captured by seeing that climate justice narratives can adopt a reformist view, which emphasises inclusion, allocation and compensation issues, or a more structural transformation position, which sees dynamics of capitalism as the key cause of climate injustice and calls for systemic change in the interests of the marginalised, poor and future generations. Thirdly, Borras et al's 'climate emergency' narrative can also infuse these different positions. For example, structural transformation narratives can emphasise the pending catastrophe and hence the need for deep and rapid systems change, while those with a more technocratic orientation can emphasise the need for rapid technological roll-out on an emergency footing, sidelining democratic and climate justice concerns. Each category will now be briefly explained in Table 1 on the next page.

Table 1: Response narratives about the climate, biodiversity and food crises

	Corporate-driven	Developmental	Structural transformation
Main actors	World Bank, finance institutions, corporate bodies, large transnational conservation NGOs, AGRA, GACSA, large farmer bodies, FAO, UNEP	FAO, UNEP, development economists, AFSA	LVC, AFSA, progressive civil society, political ecologists, critical agrarian theory
Ideological and disciplinary frame	Environmental sustainability and economic efficiency (ecological modernisation): markets, finance and technologies for adaptation	Agnostic Emergent pragmatism	Capitalism, systemic, justice, rights, equality
Problem	• Low productivity and yield gaps • Economic inefficiency (of small holders, rural dwellers, indigenous people) • Environmental destruction • Gender inequality	• Climate change • Environmental degradation • Poverty	• Systemic contradictions: fossil capitalism • Systemic inequality • Dispossession • Corporate capture
Problem	• Raise productivity to address social issues • Bring capital and markets to bear • (Corporate) technology	• Innovations and farmer adaptation, supported by policy and regulations • Appropriate technology uptake • Improved design and operation • Rights of affected populations (inclusion, allocation)	• Structural and systems transformation • Social justice as a precondition for addressing structural problems, human rights • Agroecology and food sovereignty • Climate justice: climate debt, transform global structure, redistribution, decolonisation
Key Actor	Private Sector	Affected people, scientists, the undifferentiated 'farmer'	Movements and civil society; democratised states and state bodies

The *corporate-driven, technology-centred* narrative tends to have the upper hand in framing the ecological crisis and solutions at global level. Actors in this category coalesce around an ideological framing that centres on the pairing of environmental sustainability and economic efficiency (Borras and Franco, 2018): environmental problems will be solved by incorporating them into the logic of the market, so achieving environmental sustainability by economic efficiency. This means rendering environmental and social problems legible to capital so that they can be incorporated into accumulation. This is seen in the simplification of the complex natural interconnections into ecosystem services in order to make them available to the market (Foster, 2022) or, in some instances, the reframing of farmers and their organisations simply as private sector actors in the case of agricultural development (see AGRA, 2019). Environmental sustainability also means classifying who and what are deemed environmentally destructive, and who and what is economically efficient. These two parameters are therefore also important in structuring dominant narratives and policy proposals across sectors, such as the link between 'fence and protect' conservation proposals and climate smart agriculture.

Within this frame, the problem to be addressed is understood to be low productivity. This includes gender inequality, narrowly defined as that between women and men in a household or community, as the problem that constrains women's productivity and therefore explains poverty. The solution therefore is to bring markets to bear

on environmental and social problems. This includes bringing private sector, market-based solutions to environmental management, and (private) technology to problems of low productivity. The key actor in solving problems, therefore, is the private sector, and the role of the state is to simply create the 'enabling conditions' for the private sector to grow and advance solutions, whether in relation to financing of conservation or agriculture, raising the productivity of agriculture and reducing its environmental impacts, or establishing value chains and market linkages. To sum up, the key question for this approach might be: 'What are the climate change priorities regarding people and ecosystems and how can private sector actors and technologies solve them?'

The *developmentalist/reformist* approach sits somewhere between the corporate-driven and structural transformation approaches. For example, actors might promote relatively conventional approaches to agricultural development in a particular context, without subscribing to a broader disciplinary or ideological frame such as the Green Revolution. Rather, the proposals are presented as agnostic in ideological terms and pragmatic, and may coincidentally align with what are seen to be contents of the corporate paradigm at some times, while seeming to align with elements of the structural transformation and climate justice prerogatives at others, depending on topic and context. The starting point is instead what the issue is that needs to be addressed, such as climate change, environmental degradation, poverty, lack of irrigation, and so on. The key question is what needs emerge from a particular context and what makes pragmatic sense in addressing them, such as the needs of a particular social group and what they are already doing to try and meet those needs, or the needs related to the protection of an ecosystem. This might be termed an 'emergent pragmatism', that guides the appropriate interventions, technologies and policies. The key actors in the case of agriculture are farmers and the role of the state is to support initiative and need indicated by farmers and their practices; in the case of biodiversity protection, it may be scientists who generate information on the needs of ecosystems, and the role of the state is to implement policy informed by scientific evidence. The key question in this approach might therefore be: 'What are a social group's/ecosystem's needs and how can policy best support them?'

The ideological frame of the *structural transformation* narrative relates largely to the role of capitalism; not only in causing social and ecological crises, but also in advancing inappropriate solutions that benefit corporate interests and that harm marginalised rural populations and ecosystems. Its key ideological markers are justice, equality and a people-centred logic to challenge the role of capital in crafting ways out of the ecological crisis. The problems to address include inequality, marginalisation and dispossession. The problem is also largely defined by the 'false solutions' promoted by neoliberal, corporate-driven processes that are seen to entrench corporate profitability and power, intensify inequality, and undermine democracy and the ability to address the social and environmental crises. The solution to these problems encompasses deeper transformation of the relations of production through redistribution and decolonisation, to shift property, labour, income and consumption regimes (Borras et al, 2022). Food sovereignty, agroecology and climate justice are seen as key combined elements of structural transformation. Given entrenched structural interests, this requires the building of movement and societal power to confront those interests and to democratise decision-making to achieve the implementation of policy that advances this transformation. The approach here can therefore be summed up as: 'Whose interests do proposed solutions serve and how can social justice and structural change be achieved to equitably meet the needs of people and ecosystems?'.

A last point to note about these approaches is that they will have differences in the technical categories being proposed, but at times there are also similarities in this regard. A key difference, however, is the purpose and

interests that such solutions are seen to be serving. For example, reformists who promote nature-based solutions see it as necessary for serving the needs of biodiversity and climate mitigation and adaptation, together with community involvement. However, in the market- and corporate-centred approach, the same technical component, nature-based solutions, is taken further – corporate interest lies in sustaining profit-making activities through offsets, and accumulation by delivering investment opportunities. This converges with policy makers and transnational conservation NGOs whose interest in NBS is for its potential to raise finance for biodiversity protection and climate mitigation by commodifying and marketising it (Stabinsky, 2022), constituting a neoliberal bloc around nature-based solutions. Similarly, in relation to climate change and agriculture, both developmentalists and those focused on structural transformation, may work to promote and build food system transitions on the productive basis of agroecology. However, reformists work on agroecology relatively politely as a development option, while for the latter the social justice and movement dimensions of agroecology, and its role in deeper structural change, are prioritised.

The dynamics underpinning the dominant, market-based narratives and policy solutions to be examined in this paper, are not in themselves necessarily new to southern African rural communities, ecologies and agrarian relations, but add further dimensions to the ways in which they have already been shaped in relationship to the global political economy over time. James Murombedzi (2010) and Sam Moyo (Amanor, 2020) point to how an important feature of this relationship has been the role of economic liberalisation in particular, in line with Structural Adjustment Programmes (SAPs), which saw a shift from industrialisation to export agriculture and tourism as engines of economic development and sources of foreign exchange after the debt crisis of the 1980s. Deregulating and opening up natural resources in southern Africa to global markets, led to shifting patterns of rural accumulation, especially in the former settler colonies through activities like the commodification of wildlife and landscapes in communal areas for ecotourism and hunting, the expansion of wildlife and hunting conservancies on private land and export-oriented horticulture.

These processes had a number of important effects on agrarian relations, with which the themes examined in this paper interact. First, they tended to reinforce existing authority structures. Two key aspects to colonial land dispossession were the creation of a racialised colonial agrarian structure, and nature conservation. In the case of the latter – notwithstanding nuances by context (Dlamini, 2020; Bolaane, 2005) – indigenous populations were generally perceived as a threat to sustainable resource use and so was predicated on their removal. Colonialism removed localised control over natural resources and placed it in centralised control by the colonial state, via 'traditional' intermediaries in communal areas. Governance of land and natural resources in communal areas was often maintained and reconstituted in the post-colonial era, in ways that maintained centralised authority over resources in hands of states and traditional authorities.

Secondly, in the context of neoliberalism, local authorities' control over natural resources allowed them to drive a process of commercialisation by private capital of 'communal' natural resources. Community-based natural resource management (CBNRM) was a key mechanism by which communities on communal land were incorporated into a process of commodification, while simultaneously extending corporate access to natural resources. The approach was driven by alliances of international conservation NGOs, private tourism operators, government wildlife departments and international donors. Both Murombedzi (2010) and Moyo (Amanor, 2020) argue that a consistent pattern in CBRNM has been that rural communities were incorporated unevenly into limited benefits from commodification of natural resources, but management and control tended to remain in the hands of local

government or private capital, rather than enhancing community rights over land and resources, let alone the land reform dimensions that the latter would require.

Thirdly, another aspect of the inequality was the uneven incorporation of rural communities into new value chains (through programmes like CBNRM) shaped by factors like class differentiation – 'political class lobbies' positioning themselves to advance and benefit from these new assemblages for accumulation. This included private capital drawing in sections of smallholders and businesspeople who were able to benefit from the process, while priorities for ordinary smallholders of rights to natural resources and land remained (Moyo in Amanor, 2020; Murombedzi, 2010). This trend also points to the fact that the questions around dominant solutions to the climate and biodiversity crises, like neoliberal conservation efforts, are not only those of dispossession, but also speak to the terms of incorporation into such processes, and the consequences regarding who benefits and who loses, and how relationships to natural resources are reshaped.

> **Environmental commodification processes have failed to address broader challenges around the inequalities of national agrarian structures**

Fourthly, given these features, both Murombedzi and Moyo suggest that these environmental commodification processes have failed to address broader challenges around the inequalities of national agrarian structures. Practices like CBNRM were favoured by governments and donors because it built on existing systems of land and resource tenure, rather than having to grapple with deeper transformation of agrarian relations. Instead, the deepened commodification of natural resources as an economic sector has tended to entrench existing agrarian structures that deny the land needs of large sections of the rural population. Moyo (in Amanor, 2020) argues in the case of Zimbabwe that this was part of a larger trend of increased commodification of land and wealth disparities that stalled the redistribution of land to the poor after independence and laid the basis for the rise of the occupation movement in the late 1990s.

These are some of the wider coordinates within which the proposals and narratives discussed in this paper can be situated, showing how their actual import will also be shaped by the previous experiences, processes and patterns of agrarian change in particular contexts. This is also the case with the impacts of climate change, a broad overview in Southern Africa of which the paper now turns to.

SOUTHERN AFRICA – HOTSPOT FOR IMPACTS, BLIND SPOT FOR RESPONSES

Quantification of climate change impacts in Southern Africa is drawn from the degree of global warming above pre-industrial levels, and levels of adaptation implemented (Mbow et al, 2018; Ayanlade et al, 2022). Southern Africa is a climate change hotspot. It has and will be exposed to more climate change than the global average, and is likely to heat at double the global average. Natural and human systems in the region have less ability to cope with the intensity of change (Scholes et al, 2020). This is a function of history, economic patterns, institutions, power and relationships with the global economy. In the absence of policies aimed at correcting for distributional inequalities, the impacts of climate change are shaped by existing socioeconomic inequalities, and may sharpen and create new inequalities.

The immediate impacts of changes in weather patterns, because of climate change, have already been happening on the continent over the last few decades. The general patterns of impacts in Southern Africa (most relevant to smallholder farmers and rural livelihoods) include increased temperatures and more frequent and longer-lasting heatwaves. Temperature rises will be greater in the interior than in coastal regions. In a context where about 90% of African agriculture outside of South Africa is rainfed, there will be a decrease in mean annual rainfall of 10-20%, but with variability within the region. For example, the south-western parts of Southern Africa, the central and northern regions of Zimbabwe and Zambia, and western Mozambique will become drier, while there will be slight increases in rainfall in the south-eastern region, particularly in central and northern Mozambique, together with higher overall rainfall variability (leading to greater combinations of droughts and flooding). The overall trend over the last few decades, however, is that the interior of the region has become drier, and this will continue to be the case (Vincent et al, 2013; Ayanlade, 2022; Archer et al 2018). Changed weather and habitat conditions will also lead to greater crop losses due to insect pests and diseases (Hoegh-Guldberg, 2018).

However, the distinction between 1.5°C of global warming and 2°C is critical for the region – even if warming is kept to 2°C, the impacts in Africa are projected to become widespread and severe in relation to reduced food production from crops, fisheries and livestock, increased inequality and poverty, biodiversity loss and human mortality. In southern Africa, warming of 2°C or above starts to significantly erode the capacities of adaptation measures. Above 2°C of global warming, drought frequency in southern Africa will increase and the average duration will double from 2 to 4 months (Ayanlade et al, 2022). Essentially, lack of decisive climate change mitigation at a global level will 'have devastating impacts on the southern African region' (Archer et al, 2018: 16), and will render adaptation less possible. Unfortunately, the prospect of keeping warming to within 1.5°C appears to be diminishing, and the world is currently heading towards 2-3°C of global warming (Meyer, 2022; Carrington, 2022). This poses a key policy question for adaptation, and the depth of such, as well as dealing with the fallout of resulting social crises.

These changes have significant implications for food systems and nutrition, with agriculture being particularly vulnerable to the impacts of climate change. Sub-Saharan Africa already experiences some of the world's highest rates of food insecurity, and it will also likely experience some of the greatest declines in food production due to climate change.[1] Small-scale farmers and rural dwellers will be hardest hit – on average 60% of the population works primarily in agriculture (Clapp et al, 2018), and hunger and malnutrition are highest amongst these groups (FAO, 2021b). Across Africa, production of staple crops like maize, sorghum and wheat, has already decreased due to climate change. In southern Africa 2°C of warming would significantly reduce yields further and suitability of growing crops like maize and sorghum (Mbow et al, 2018). The yield of maize, a prolific staple crop across the region, is particularly sensitive to changes in temperature and moisture (Johnston et al, 2013). Even at 1.5°C of global warming a large reduction in maize cropping areas is projected, as well as reduced fisheries catch potential. In places like Zimbabwe, climate change has already reduced food total calories across crop types by 10% (Ayanlade et al, 2022). Increased CO_2 levels in the atmosphere, while speeding up growth of some plants, can also lead to lower nutritional value, potentially sharpening nutrition-related health risks (Myers et al, 2014).

Marine livelihoods will also be significantly affected by climate change. The southern African coastline has already experienced an increase in the number and intensity of

1 Food Systems Primer, 'Food and climate change', Johns Hopkins Centre for a Livable Future, https://www.foodsystemprimer.org/food-production/food-and-climate-change/.

Experiences of climate change are heavily mediated by the characteristics of households themselves - and therefore by prevailing socioeconomic inequalities including wealth, education, participation in non-farm employment, and gender of the household head

marine heatwaves (periods of extreme warm sea surface temperature that can last for days or months), and they will increase under future global warming scenarios, which will overwhelm the ability of marine organisms and ecosystems to adapt to those changes, with clear implications for marine livelihoods (Ayanlade et al, 2022). The climate impacts on global food systems are also likely to lead to food price increases, further undermining food security in regions like southern Africa (*ibid*). There is, however, a shortage of research from a holistic food systems perspective on the impacts of climate change in Africa beyond production, with much research focusing only on the production impacts on a limited number of crops, mostly maize, wheat and rice (Ayanlade et al, 2022).

This brings us to a deeper consideration of the social impacts of climate change, which are a function of climate patterns, but also of the social, political and institutional relations in a given context. Sub-Saharan Africa is considered to have some of the lowest adaptive capacity globally given the high level of exposure to climate risks combined with already existing poverty, malnutrition, and poorly resourced rain-fed agriculture (Rahut et al, 2021). Furthermore, Africa is also considered to have the lowest levels of institutional response to climate change in the world as well as an apparently low institutional capacity to support adaptation (Ayanlade et al, 2022). This also occurs in a context of historically poor public investment in smallholder agriculture and rural areas as a result of contradictions of both postcolonial development patterns and structural adjustment policies (Mafeje, 2003; Mkandawire and Soludo, 1998). These factors mean that experiences of climate change are heavily mediated by the characteristics of households themselves - and therefore by prevailing socioeconomic inequalities including wealth, education, participation in non-farm employment, and gender of the household head (Rahut et al, 2021; Kerr, 2018).

The distributional impacts of climate change include the intersection between the geographical location and the socioeconomic status of households. Some research has shown that in 2010, across sub-Saharan Africa about 31% of rural populations were situated on less-favoured agricultural lands and areas[2] (Barbier et al, 2016), while across the developing world higher proportions of poor people live in such areas. Such poor rural households in sub-Saharan Africa located in less-favoured arid areas are already experiencing declining incomes due to extreme climate conditions, lower agricultural productivity, as well as affecting land and natural resource use (Barbier and Hochard, 2018).

Angelson and Dokken (2018), in their sample of households across various regions including Africa, found correlations between the socioeconomic status of villages and their ecological conditions (such as the poorest villages being situated in the driest areas), as well as varying socioeconomic status of households within these villages, correlating with environmental shocks experienced.

The poorest segments of rural populations are most exposed to rainfall variability, and tend to be more reliant

2 Less-favoured agricultural lands are defined by economists such as Barbier and Hochard in terms of soil quality, access to irrigation and rainfall etc, and less favourable areas may have favourable land but are remote from markets and access to infrastructure.

on natural resource harvesting, and across Africa poor households are also suffering the greatest rates of loss of forests on which they depend (Angelson and Dokken, 2018). The implications are that as climate change progresses – and without targeted policies for adaptation that takes distributional impacts into account – more poor people could be concentrated in less favourable agricultural lands and areas, and inequality and poverty is likely to be sharpened. This will have direct consequences for the politics of land, especially in its intersection with issues relating to mobility and migration.

> **The poorest segments of rural populations are most exposed to rainfall variability, and tend to be more reliant on natural resource harvesting**

These factors are embedded in wider social relations of accumulation, governance, class, gender, and generation. However, providing a critical account of the intersections between them is made challenging by the fact that there is little research on this topic from political ecology or critical agrarian theory perspectives. For example, many studies point out the differences in climate impacts on households according to socioeconomic differences, but less on the more dynamic relationships between processes of local differentiation under climate change, or connections between local socioeconomic differences in the experiences of climate change and wider processes of accumulation, politics and power. Much of the research on climate change impacts and adaptation take a narrowly developmental approach in which the impacts of climate change are understood somewhat quantitatively and as a given, and to which the onus is on households (and women) to respond. It thus focuses on topics like the uptake of new practices and technologies to respond to climate change (often delivered by NGOs), practical constraints, and proposed behaviour changes at individual and household level for adaptation to occur.

Climate change impacts on rural households and responses include crisis responses in the short term such as finding piece work, modifying farming practices, crop types and varieties, various resource management strategies, and diversification of livelihood activities (Vincent et al, 2013). The poorest, located in less-favoured agricultural lands and areas, also rely on natural resource harvesting from forests and other wildlands as a last resort in response to shocks (Wunder et al, 2014). However, Rahut et al (2021) show that who undertakes which responses and in what combination, is underpinned by inter-relating differences in household wealth, gender, age and education, as well as geographical and agroecological context. Changing farming practices tends to be one of the most common responses. Wealthier farming households have a greater tendency to respond by changing farming methods, as well as to draw on savings or borrowing and selling livestock, while poorer households tend to have less capacity to respond in these ways and tend to reduce consumption, seek alternative employment opportunities and diversify into non-farm livelihood strategies. Similarly, households with the larger landholdings are less likely to draw on savings or to borrow. Similarly, those with higher education levels tend to have higher incomes, and so do not respond to climate risks by reducing consumption (Rahut et al, 2021).

These responses are also shaped by age – households with older heads are more likely to draw on savings or to borrow and less likely to seek alternative employ-

> **There is little research on this topic from political ecology or critical agrarian theory perspectives**

ment opportunities, perhaps related to skill requirements and physical ability to offer labour elsewhere. It is also notable that the relationships between these variables tend to vary between countries according to Rahut et al's (2021) data.

Patterns of wealth differentiation also intersect in varying ways with gender, age and education. Female-headed households are generally poorer and have lower asset endowments, meaning they are more likely to reduce consumption in response to climate risks. Rahut et al (2021) found that those from women-headed households were less likely to seek alternative employment opportunities in response to climate risks. In some cases, such as those documented in Malawi, it has been found that when food supplies are exhausted before the next harvest, women-headed households are far more likely than male-headed households to have to engage locally in casual labour in other households as a survival strategy (Patel et al, 2015; Vincent et al, 2013). Various studies show that the impact of climate change on farming households invariably increases labour requirements, such as having to water vegetable crops more often due to lack of rain, or having to walk further to fetch water as nearer sources dry up. This invariably falls on the shoulders of women, who undertake these daily tasks in the field and household. However, gender differences are also shaped by local socioeconomic differences. For example, in Dube et al's (2017) study in a village in one of the driest regions of Zimbabwe, the labour burden on women of fetching water from farther away was remedied in slightly better-off households that had access to a cart and the livestock to tow it.

Migration to urban areas is a key response by rural people to the effects of climate change. However, in the context of disarticulated development (Mafeje, 2003) and as current trends suggest, most such migrants are not likely to be fully incorporated into urban economies on beneficial terms. The continued growth of informal settlements with poor basic services will face greater risks from climate hazards (Ayanlade et al, 2022). This was tragically illustrated in the April 2022 floods in Durban, South Africa, where over 300 people died. It raises the importance of climate change responses in building adaptive capacity in rural areas, achieved not only by technical means but in conjunction with deeper structural, power and distributional shifts to achieve more transformational forms of resilience (Holt-Giménez et al, 2021). Current dominant responses to climate change tend to coalesce around technical solutions and corporate interest as mechanisms of such mitigation and adaptation, framed by wider market-led biases. The paper now turns to unpacking some of these key patterns through the green economy, climate finance, agriculture and biodiversity protection.

CLIMATE CHANGE RESPONSES AND CONTESTATIONS

The 'Green Economy' Response to Climate Change

Since the publication of the Brundtland Report, *Our Common Future*, in 1987, confronting the environmental impacts of the capitalist economy, has occupied a prominent place on the global agenda. It spurred the Conference on Environment and Development (the 'Earth Summit') in 1992, as the first global gathering of governments specifically to come up with a response to the environmental crisis. Sustainable development became the buzzword as a main objective for economies to achieve.

From the late 2000s, the green economy emerged as a key organising concept for what economies needed to be to achieve sustainable development. The green economy has been particularly deployed across the South as a framing solution to its development needs, and encompasses concepts like just transition, circular economy, bi-

oeconomy and the blue economy. Green economy initiatives have been growing over the past number of years, including carbon payments, sustainable agriculture, ecotourism, conservation and community-based wildlife management, and offsets by mining companies (Brockington and Ponte, 2015; AfDB, 2021). Many of these activities already existed in the south before the elaboration of the green economy concept on the global stage, and so it includes many of the activities that already sought to connect markets to the south's natural resources.

The notion of a green economy gathered ground in the run-up to the Rio+20 Earth Summit in 2012. The starting point of the main deliberations on the green economy are the twin threats of climate change and resource scarcity (Unmüßig et al, 2012). A key actor shaping the green economy discourse was the UN Environment Programme (UNEP) and its 600-page document *Towards a Green Economy* published in 2011. It argued that in the aftermath of the 2008 financial crisis the green economy would provide a way for the world economy to emerge from the crisis with far higher rates of economic growth. Going green would provide more and better employment, address poverty and meet the millennium development goals in a sustainable way. A green economy was therefore defined as one that leads to 'improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities' (UNEP; in Death, 2015: 2209).

UNEP's work on the green economy was complemented by the Organisation for Economic Cooperation and Development (OECD), an association of industrialised countries plus Mexico and South Korea, with its concept of green growth. Similar to UNEP, the starting point for the OECD is climate change and the drastic decline in resources as well as biodiversity loss, overfishing and the increasing scarcity of land and water. It argued that green growth could be spurred through increased productivity and efficiency in use of energy and natural resources, innovation, and the creation of new markets (stimulating demand for green technologies, goods and services) (Unmüßig et al, 2012).

Different approaches have developed in relation to the content and meaning of the green economy. Core to the initial institutional framings of green economy and green growth, is the idea that economic growth can be decoupled from resource depletion and climate emissions. In addition, growth is viewed as the central strategy to address environmental problems and poverty. This is achieved by increasing productivity and efficiency through technological innovation, so the key solution is to orient investments to green investments and green innovations (Lander, 2011). Decarbonising the global economy through investments in resource efficiency and renewables is therefore a central objective of its protagonists (Unmüßig et al, 2012).

This notion is rooted in one of UNEP's core arguments on the green economy, which is that the multiple crises, including the ecological crisis, are caused by a 'misallocation' (in environmental terms) of capital. The key is therefore to direct capital into investments in the areas that would make an economy green: biodiversity protection, water, forestry, fisheries and ecosystem services, emissions reductions, improved public transport, sustainable agriculture, renewable energy, and so on (UNEP; in Lander, 2011). There are therefore two core components to official notions of the green economy, both underpinned by the desired channelling of investment: reducing the economy's impact on natural resources and climate change through increased productivity and efficient use of resources, and incorporating nature more into the economy so creating new areas of 'green' economic activity and profitable avenues of investment for capital.

In order to facilitate this investment, a prominent aspect of the green economy is the valuation of nature. The rationale of this process of valuation is that nature is damaged

because it is undervalued in economic terms. If economic values can be assigned to nature, then disincentives for environmental degradation can be created by incurring economic costs for doing so, while obtaining economic benefits for preserving them (Unmüßig et al, 2012). This will engender a more rational allocation of capital, bringing the needs of capital and nature together; that of economic efficiency and environmental sustainability. For critics of the green economy and valuation, to do so requires making new areas of nature legible to capital in order to make it investable (Foster, 2022; Monbiot, 2014). To make new areas of nature legible to capital as something that can be invested in involves the recasting of nature and ecosystems as natural capital, that provide ecosystem services to humans, to which market values can be applied in order to sell and buy those services, and which can also serve as a source of finance for nature's protection (Foster, 2022; Arsel and Büscher, 2012). Depending on the object and activity, it involves varying modes of commodification, capitalisation, marketisation, or financialisation of nature; the underlying logic being that of creating markets from ecological and social problems. It can involve further commodification through various means, such as valuation of ecosystems through selling of offsets, commercialising nature through ecotourism, in the case of some renditions of climate smart agriculture the tighter integration of smallholders into commercial input value chains to purportedly raise their productivity and so reduce their environmental footprint, and so on. The process requires a host of operations to recast nature, to create the processes and institutions for managing it as an economic asset, and organising markets for its exchange, thus recasting socio-ecological relationships and political relations in concrete ways (Leach and Scoones, 2015b).

Within the frame of the driving role of markets and capital in achieving ecological ends, the role of the state is generally to create an enabling environment into which investments can flow. States should provide the framework for the green economy to grow, by removing environmentally harmful subsidies, formulate legislative standards, implement green industrial policy and promote research, so as to attract investments into the green economy (Unmüßig et al, 2012). However, the role of the state also depends on the particular way in which the green economy is conceptualised in a particular context. As those such as Death (2015) and Merino-Saum et al (2020) show, while the blueprint of the green economy concept emerged from institutions like the UN, it has been elaborated in various ways by differing political actors and contexts, as well as by states as they mould it to their particular circumstances. Thus Death (2015) shows that in what he calls 'green transformation' and 'green revolution' approaches to the green economy, a stronger developmental role for the state is envisaged. This would more actively steer the economy towards green objectives, *ala* the developmental state. Such perspectives are reflected in some of the framings of the Presidential Climate Commission (PCC) in South Africa, which tackles fundamental obstacles to the necessary transformations of the economy like the minerals-energy complex (MEC) (see Baloyi *et al*, 2022), although such an approach is unevenly represented in PCC documents and positions. In 'green growth' and 'green resilience' approaches the state is to enable the functioning of the market as the main agent for building a green economy (Death, 2015).

The green economy has been adopted and incorporated into defining priorities for development by continental institutions in Africa and governments. The African Union's *Agenda 2063*, its key vision document for the continent's development, asserts the intent to grow the green and ocean/blue economies, the latter of which is composed of marine and aquatic biotechnology, the development of an Africa-wide shipping industry, enhancement of freshwater and ocean fishing, and the extraction of deep-sea minerals (AU, 2015). The African Development Bank (AfDB) has a Climate Change and Green Growth Department, which is tasked with 'driving Africa's transition towards greater climate resilience and a low-carbon devel-

opment path,'[3] in line with the Bank's Climate Change and Green Growth Strategic Framework. Consonant with the green economy assumption that growth is the foundation for addressing societal problems, the AfDB defines green growth as 'a socially inclusive economic growth and development path that is low carbon, climate resilient, resource-efficient, and maintains and enhances biodiversity and ecosystems' (AfDB, 2021: 16). Its approach to the green economy combines both what Death (2015) terms the 'green growth' discourse, which sees growth as a precondition for addressing environmental problems, and the transformations required to green economies as opportunities for increasing economic activity, with the 'green resilience' discourse that aims to strengthen the capacities of economies to cope with climate changes and deliver growth. This will be achieved with a focus on four key policy pillars to engender green growth: adaptation to boost climate resilience; mitigation to promote low-carbon development; leverage climate finance and mobilising resources; and working with African governments to enact governance reforms to create an enabling environment for green investments from the private sector (AfDB, 2021). Business and investors are therefore seen as key actors in building the green economy.

In 2021 the AU released its *Green Recovery Action Plan* (AU, 2021), which essentially adopts green economy thinking in framing the economic recovery from the COVID-19 crisis as an opportunity for fostering economic growth that is socially inclusive, lowers emissions and protects nature. It is organised around five priority areas of climate finance, renewable energy, biodiversity and nature-based solutions, climate resilient agriculture, and green and resilient cities. Some of these areas will be spoken to in the sections below. The plan continues to emphasise the private sector, and the just transition is framed rather narrowly as a technical energy transition driven by private sector investments, reflecting what some have called a 'shallow' approach to the just transition that emphasises market investments but with inadequate focus on redistribution, democracy, social transformation and climate justice (Cock, 2016).

The notion of the green economy has generated a surge of debate and critique, which relates note only to the notion of the green economy itself, but can also be found across a host of debates on specific aspects that are seen to fall within the green economy, such as in relation to finance, multiple contentious issues within food and agriculture, the renewable energy transition, and so on. Critiques also emerge from grounded research on topics that are seen to fall under the green economy, such as conservation.

These critiques are therefore numerous and multidimensional, but here the paper will just briefly touch on some of the key critiques of the green economy itself, while some of the other dimensions will be unpacked in subsequent sections. A first key critique, coming from the perspective of the need for structural transformation, is that its dominant renditions fail to account for the drivers of ecological (and social) crisis rooted in the structure of the global economy and associated patterns of production, consumption and inequality; and the implications of the kinds of more fundamental transformations that would be necessary to transition the world to a truly sustainable footing. This is also seen in AU and AfDB documents on the green economy, in which structural inequalities between Africa and the world economy, and how they structure the conditions of rural livelihoods and ecologies, are not problematised. Rather, the focus is simply that financial investment, technology and enabling environments will create growth, which will solve these challenges.

Others critique the green economy for offering the opportunity to expand the frontiers of capital accumulation and so requiring some ideological and discursive work for 'paradigm maintenance'. This is pointed to in the case of the green economy to climate smart agriculture, how par-

3 https://www.afdb.org/en/topics-and-sectors/sectors/climate-change

adigms and discourses rooted in material interests and power are constructed through 'multistakeholder' platforms and processes, through a host of symbolisms and discourses, that construct accumulation as the desired response to ecological and social problems (Newell and Taylor, 2018; Arsel and Büscher, 2012). As with the case of turning nature into ecosystem services and natural capital valuation, critics argue that they both recast natural and socio-ecological relationships in ways that have very real effects on the livelihoods of affected people, introducing new contestations and the possibility of dispossession as aspects of the environment that some people depend on are further privatised and commercialised to construct the green economy.

In this sense, the green economy is also critiqued by those such as Lander (2011) as a 'sophisticated offensive' that seeks to respond to the ecological crisis in ways that allow the fundamental, destructive dynamics of capital accumulation and its associated relations of domination and exploitation to continue. While for those like UNEP, the problem is caused by a poor alignment between capital investment and priority areas in the green economy, for structural transformationists like Lander the problem is precisely the subversion of ecologies, societies and democracy to the logic of capital, and especially of finance capital. A more fundamental break with the dominant logic of accumulation and consumption is therefore required for truly greening economies. This critique of how the green economy reinforces existing patterns of power and inequality is to some degree also reflected in some local level research, which show how activities like eco-tourism classed under green economy can in fact intensify resource use and climate emissions (Ströbel, 2015), and perpetuate social inequality by entrenching privileged economic interests in the prevailing distribution of land and resources, and so undercut redistributive claims (Ramutsindela, 2015; Marcatelli, 2015).

How the green economy is structured and put to use, is also a social question. As Death (2015) points out, however, the green economy means different things to different actors, and in different contexts. It is therefore also important to consider the situated ways in which the green economy is 'domesticated', which will be shaped by prevailing arrangements of social and political forces, and the purposes to which the green economy is made to serve and whose interests it reflects (Unmüßig et al, 2012). The discussion here has therefore shown that the green economy is a contested object and therefore liable to be captured by reactionary interests. However, beyond ideological critique, it would also be necessary to engage with how this capture can be contested, and what more progressive and inclusive articulations of real green economies look like. For example, in South Africa, this has been done through the One Million Climate Jobs Campaign.[4] Indeed, approaches under the structural transformation narrative seek deeper green transformations from various angles, and global movements and campaigns representing these arguments abound.

Climate Finance and Carbon Politics

The most important focus of 'green economy' discourse is to align financial flows with efforts to reduce emissions. Here, the most important issues are the different forms of private and public investment through which this can take place, which forms are gaining prominence, and what this might mean for ecologies and agrarian change. This section gives a broad overview of the status of climate finance, the different forms of climate finance, and some of the contestation.

The issue of finance for addressing climate change and biodiversity protection has in recent years come to occupy a prominent place in relevant negotiations and fora, given the scale of finance required to meet the Paris Agreement target of keeping temperatures to 1.5°C and the implications for many developing and small island

4 https://aidc.org.za/download/climate-change/OMCJ-booklet-AIDC-electronic-version.pdf

states of overshooting this target. According to the African Development Bank, African countries would need around US$2.8-3 trillion in finance by 2030 to implement their mitigation and adaptation targets (AfDB, 2021: 12; Climate Policy Initiative, 2022). Climate finance has also been made all the more urgent by the failure of developed countries to live up to the goal set at COP15 in Copenhagen in 2009 of providing US$100 billion dollars of grant-based finance annually to developing countries by 2020 – in 2019, only US$32.9 billion was provided by developed country governments (Yu, 2021), a fraction of the total global flow of climate finance (from public, private, development, bilateral and multilateral sources) of $632 billion in 2019/2020 (Buchner et al, 2021). Even this is about half the US$1.3 trillion that it has been estimated developing countries alone need annually to finance mitigation, adaptation and loss and damage (AGN, 2021). A further point to note about existing flows of climate finance is that a very small proportion has been going to adaptation, with the bulk going to mitigation (Buchner et al, 2021).Even under the unlikely 'safe' scenario of 1.5°C of global warming, adaptation needs in southern Africa will be significant, especially among those dependent on rural livelihoods. Under a 2°C scenario matters will be worse.

Most of the funding that has gone into adaptation has come from the public sector, yet together with national bilateral and multilateral development finance institutions, adaptation finance constituted in 2019/2020 only 14% of total public finance (Buchner et al, 2021). It is estimated that at 1.5°C global warming Africa will need up to US$50 billion per year for adaptation. Of the climate finance mobilised for Africa, only about 5% has been allocated to adaptation. Most climate finance is based on debt instruments and so mitigation projects are preferred by bilateral and multilateral lenders because they have more certainty of earning returns. African governments also tend to prefer accessing grant-based financing as loans add to already-onerous debt burdens. However, in addition to insufficient funds being mobilised to support African governments in mitigation and adaptation, many African countries lack the institutional capacity to access grant funds that are available like through the Green Climate Fund, as well as to implement adaptation projects (Ayanlade et al, 2022).

Key factors to note about global climate finance from an African perspective are that financial flows have remained far below what is needed, and very little of that finance has gone into adaptation. Furthermore, the private sector has been a major source of climate finance, almost all of which has flowed into mitigation investments. Furthermore, regions like Africa exist in a relative vacuum of climate finance, with about 75% of climate finance flows taking place in North America, Western Europe and East Asia and the Pacific (Buchner et al, 2021). At the same time, grant-based funding as transfers from the north to the south have not been forthcoming at the required scale, plus there are capacity issues in linking what funding is available to adaptation projects. African governments are also reluctant to take on more loans to finance adaptation and mitigation initiatives, reflecting an ongoing legacy of the structural adjustment policies of the 1980s and 1990s. This context therefore creates a key opening for private finance to take prominence in African green economy, mitigation and adaptation efforts, reflected in various continental framework documents' emphasis on attracting private finance into various aspects of the green economy (AfDB 2021; AU 2021).

This reflects a global push to mobilise the trillions of dollars in global financial systems towards investments towards net-zero and biodiversity protection. In April 2021, the Glasgow Financial Alliance for Net Zero was launched, consisting of over 160 firms that are responsible for assets of more than US$70 billion, and which aims to mobilise trillions of dollars into net zero investments in pursuit of the goals of the Paris Agreement (UNFCCC, 2021). A dominant emerging narrative has been about how to bring climate change and nature closer to financial flows

Figure 3

CLIMATE FINANCE FLOWS TO AFRICA

A drop in the ocean

$2.8 TRILLION
Amount needed by African countries by 2030 to implement mitigation and adaptation targets

$1.3 TRILLION
Amount needed by developing countries per year to finance mitigation, adaptation and loss & damage

$632 BILLION
Total global flows of climate finance (public, private, other) in 2019/2020

$100 BILLION
Amount pledged in 2009 by developed country governments to developing countries per year as grants

$32.9 BILLION
Amount forthcoming in 2019

$50 BILLION
Funds required in Africa for adaptation to 1.5°C global warming

$30 BILLION
Total amount of climate finance to Africa in 2020

5%
Total climate finance to Africa allocated to adaptation

– how to make climate change and nature available for investment. Key to this is to move beyond donor funding to finance conservation and climate mitigation and adaptation, to an investor-driven approach by which these issues attract finance by providing returns to investors. However, this requires a reframing of nature in line with financialised logics, getting the state and philanthropies to create an environment amenable to financialisation, and the complicated process of bringing ecologies and people into financial value circuits, with very real concrete consequences (Cohen and Rosenman, 2020). These processes of reshaping could become highly significant as more efforts are made to make nature appeal to financial market actors: the assets of the world economy is US$512 trillion, while the asset value of the world's natural capital is estimated to be US$4000 trillion (Foster, 2022), a significant opportunity for accumulation if nature can be brought even further into financial markets successfully.

One of the mechanisms for potentially doing this and that has gained a significant amount of attention globally, including in the climate and biodiversity negotiations, is that of nature-based solutions (NBS). The most prominent definition of NBS is that developed by the International Union for the Conservation of Nature (IUCN):

> *Nature-based solutions are actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits (IUCN, 2016: 1).*

NBS encompass a range of already-existing activities like protection of ecosystems through various means, and are seen as critical for combining climate mitigation and adaptation with biodiversity protection. For example, recognising the role of an intact mangrove forest in protecting livelihoods and cities from flooding, by 'reformists' like King (2022). However, NBS has gained prominence as a way to connect nature to the financial markets in more neoliberal forms of thinking. According to a report by the UN Environment Programme (UNEP) and the World Economic Forum (WEF), about US$133 billion flows into nature-based solutions per year, with 86% of this constituted by government expenditure (of which a third is investments by national governments in protection of biodiversity and landscapes),[5] and the remaining 14% is invested by the private sector. It therefore argues that NBS need to be promoted as a source of revenue for the private sector, and so attract further investment (UNEP, 2021). Packaging already-existing and new efforts to protect, conserve and restore ecosystems as NBS, is an important way to leverage carbon finance for biodiversity protection, through the carbon markets for offsets and trading. It also offers a way to commodify and securitise the climate-mitigation elements of biodiversity and turn them into an asset class to attract investment beyond only carbon markets (Stabinsky, 2021). With this global effort to align private finance with climate change responses and biodiversity protection, this section now turns to a brief overview of the landscape of private finance potentially relevant to the southern African context, rural livelihoods and agrarian change.

The first is the carbon markets. There are broadly two aspects to carbon markets, which emerged from the Clean Development Mechanism (CDM) of the 1997 Kyoto Protocol. The first is the regulated carbon markets, where trading is linked to carbon pricing informed by the polluter pays principle and can take the form of a carbon tax or the requirement to purchase permits to emit. The latter can be traded, whereby those who wish to emit over their initially purchased permits can purchase in the emissions trading market from those who have emitted less than their permitted amount; also referred to as cap-and-trade. An example is the EU Emissions Trading System, where a state regulator grants the permits in line with set overall emissions targets. The second is the voluntary carbon markets where emitting entities can purchase offsets, but these are not counted under their official emissions reductions under regulated markets. Projects like REDD

5 Most prominent of which would be national parks, for example.

(Reducing Emissions from Deforestation and Degradation) have been part of the voluntary markets, where sequestered carbon in protected forests or savannahs, or in tree plantations, can be sold by middlemen companies on the offset market.

The size of the carbon markets has remained relatively small, at about US$300 million in 2019. However, they look set to become a major source of climate finance in the near future with the finalisation at COP26 in December 2021 on a set of unified rules for the operation of the global carbon markets under Article 6 of the Paris Agreement. Carbon markets are projected to grow to US$180 billion by 2030 (Schwartzkopff, 2022). Another study predicts that additional financing from carbon markets could exceed $1 trillion by 2050 (Di Leva and Vaughan, 2021). African institutional actors also explicitly see the carbon markets as important sources of finance for renewable energy, biodiversity protection and agriculture. This includes AU's *Green Recovery Action Plan* (AU, 2021), while in the context of limited public finance available, the UN Economic Commission for Africa has responded by working with member states to link ecosystem protection to carbon markets as a source of finance (UNECA, 2022).

One of the key ways that African ecosystems have already connected with carbon markets is through carbon forestry, whereby selling carbon offsets is seen as a source of finance for conservation. Carbon forestry projects like REDD involve payments or funding from conserving, protecting and establishing forestry and agroforestry landscapes that capture and store carbon, with the carbon market being a key source of such funding (Arhin and Atela, 2015). One of the most prominent of these programmes in Africa has been REDD, which was floated at the UNFCCC in 2005 as one of the formal mechanisms to be embedded in a post-Kyoto framework for global climate action and has since dominated international forestry policy (Kill, 2022). Initiatives like the World Bank's Forest Carbon Partnership Facility (FCPF) and UN-REDD, a partnership between FAO, UNEP and UNDP, were established to support the readiness and implementation of REDD. A key formal motivation for carbon forestry projects like REDD were that they were a key way to benefit local communities as a form of paying them for protection of ecosystem services, and could provide the finance to square the need for addressing poverty with protecting, rather than exploiting, forest products (Arhin and Atela, 2015). They can incorporate land use types, as well as support to community activities like agro-forestry, stove projects as alternatives to charcoal use, market-oriented conservation agriculture and other micro-projects, ostensibly as alternatives to prevent deforestation, for example, for charcoal-making (see Leach and Scoones, 2015a).

Although Africa lags behind other continents in terms of numbers of carbon projects, this model could become significant for rural livelihoods in the coming future. For example, REDD is also geared to become embedded in the global carbon markets architecture with the finalisation of Article 6, and 17 African countries are involved in projects like the World Bank-sponsored Forest Carbon Partnership Facility (FCPF) and twenty are partners of the UN-REDD programme[6] (Arhin and Atela, 2015). Furthermore, the potential for significance at national levels in southern Africa is indicated in the case of Zambia – it made REDD the centre-piece of its national forestry policy and legislation, and covers not only forests *per se*, but general sustainable land use and management (Mickels-Kokwe and Kokwe, 2015). Broader participation in offset mechanisms is being seen across Africa as a source of finance for conservation and agriculture (see Phillips, 2022), including South Africa where, for example, there is a push to link regenerative agricultural practices to carbon markets (see *Engineering News,* 2021).[7]
Beyond the offset markets, there are also efforts to attract

6 Only two southern African countries are partners, Zambia and Zimbabwe; although there are REDD+ projects in South Africa, Zimbabwe, Zambia and Malawi.

7 If this takes root on a wide scale, it could have implications for land reform questions in that they can potentially drive up the value of land (see IATP, 2020). This links to the points raised by those like Murombedzi and Moyo about how various forms of commodification of ecologies under existing agrarian structures can further 'lock in' the inequalities of those

private finance into business opportunities that fall under climate mitigation and adaptation, and biodiversity protection. For example, the World Economic Forum (WEF) has estimated that investments in technologies to protect and restore 'natural capital' could generate business opportunities worth $10 trillion per year, an opportunity that the African Development Bank seeks to harness (AfDB, 2021: 16). A key mechanism to attract such finance is through the promotion of blended finance, especially through public-private partnerships (PPPs), where development finance institutions, public institutions and philanthropies can provide finance to offset investors' risk-returns requirements (to 'de-risk' investments) to attract private capital for development and environmental protection. Blended finance is increasingly being promoted to finance biodiversity protection (by turning biodiversity into an investment opportunity) and green economy investments. It has come to the fore as a financing option under the Convention on Biodiversity (Lim and Chistiansen, 2021), and the African Union has also promoted it as a way of de-risking for private sector green investments (AU, 2021).

Another way in which private investment is channelled into nature is towards impact investment, which is also being positioned as a key mode of intervention by philanthropies. Impact investing essentially suggests that private financial markets provide an unmatched source of capital for addressing escalating environmental and social crises, together with the guidance of market discipline. This remains underpinned by the assumption that social and environmental problems can be solved by subjecting them to financial market logics (Cohen and Rosenman, 2020). This logic has also to some degree shaped the philanthropic world, where there has been a shift to making social investments that should generate returns as indicators of their efficiency based on business principles. There is also a push for philanthropic actors to participate in blended finance arrangements by partnering with public institutions in making the initial input to de-risk investments to attract much larger private climate investments in climate mitigation in developing countries, through initiatives such as the Climate Finance Partnership, led by the largest asset management firm in the world, Black Rock (Jafri, 2022; Waite, 2020).[8]

However, there are also variations amongst philanthropies on approaches to impact investing. For example, there is a conversation amongst some philanthropies who fund more progressive issues such as agroecological food system transformations, about combining their grant-making and investment endowments into providing integrated capital[9] to enterprises working on issues they support. However, they place less emphasis on profitable returns which allows their investment approaches and expectations to be guided by investees' needs, and those of the wider social and ecological systems in which they are embedded (see Astone and Crosby, 2019; Astone 2018). More work is perhaps needed, to understand more deeply how such processes operate in relation to social transformation and agrarian change; to what degree they depart from, or perhaps enhance integration into, neoliberal financial flows; and whether they contribute to social equality or perhaps support those who are already 'winners'.

Contestation on the question of climate and biodiversity finance is widespread. A core theme of critique, coming from a structural transformation perspective, is the contradiction that much of the ecological devastation today has been caused by the power of finance capital as it seeks profitable outlets, and that current predominant ap-

agrarian structures.

8 See https://hewlett.org/blending-philanthropic-public-and-private-capital-to-finance-climate-infrastructure-in-emerging-economies/; https://www.blackrock.com/institutions/en-us/strategies/alternatives/real-assets/infrastructure/climate-finance-partnership

9 A combination of financial capital (philanthropic and investment) and other forms of support to enterprises that address social and environmental problems.

proaches to further recast and make nature further available to finance capital reflect this power and perpetuate the source of the problem, rather than challenging it, and will create renewed forms of exclusion. They argue that other means of mobilising public finance should instead be found, including the payments of climate debt on the global scale, as well as more effort put into disincentivising environmental damage in the first place, through measures like progressive forms of taxation, and undoing the debt-austerity nexus that restricts the availability of public funding for climate and biodiversity action (Lim and Christiansen, 2021; Dempsey and Irvine-Broque, 2022).

Distributional questions are therefore raised in critiques as well. For example, some argue that blended finance and PPP approaches effect public transfers to private entities to provide services that should be public goods, and that much larger amounts of public funds would be needed to attract private investors than is anticipated by its promoters anyway, and with a low chance of achieving any transformative ends (Lim and Christansen, 2021). Similarly, authors have shown how in the financialisation of nature to protect it, the provision of many 'ecosystem services' in the first place depend on public and philanthropic expenditure, thus providing public subsidies to private accumulation (Cohen and Rosenman, 2020). There is also a distributional question at the global scale – it has been estimated that the total annual debt repayments for 44 African countries is in the region of US$75 billion per year, far more than current flows of climate finance to the continent. Even the Working Group II of the IPCC's latest 6th Assessment Report argues that if debt relief was aligned with the goals of the Paris Agreement, significant funds could be freed up for African governments to spend on climate mitigation and adaptation priorities without having to incur further debt (Ayanlade et al, 2022).

Critiques of privatised approaches to climate finance also emerge from examinations of their dynamics at community and ecology level. The most prominent points of controversy on forest carbon projects like REDD is that, firstly, as a market-based mechanism for lowering emissions through offsets, they simply do not work (evidenced by the failure to halt deforestation), they provide a way to avoid reducing emissions and consumption patterns of the highest emitters, and that they distract from addressing the root causes of deforestation and climate change, and therefore from the changes in consumption and production patterns required to enable this, especially of the North (Stabinsky, 2021). In this sense, secondly, they are critiqued for further placing the burden of mitigation on populations least responsible for climate change, and essentially blaming rural and forest peoples for deforestation rather than large-scale, corporate-driven deforestation (Kill, 2022). Thirdly, while such projects have been promoted as ways to benefit local communities through cash transfers or employment opportunities, negative impacts have been widely documented, such as displacement of forest-dependent communities, restricted access to the use of forest resources, and restricted participation by affected communities (Arhin and Atela, 2015). There are also arguments that carbon-offset projects are prone to failure, while still having these social and economic impacts on communities (Leach and Scoones, 2015).

Beyond the problem of displacement and dispossession, research also points to how who benefits and who is excluded from such benefits are also shaped in complex and nuanced ways. For instance, in order to bring nature into the market, natural ecosystem processes, carbon and biodiversity that were 'unruly and dynamic' in their original context need to be made 'controlled, auditable and tradable' (Leach and Scoones, 2015: 25). This means that ecologies must be simplified and reordered, and therefore people's relationships to them. In this reordering, pre-existing conditions, processes and histories determine how this plays out in terms of who is in a position to take advantage of opportunities, the kinds of opportunities it offers, and how it articulates with the role of the state.

Different proposals thus emerge from these critiques. For

example, those from a more structural transformation perspective argue that such carbon projects should be abandoned. Instead, local projects with local interests should be prioritised in design and implementation, and climate mitigation addressed elsewhere, such as addressing at source emissions and northern consumption patterns (Leach and Scoones, 2015; see Cabello and Kill [2022] for this position). On the other hand, reformist positions suggest that economic and technical issues have so far dominated the discussions on carbon projects, while social justice and equity issues have been sidelined. Reformists argue that carbon markets, through carbon projects, can still be made to work if issues of social justice, equity and local development objectives are placed at the centre of project design (Arhin and Atela, 2015). This is linked by some reformists to the need for more transparency in credit markets and for better quality of credits in terms of carbon sequestration, as well as reforms to cap-and-trade systems to make them more effective. They also argue for pushing other forms of finance to developing countries in the name of climate justice.[10]

This section has covered some of the overarching coordinates of climate finance as potentially relevant to the southern African context, and some of the ways in which African ecologies and livelihoods have been brought into the flows of climate finance. There are, however, an array of other financing mechanisms being developed for various aspects of the ecological question, such as around sustainable landscape management and restoration, that are too numerous to unpack here and would require further research. For example, the UN Development Programme in South Africa has been working with the national Department of Environment, Forestry and Fisheries (DEFF) and Endangered Wildlife Trust (EWT) on a programme across commercial farmland and communal land aimed at securing multiple ecosystems benefits through sustainable land management and restoration, by a particular integration of agriculture, land restoration, biodiversity protection and other economic activities like tourism.[11] The SA National Biodiversity Institute (SANBI) has also worked with the UNDP on a Biodiversity and Land Use Project to support municipalities in ensuring biodiversity provides benefits to residents.[12] New mechanisms are being developed to finance this sort of work, like the Biodiversity Sector Investment Portal developed through the UNDP Biodiversity Finance Initiative (BioFin) across a number of countries;[13] a Sustainable Landscape Management Finance Strategy is being developed by UNEP for Ecosystem-based Adaptation (EBA) work; and WWF-SA and the Wilderness Foundation Africa established the Sustainable Landscape Finance Coalition.[14]

Agriculture and Climate Change

In 2019, food systems globally contributed 31-33% of greenhouse gas emissions, the largest portion of which is from agriculture (Tubiello, 2021), which is also the key driver of biodiversity loss. This, and agriculture's vulnerability to climate change, means it is a key focus of green economy responses to climate change. Africa contributes about 14% to global food systems emissions, most of which comes from agriculture and land use change (FAO, 2021c), bearing in mind that on the whole Africa still only contributes about 3% of total global GHG emissions. In the African context, with the high proportion of people that depend on agriculture for their livelihoods, dominant efforts are particularly connected to priorities around poverty alleviation, development, nutrition and adaptation to

10 Such as Carbon MarketWatch, https://carbonmarketwatch.org/our-work/carbon-pricing/scrutinising-private-sector-offsetting/

11 See https://sites.google.com/view/slm-progress-calculator/home; https://www.youtube.com/watch?v=-e3T48DLy0o

12 See https://www.sanbi.org/biodiversity/science-into-policy-action/mainstreaming-biodiversity/biodiversity-and-land-use-project/.

13 https://www.biofin.org

14 https://www.wwf.org.za/our_work/initiatives/the_sustainable_landscape_finance_coalition/

climate change. The hegemonic framing of these priorities amongst bilateral donor agencies, philanthropy-funded initiatives, and AU bodies is generally that of a 'green industrialisation' agenda that emphasises enhancing productivity through commercial inputs like artificial fertiliser and pesticides, technologies like improved seed and digital platforms, finance, and connection to markets for inputs and outputs. These components, however, are foregrounded by several intersecting ideas and approaches.

The first is the sustainable intensification discourse, which was triggered by the FAO's announcement in 2008 that the world needed to double food production in order to feed a population of 9 billion by 2050. The organisation has since changed its position on this, acknowledging statistics that the world already produces enough food, and that the problem is about access to food (and therefore its distribution). Nonetheless, many governments, international agencies like the CGIAR, Alliance for a Green Revolution in Africa, and development cooperation agencies, and large food industry players, have latched onto this notion, setting the aim of needing to double food supplies by 2050. Thus in 2020 the FAO made it its 'Priority Objective A', and has thus been defined by the UK Royal Society as when 'yields are increased without adverse environmental impact and without the cultivation of more land' (in FoEI, 2012 5). Its underpinnings of proposed economic efficiency and environmental sustainability extend to the protection of natural habitats, because its proponents suggest that it will halt further agricultural expansion, and so also forms part of 'half-earth' conservation proposals, as discussed below. What constitutes sustainable intensification in practice has been difficult to pinpoint, being used to justify intensification of conventional practices, conservation agriculture, and even agroecology (see Mdee et al, 2021). However, by not excluding any practices, it has become a key rationale for those who promote industrial agriculture techniques as the tools to raise productivity, including genetically modified organisms.
Sustainable intensification provides a rationale for climate-smart agriculture (CSA) as well, which based on the recognition of the environmental damage caused by global agriculture systems, is posed as the solution. In its global articulation CSA is not limited in its focus to smallholder farmers, but has been endorsed by a host of food system actors, from the FAO, to the World Farmers Organisation (representing large-scale commercial farming unions like AgriSA), some of the world's largest agro-food corporations, and the AU. However, in contexts like Africa, it has specifically been 'tailored' to smallholder farmers. At an international conference on CSA in 2010 in The Hague, CSA was defined as an approach that 'sustainably increases productivity, enhances resilience, reduces/removes greenhouse gas emissions, and enhances achievement of national food security and development goals' (Newell and Taylor, 2018: 5). The three pillars of CSA are to reduce emissions from agriculture (mitigation), build resilience to climate change (adaptation), and to raise agricultural productivity to increase incomes and reduce poverty and hunger in developing countries, promoted as 'triple-win' outcomes (Clapp et al, 2018). It is not seen as one technique, but a broader approach to reconciling agriculture and climate change by incorporating a range of techniques from digital tools to help farmers judge when to crop, nutrient management to tailor fertiliser use, and intercropping to maximise soil carbon sequestration (and hence its link to carbon trading). In this sense, however, CSA does not offer anything new, but instead embodies a renewed vigour 'to demonstrate the ongoing viability and sustainability of existing agricultural technologies, practices and strategies' (Clapp et al, 2018: 4). In this sense it can be seen as a framing device for continued accumulation by global agribusinesses under climate change.

This also reflects the global interests that have tended to coalesce around CSA, in a 'regime complex' of UN institutions like the World Bank, FAO, International Fund for Agricultural Development (IFAD), CGIAR, transnational development and conservation NGOs, private sector actors and representatives like the International Fertiliser Association,

McDonalds and Kellogg's, biotech companies like Monsanto, universities and bilateral actors. One of the features of this regime complex is the interlinkages between universities, research organisations, and industry actors, like between CGIAR's Climate, Agriculture and Food Security research programme and Monsanto and the International Plan Nutrition Institute, a fertiliser lobby group (Newell and Taylor, 2018). One of the programmes founded by the FAO for advancing CSA globally, the Global Alliance for Climate Smart Agriculture (GACSA), plays a key role in bringing transnational agribusiness actors into CSA initiatives, largely on the basis of market opportunities and their Corporate Social Responsibility and investment footings. In short, agribusiness is overrepresented in the CSA regime complex, as well as key global governance institutions that are committed to the neoliberal organisation of the global food regime.

In many ways, these approaches therefore reflect the reproduction of the Green Revolution approach to agricultural development. Based on increased commercial input use, improved seed varieties, technology and access to markets, the Green Revolution has long constituted a framing agricultural development approach across Africa, and its tenets continue to be promoted by dominant institutions and agencies on the continent, such as USAID, the EU-Africa Alliance for Sustainable Investment and Jobs (EC, 2020; ACB, 2019), and the Alliance for a Green Revolution in Africa (AGRA). AGRA works in 11 African countries (Mozambique and Malawi in Southern Africa) and is characterised not only by its promotion of the Green Revolution, but by its market-led and private sector-oriented approach, seeking to roll back and privatise more overt roles of the state in agriculture and food systems (see AGRA, 2019; Moyo *et al*, 2009; Mkindi et al, 2019). However, while it only works in 11 African countries, it promotes its positions in continental policy programmes and conducts joint programmes with institutions like the AU and African Development Bank in alliance with corporate agribusiness actors (see AfDB, 2017; AUC, 2017).

There is a deeper agrarian development assumption that underpins these proposals for industrialising African agriculture as a climate change response. This might be called a market-led development consensus that advocates for the expansion and deepening of capitalist social relations to address social and ecological problems, assuming repetition of 'successful' capitalist development in rich countries (Selwyn, 2017). This rests on perspectives of who is economically efficient and who and what is environmentally sustainable: the assumption tends to be that as more efficient producers are able to take advantage of technologies and markets and agro-food value chains develop, so less efficient (poorer) producers will transition out of agriculture into downstream agro-food value chains and non-farm and urban employment as the wider economy develops, a big (and unfounded) assumption. Production will also become more environmentally sustainable as better-off farmers have adopted technology and raised productivity (sustainable intensification), and the out-migration of less efficient farmers makes more space for environmental protection, linking to conservation imperatives (Borras and Franco, 2017).

Many of the tenets of the Green Revolution are also reflected in long-existing approaches to agricultural development by African governments, and are reflected in continental framings of agricultural development in the context of climate change and the green economy. For example, the African Development Bank acknowledges that Africa has made extremely low contributions to historical climate emissions (around 7%; Brockington and Preto, 2015), and it seeks to focus its financing on the sectors that contribute most to Africa's emissions, and which are projected to do so. With 60% of Africa's GHG emissions coming from land use and land use change, the top of its priority for mitigation investments have significant bearing for rural livelihoods – bankable 'country-driven national projects' that address 'unsustainable agricultur-

al practices' and 'emissions from deforestation' (AfDB, 2021: 12). Agriculture has consistently occupied an important place in the AfDB's approach to green growth; its 2012 definition of green growth specifically included 'enhancing agricultural productivity' (AfDB, 2012: 3). The ecological agenda is inserted into AU policy documents in various ways, from its endorsement of climate-smart agriculture and support to the Africa CSA Alliance, to its call to promote 'ecological organic agriculture' in the Malabo Declaration (AUC, 2022). It also includes proposals for agriculture in its *Green Recovery Action Plan* (AU, 2021), which calls for making agriculture and rural communities more resilient to climate change through investment in technology (irrigation, 'improved' seed varieties, targeted research etc) and linking to value chains in order to make it more productive and profitable as a basis of resilience, framed by the 'green industrialisation' of agriculture and climate smart approaches.

These positions all continue to reflect, however, a consistent agricultural modernisation agenda, as reflected in items like the Comprehensive African Agricultural Development Programme (CAADP) and the 2014 Malabo Declaration: to pursue increased productivity through industrialising African agriculture, to increase the commercialisation of African food systems and develop agro-industries, for enabling conditions for private sector growth, public-private partnerships, increased technology and investment, and regional and global integration into commodity value chains (Newell et al, 2018). In the 2014 Malabo Declaration, African heads of state endorsed the establishment of the Africa Climate Smart Agriculture (CSA) Alliance as the vehicle through which to pursue the African Union's 'Vision 25x25' of having 25 million African smallholders practising CSA by 2025. This has been positioned as the AU's defining approach to achieving food and nutrition security on the continent, which, consistent with its approach to agricultural development, would be achieved 'through exports and value-added processing' (NEPAD, 2019: 1). Through the Africa CSA Alliance Forum, the African Union Development Agency has the key mandate to coordinate the CSA roll-out at country level and in regionally integrated ways. A central basis of this approach remains the commercialisation of agriculture through private sector partnerships with smallholder farmers and the need to use development finance to unlock large-scale private sector investments in CSA (AUDA-NEPAD, 2019).

Given the role of agriculture in contributing to climate change globally, the need for adaptation in agriculture to protect livelihoods, and the growing scale of climate finance, framing existing agricultural solution packages as climate-friendly, such as CSA, is also seen as an important way to attract climate finance associated with the carbon markets and the green economy (Newell and Taylor, 2018). This repositioning of agriculture in the solutions to climate change and as offering agribusiness opportunities is seen in a report on regenerative agriculture in Africa co-developed by those like AGRA, the African Climate Foundation, UNECA, and the International Union for the Conservation of Nature (IUCN), and endorsed by the AU Development Agency (AUDA-NEPAD) (African Regenerative Agriculture Study Group, 2021). It seems that CSA and conservation agriculture practices of low tillage, mulching, crop diversification, water conservation techniques and agroforestry are packaged into the concept of regenerative agriculture. Regenerative agriculture appears as a way to promote these practices to large agribusinesses operating on the continent, such as AB Inbev, to support the farmers they procure from to shift to, because of the increased yields and profitability, job creation and export market opportunities it offers, and for attracting climate finance.

There is therefore a significant array of actors operating across the continent that are working to re-organise African agriculture around markets, technology, corporate inputs, productivity and the private sector. A common

feature is to promote particular elements, like digitalisation, or genetically modified seeds, or increased fertiliser use, as silver bullet solutions. However, these technofix approaches have also been strongly contested, through combinations of research, advocacy and organising, by researchers and civil society organisations aligned with food sovereignty perspectives that focus on various aspects of climate justice and structural transformation. A key overarching aspect of contestation is that these approaches to agriculture simply repackage what is an environmentally destructive model of industrial agriculture and its corporate-controlled inputs as the solution to climate change. Programmes like AGRA are seen as strategies to create the frameworks and rationale for expanding the markets of agribusiness corporations across the continent, with better-off farmers potentially accruing some benefits but hooking the majority of smallholder farmers onto an economically unviable model that siphons farmers' and public funds into the private sector, with little to show for it by way of improved productivity, food security and incomes (Mkindi et al, 2020; Wise, 2020; ACB, 2012; 2016a).

Some research has also critiqued how essentially rural differentiation shapes who is able to take advantage of this development approach, with primarily male and wealthier farmers benefiting from Green Revolution technologies (ACB, 2016a; Wise, 2022). Such findings are in fact congruent with the development assumptions that structure this Green Revolution development approach, which assumes that 'less efficient' farmers will simply transition to other areas of the agri-food value chain, other industries, and into residence and employment in urban areas. This assumption has of course been critiqued, on the grounds that in the context of the south and 'disarticulated' development, the already existing patterns of surplus populations surviving precariously in the informal economy is simply likely to grow (Amin, 2011; Borras and Franco, 2017; Li, 2009).

Much critique of the Green Revolution narrative remains focused on the technologies promoted and their association with corporate power. This includes digitalisation – whereas corporate-centred narratives promote it as having a key role to play in providing farmers with access to weather information, accessing markets, and enabling 'precision farming' as a solution to coping with climate change, structural transformation critics view it as a trojan horse aimed at creating markets for and expanding the power of big data and corporate agribusiness over the agricultural value chain (Mooney, 2018; Tanzmann, 2019). Similarly, solutions to climate change are seen as providing further cover for trying to create a market in African for technologies like GMOs after being rejected in places like Europe and that have failed in their stated objectives of engendering drought and pest tolerance across the continent where they have been experimented with (see ACB, 2021a, 2021b).

A further key point of contestation relevant to agricultural development and climate change in southern Africa is the question of seed systems. It is widely acknowledged that agrobiodiversity (genetic and seed diversity in agriculture) is critical for ecosystem health, for the ability of agriculture to adapt to climate change impacts, and for health and nutrition through diverse diets (FAO, 2019; 2021b; Mushita and Thompson, 2019). For many advocates of agrobiodiversity, it is predominantly smallholder farmers who are responsible for reproducing and protecting this agrobiodiversity through farmer managed seed systems, defined as the measures and practices that farmers undertake to source, select, adapt, ensure quality, use and disseminate their seed; and are said to constitute 90% of the seed used in sub-Saharan Africa (Biowatch, 2021; McQuire and Sperling, 2016). Such advocates call for the protection and the promotion of these systems as a key solution to resilient food systems under climate change through the recognition of and support for farmers' rights, in line with Article 9 of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and Article 12 of the UN Declaration on the Rights of Peasants

and Other People Working in Rural Areas (UNDROP).
These arguments are made in opposition to the spread of commercial Plant Variety Protection Laws on the continent informed by the International Union for the Protection of New Plant Varieties 1991 (UPOV91), which is essentially an intellectual property (IP) framework for seeds. The passing of commercial seed laws in African countries, as well as harmonisation processes to enable cross-border seed trade in regional economic communities (and more recently continent-wide), are promoted by African governments, the AU and the likes of AGRA, as important for raising agricultural productivity in the context of climate change by incentivising the breeding and commercialising of more productive seed varieties, especially of more drought-tolerant varieties. Food sovereignty actors resist these arguments on the basis that they have little to do with the wellbeing of farmers and are more aimed at creating the policy architecture for market expansion to benefit the world's powerful seed and agro-chemical companies while criminalising farmer seed practices, and the focus on singular varieties promotes a monoculture model of agriculture that reduces agrobiodiversity, thus undermining capacities for climate mitigation and adaptation (see ACB, 2021c).

A further point to note about contestation is that approaches to agro-food systems in the context of the climate and biodiversity crises tend to be quite sharply polarised between the neoliberal, corporate narrative promoting industrial agriculture versus the structural transformation narrative promoting food sovereignty and agroecology. However, many of the components of corporate framing used to be taken for granted as the conventional approach to agricultural development across the world and in postcolonial states, and are still promoted by reformist/developmentalist researchers (such as Wiggins and Lankford, 2019; Vincent et al 2013). One reason may be environmental movements' exposure of the ecologically destructive nature of industrial agriculture over the past few decades. Possibly the factor that has caused such a sharp division, is the privatisation of these components (such as formal seed breeding and research) from a primarily public sector service and their subsumption to a more explicit profit motive with the rise of the 'corporate food regime' since the 1970s. These components are hence less associated by many with a 'conventional' approach to agricultural development and more a corporate approach, and hence the understandings of the struggle as against the power of capital to shape agriculture in its private interest over that of the public good.

This focus on corporate techno-fixes by food sovereignty actors as a key object of struggle in the African context, and the consequent promotion of agroecology as an alternative tends to maintain the focus on productive techniques as indicators of food sovereignty. As Ian Scoones points out, this can occur at the expense of consideration of the context of the interventions in question that shapes their character and outcomes (and could be equally relevant in shaping/limiting the outcomes of agroecology interventions), as well as 'the socio-technical and political challenges of wider change' (Scoones, 2016: html; Scoones, 2021). In other words, more attention should be given to the wider agrarian and political relations with which interventions – Green Revolution-centred or agroecology-centred – intersect and determine the fortunes of the rural livelihoods in question. This might include links between state-society relations, agroecological conditions, patterns of differentiation and forms of organisation, and distributive questions, that ultimately shape the social and political grounds upon which such interventions are elaborated.

This has further relevance for coming back to thinking about the 'green' agricultural industrialisation agenda on the continent, and the necessity of situated and contextual analyses. One aspect is the question of where agency lies in the formulation of the relevant policies and programmes. Mdee et al (2021) note how often at both continental and national level policies tend to be informed by donor-driven discourses and international finance incentives. This is seen, for example, in how the AU *Green*

Recovery Action Plan is crafted largely with non-African government donor support, and the myriad programmes that it encompasses involve partnerships between the AU, donor governments and bodies, and private actors (see AU, 2021: 8). This means that there tends to be little coherent operationalisation of these policies on the continent (Mdee et al, 2021), a fact confirmed by the mixed implementation of the provisions of the Malabo Declaration across the continent, as reflected by the AU Commission's most recent continental review (AUC, 2022). Thus, although there is a general policy commitment by governments across the continent to technology-driven modernisation and commercialisation of agriculture, achieving these ends is often hampered by factors like apparent lack of state capacity at national level. For example, in their review of efforts at sustainable intensification of agriculture in Tanzania, Malawi and Zambia, Mdee et al (2021: 1277) suggest that, coupled with existing political priorities and elite accumulation patterns, donor-funded projects tend to compensate for the gaps in state implementation capacities, 'creating a fragmented mess of donor-driven interventions.' This implies that it is not just stated (corporate-centred/industrialisation/private sector-focused) policy that determines processes and outcomes on agriculture and climate change, but the complex intersections between an array of material conditions, governance actors, political interests and dynamics, and which require particular investigation.

This assemblage of interventions shaping various parts of African agriculture includes the question of insurance. This is underpinned by two prominent concerns: firstly, to build farmer resilience and prevent the deepening of hunger as a result of climate change and, secondly, to enable insurers to respond in this context of increasing risk and guide what kind of insurance packages and practices should be developed for this context, and how to distribute and manage risk and cost between insurance companies, the state and the insured. This reflects growing global attention to the role of insurance in governing, in the context of the risks associated with climate change (Collier et al, 2021), and the notion that there are in fact significant business opportunities for insurers that aligning insurance, resilience and sustainability could provide, promoted by the UN Environment Programme Finance Initiative (UNEPFI), for example.

The processes, structures and dynamics around climate insurance, raises questions related to agrarian change in a number of ways. The first is that of coverage. A key concern for global bodies like the World Bank, G7 and G20 and international NGOs is that most small farmers across the developing world remain uninsured, and that insurance is a key tool to prevent the reversal of 'development gains' through losses resulting from the growing frequency and intensity of adverse weather conditions and disasters. Hence in 2015 the G7 pledged to extend climate risk insurance to 400 million people in the developing world by 2020, with a particular emphasis on Africa, under the InsuResilience Global Partnership for Climate and Disaster Risk Finance and Insurance Solutions (Johnson, 2021).[15] The instrument to insure populations otherwise too poor to be insured is index-based insurance, which for agriculture is indexed to weather conditions like rainfall, temperature and vegetation cover. Rather than paying out for assessed losses, a payment is triggered to farmers based on weather-related conditions, irrespective of individual farmer losses. This is ostensibly aimed at reducing risks for insurers and transaction costs for farmers, as each individual claim does not need to be assessed (Isakson, 2015). Efforts have been made to roll out index insurance to poor and vulnerable small farmers across Africa, including in Southern African countries like Zambia, Mozambique and Malawi. However, they have been plagued by low demand and basis risk,[16] and so coverage has remained well below the hundreds of millions target.

15 See https://www.insuresilience.org.

16 The discrepancy between the weather conditions represented in an index and the actual conditions experienced by farmers (Johnson, 2021).

Despite its problems, as Johnson (2021) details, index insurance is still seen by the development apparatus as the only viable solution for small farmer climate risk insurance, and so significant effort and investment remains focused on index insurance to narrow the gap between what it attempts to do and what it accomplishes.

This problem of coverage is not only a problem for small farmers, however. In South Africa, with its agricultural system dominated by large-scale commercial farmers, only 20% of its commercial grain farmers have drought insurance, which is argued to be a function of the high cost of climate insurance and its low availability, signalling a 'broken' insurance system (Reuters, 2021). The government and the insurance industry have therefore developed a plan to implement a 10-year scheme to subsidise 25% of the premiums of multi-peril crop insurance for commercial grain and oilseed farmers, and 75% of the premiums of weather index insurance for smallholder grain, oilseed and livestock farmers (Reuters, 2021). This points to a second issue related to climate risk insurance and agrarian change, which is that to establish a viable market for insurance requires governance arrangements that make actors take certain information into account in their decisions and actions, what Collier et al (2021: 166) call 'calculative agencies'. This topic of information points to the politics of knowledge. A key issue here is getting weather information to those like farmers, raising a research question of how markets in weather informatics are constructed.

The calculative agencies also involve arranging the distribution of risk, which includes the achievement of behaviours that will make activities insurable in financial terms. In this regard, they play an active role in constructing sites for (and contesting of) social agency at the regional and local level. For example, insurers like Santam in South Africa, realise that increasing disasters pose a risk to the financial sustainability of the insurance industry and so are undertaking active interventions aimed at mitigating the impacts of disasters, like setting up forums for fire and environmental management, advising farmers on their environmental practices and clients on behaviours to mitigate risk, and advising municipalities and other spheres of government (UNEPFI and SBI, 2014; Forsyth et al, 2019; Gibbens, 2021; Diedericks, 2021). Similarly, in responding to the challenges of rolling out index insurance to small farmers in Africa, promoters from development finance institutions and those like the World Bank have shifted both whose behaviours are to be modified and the scale at which they provide the insurance, from individual smallholders to meso arrangements, and up to providing the insurance to states on behalf of smallholders. This involves certain requirements from states and in their relationships to smallholders (see Johnson, 2021). How new governance arrangements over landscapes are being crafted between private, public and other actors in the face of climate change, the relationships between the actors, and how they are shaping/governing practices on the ground could thus potentially be an interesting area of further research.

A third aspect to this is the relationship between insurance, agrarian change and inequality. A key threat of index insurance, acknowledged by some of its promoters as well, is that it can potentially leave poor smallholders who sign up to it even worse-off than before, such as when they have incurred the costs of premiums and the pay-out for losses is way below the actual value for losses, as has been common (Johnson, 2021). Furthermore, many index insurance operators have also sought to modify farmer behaviour by bundling the purchase of insurance with loans and Green Revolution input packages, with the aim of spurring higher productivity and encouraging farmers to grow higher value crops (a supposed hedge against climate change). However, those like Isakson (2015) argue that increasing dependence on homogenised seed and crops and on private sector inputs furthers the vulnerability of poor farmers to climate change. Similarly, with the shift towards insuring nation

states with index insurance, Johnson (2021: 269) argues it is the 'adversely selected' of households and states who are compelled to continue to experiment with this less-than-perfect solution 'by virtue of their present and past positions in the global political economy.' This raises the question of inequality between those who are the subjects of index insurance, and those populations and countries with access to better insurance options by virtue of their economic means.

The Conservation Push in the Context of Biodiversity Loss and Climate Change

Conservation has had a chequered history in Southern Africa, from its colonial 'fortress conservation' approach that dispossessed natural-resource dependent communities on a racial basis, to more contemporary incarnations of neoliberal conservation that extend old approaches, incorporate new community-based approaches, and engender new opportunities, inequalities, exclusions and contestations. Conservation has become a part of the green economy discourse as a site of accumulation by connecting the protection and monetisation of nature. Conservation has also received renewed attention in the context of the severity of the biodiversity crisis (IPBES, 2019) and in the lead up to COP15 of the Convention on Biological Diversity (CBD) that was supposed to take place in 2021 to develop a post-2020 Global Biodiversity Framework (GBF). Push for conservation is also increasingly connected to the need to protect carbon sinks for mitigation and 'ecosystem services' necessary for climate change adaptation.

This raises questions about the possible implications for rural livelihoods. Many studies have documented conservation histories in particular contexts, as well as the recurring controversies over the social impacts of formal conservation on affected populations' livelihoods related to access to food sources, grazing land, spiritual and medicinal dimensions, and cultural ties. They also highlight the undermining of human rights through the mistreatment and force used against affected communities to enforce conservation priorities, and how conservation interests are advanced through the power inequalities that exist between well-resourced conservation organisations and usually poorer affected communities. At the same time, there are also studies that highlight the positive impacts of conservation, along similar axes (Holmes and Cavanagh, 2016).

Similarly, Holmes and Cavanagh's (2016) extensive review of the dynamics and impacts of neoliberal conservation bring to the fore how, rather than only blanket dispossession, rural communities are also integrated into conservation, linked to wider projects of accumulation. Neoliberal precepts have increasingly come to define mainstream approaches to conservation, which generally continue the dichotomy between people and nature via the promotion of protected areas together with broader participatory approaches with affected actors, like community-based conservation models (Büscher and Fletcher, 2019). Neoliberal conservation, or 'neoprotectionism', links this to capitalist markets to supply solutions to environmental problems through various combinations of commodification, privatisation and financialisation. Arsel and Büscher (2012: 54) have referred to this as 'Nature™ Inc.'. Beyond only displacement and dispossession, studies find that often the costs and benefits of neoliberal conservation co-exist, but are unevenly distributed according to political power, class, gender, race and generation (Holmes and Cavanagh, 2016). One aspect to this is the contextually specific ways that neoliberal conservation acts to produce 'both environmentally and market-friendly subjects', and interacts with prevailing patterns of agrarian differentiation in wealth, gender, ethnicity and political power to shape the distributional impacts, sometimes in counterintuitive ways (Holmes and Cavanagh, 2016).

In the context of the negotiations under the CBD for a post-2020 Global Biodiversity Framework (GBD), a number of

key proposals have been put on the table to achieve the CBD's target of biodiversity conservation. However, these are subject to dynamics in the CBD negotiations process, and it is unlikely that any proposals will be singularly reflected in the final outcomes. How outcomes from the CBD are implemented also depends on national circumstances – existing approaches to conservation, financial and implementation capacities, and political relations and priorities; as well as the success in national contexts of the global campaigns for these different conservation proposals. Nonetheless, the paper now provides a brief overview of some of the key proposals that have emerged on the global stage and that may have relevance in the Southern African context – Half Earth, Shared Earth, and Convivial Conservation.

One of the most prominent, and controversial, proposals has been the Half Earth vision, which emerged from scientific debates on species conservation and proposes putting 30% of the world under protection by 2030 and 50% by 2050 (and hence is sometimes referred to as 30x30) (Immovilli and Kok, 2020). This was first proposed by E.O. Wilson, and has been promoted under the Global Deal for Nature through the Campaign for Nature, a partnership between the Wyss Foundation and National Geographic Society that couples conservation with the Paris Agreement on climate, and the High Ambition Coalition for Nature and People.[17] The core proposal of the Half Earth narrative is that biodiversity conservation should halt species loss, retain ecological processes and protect wilderness from humans in high biodiversity areas, through large-scale conservation efforts. This 'neoprotectionist' argument (Büscher and Fletcher, 2019) makes the case that environmental sustainability requires protecting half the earth by separating nature and wilderness from human pressures, where human interactions with nature would be mediated by forms of protection and sustainable use under the International Union for the Conservation of Nature's Protected Area as well as Other Effective areas-based conservation measures *(ibid)*.

To make way for such vast protection of wilderness, this has been accompanied by extensive economic proposals for how to organise economic activity outside of protected areas, as indicated in a paper commissioned by the Campaign for Nature (Waldon et al, 2021). This Half Earth proposal is closely linked to sustainable intensification, proposing that with consequent increased pressure on land outside of protected areas, technology and innovations (such as more efficient nutrient management and genetic modification) will be needed to feed a rising population. This proposal includes energy generation from biofuels as part of the intensification process, which would also be supported by the further globalisation of food markets and a deepening of trade liberalisation, tailored in accordance with global sustainability goals (Kok et al, 2018; Borras and Franco, 2018). This proposal thus adds a new dimension to neoliberal conservation.

This 30x30 proposal, which made it as a target into the first draft of the CBD's Global Biodiversity Framework, ignited a storm of controversy in global civil society. In a widely publicised open letter, Agrawal et al (2020: 3) responded to the Waldon et al paper, stating that it 'reads to us like a proposal for a new model of colonialism.' Together with other responses to the Waldon et al and 30x30 model, they highlight that the proposed large increase in protected areas where no farming, livestock keeping or fishing would be permitted raises alarm about the history of the protected areas approach regarding its violations of human rights and dispossession, and that it marginalises the very people who are best equipped to continue protecting biodiversity. They therefore raise warnings on the lack of clarity on how many people and who would be affected by these proposals, its impacts on affected people's livelihoods, cultures and indeed their existence, and the fact that the research team was composed primarily

17 https://www.globaldealfornature.org; https://www.campaignfornature.org; https://www.hacfornatureandpeople.org/home.

by economists from the global north, while the proposals would likely affect mostly communities in the South, reflecting how environmental interests from countries with the highest carbon emissions seek to control the resources of countries of the south in the name of conservation (Agrawal et al, 2020; Agroecology Fund et al, 2021). What emerges from this and other papers on the issue (Schleicher et al, 2019) is that there simply has not been sufficient research done on the social, environmental and economic implications of this proposal if implemented. This reflects both a research lacuna, and the dominant conceptions and interests driving the proposal and the consequent potential dangers for affected communities.

A more moderate proposal is the Shared Earth model, associated with what Büscher and Fletcher (2019) term, 'new conservationists'. It recognizes the need to formally protect and restore biodiversity, but suggests that this can be done in multiple ways and spaces beyond only formally protected areas. It emphasises human-nature relationships in the form of sustainable use of natural resources (ecosystem services) and the importance of cultural and spiritual relationships of communities directly dependent on nature. While the Half Earth approach emphasises centralised global decision making to coordinate the establishment of protected areas, the Shared Earth Model emphasises localised, contextual decision making amongst stakeholders to identify conservation objectives and priorities in ways that enhance the provision of ecosystem services and nature's contributions to people. The scale of action is the landscape, equity is a guiding principle, and while traditional Protected Areas are still seen to have a role to play in biodiversity protection, this is paired with Other Effective Conservation Measures (OECM) and more flexible area-based approaches. Agriculture is integrated into this approach based on mixed-use landscapes, underpinned by ecological intensification rather than agricultural intensification, where agricultural practices enhance ecosystem services and nature's contributions to people. Area-based planning integrates nature within urban spaces and across urban-rural ecologies, and nature-based solutions are implemented in ways that combine various knowledge systems (Immovilli and Kok, 2020; Obura et al, 2021). Those who promote this approach are not necessarily opposed to capitalist elements like nature valuation and payment for ecosystem services, and some rather see it as a different way to organise a capitalist approach to conservation (Büscher and Fletcher, 2019). In this sense, it might be seen as a reformist approach to conservation.

These different conservation proposals in the context of the current push to ramp up the protection of biodiversity, are not perfectly distinct or opposing, but share various common elements and variations. Büscher and Fletcher (2019) advance a more explicitly transformational argument for convivial conservation as an alternative to both the Half Earth and Shared Earth approaches, but emphasise that it also incorporates valuable elements from both. Convivial conservation thus goes further as 'an explicitly political approach to conservation' that in the face of the futility of neoliberal consensus politics on confronting ecological decline, and rising political authoritarianism, 'takes seriously – and so positively confronts – the structural, violent and uneven socio-ecological pressure of our current economic system' (Büscher and Fletcher, 2019: 284). It therefore rejects both nature-people dichotomies and capitalist growth and the intensified consumerism it requires, and is built instead on a politics of equity, structural change and environmental justice. To this end, it rests on five key elements. Firstly, the promotion of nature where people are seen as an interconnected presence in more democratic ways. Secondly, challenging the idea that conservation is only about saving nonhuman nature, which further dichotomises nature-society relations. Instead, both human and nonhuman nature should be equally celebrated and saved. This also opens up the ways in which human value, production and consumption relations can be changed to align with and nurture sustainable conviviality. Thirdly, it moves beyond elite, 'voyeuristic' tourism as a means of enjoying nature, towards creating more democratic possibilities of longer-term engagement. Fourth, in-

stead of nature as a spectacle, it proposes a shift to focusing on 'everyday nature', as a basis for more meaningful engagement with the natures that humans are surrounded by. Lastly, rather than the 'privatised expert technocracy' and the monetisation of nature as ecosystem services that it gives rise to, it proposes making decisions based on the multiple meanings, values and relationships in which nature is embedded and to channel autonomous sources of financing that support this multi-dimensionality.

Given the ways in which these proposals may find traction in different ways in various contexts, and the wider processes discussed in this paper that they may intersect with (like priorities for conservation linked to carbon markets), there may be interesting avenues for research to explore existing processes of environmental conservation in different contexts, the ways in which commodification and marketisation is happening or how they are being countered, and their intersections with rural livelihoods, distributional inequalities and agrarian change. For now, the paper turns to some of the key issues emerging from the discussions in this paper.

CLIMATE CHANGE, RURAL AND AGRARIAN LIVELIHOODS, AND DISTRIBUTIONAL POLITICS

This section briefly draws out some of the key themes from the discussions in this paper on some of the aspects of climate change responses relevant to the Southern African context, specifically, as they relate to distributional questions and governance. This may point to further areas of research around rural and agrarian livelihoods.

Distributional Politics and Transnational Capital

One of the most prominent trends uniting the dominant narratives and policy proposals in response to climate change and relevant to Southern Africa, is how they are aligned with objectives to further open ecologies, farms, food, land, air and markets to the penetration of capital. This raises questions about how they potentially affect the distribution of resources at different levels. One prominent critique is how they depend on or effect transfer of resources from the public to the private sector. For example, blended finance as a way to de-risk private investment essentially acts as a public subsidy to private actors with little guarantees of success; even if 'successful' the gains largely accrue as private profit. They thus privatise gains and socialise potential losses (Christiansen and Lim, 2021). Similar problems have been raised in relation to the financing of Green Revolution agricultural development approaches that are now positioned as solutions to climate change. Research by those like the African Centre for Biodiversity (ACB) has argued that in many African countries, public funds are used to subsidise corporate inputs through Farmer Input Subsidy Programmes (FISPs), which creates a market for the private sector but entraps many farmers in cycles of debt, with net transfers away from the state and households to agribusiness actors, when it could instead be going into in investing in public goods such as research, rural infrastructure and extension (ACB, 2014; 2016a; 2019). Similarly, an assessment of AGRA's operations found that government funding for the process exceeded donor funding, which was used to purchase private sector products, but without reaching its targets of improved yields, farmer incomes and food security (Wise, 2022).

Distributional questions at a global level are also raised, especially in how predominant private sector, market-based approaches take for granted and potentially lock in existing distributional patterns, rather than raising questions about the distribution of land or the role of supporting public investment in directly addressing social and ecological issues. For example, the emphasis on the financial system for funding climate change and biodiversity responses distracts from addressing global distributional issues in the form of taxation, unfair trade, debt owed by

the South to the North as well as climate debt owed to the south, as ways to free up resources for public investments (Christiansen and Lim, 2021; Dempsey and Irvine-Broque, 2022). In addition, carbon projects like REDD not only shift responsibility for responding to climate change to southern populations (Büscher and Fletcher, 2019), but integrate ecologies and rural people of the South into a system that perpetuates inequality and is largely organised by mostly northern-based companies to take advantage of profit-making opportunities (McAfee, 2012).

Dynamics of Differentiation

Apart from the global questions of distribution, studies of agriculture and conservation consistently show outcomes shaped by intersections with local patterns of differentiation. For example, a number of studies into Green Revolution-based programmes show that both adoption and benefit are often shaped by ***existing*** patterns of differentiation. For example, Makate et al (2019) show how mostly more affluent farmers in their study districts in Zimbabwe are able to adopt drought tolerant maize varieties and conservation agriculture (CA) practices, because they have the resources to undertake the initial investments, the capital required to adopt the technologies, and greater capacity to mobilise labour. They consequently recommend that policy and institutional dimensions correct for these inequalities and to give the technology and practice roll-out a pro-poor emphasis. But other research shows when inputs are subsidised with the aim of boosting the productivity of the poorest due to wider political dynamics, they can still favour commercial farmers, while the poorest are further marginalised (ACB, 2016b). Mdee et al (2021) show how across a range of contexts, differentiation and elite interest, combined with poor state capacities, shape the very nature of these programmes, raising the questions about the political possibilities under current context of most states being able to simply adopt a pro-poor practice.

Similar dynamics are evident in relation to conservation. As Holmes and Cavanagh (2016) show, a wide body of research explores how neoliberal conservation approaches tend to reinforce broader processes of agrarian change and differentiation. They can exacerbate the inequalities created by pre-existing conventional forms of conservation, but also alter the distribution of positive and negative benefits and increase pre-existing inequalities and forms of social differentiation. Through further commodification and marketisation of nature, new sources of rents and incomes can be created for elites and patron-client networks; but existing patterns of differentiation in terms of household assets and incomes also shape capacities to access benefits from conservation schemes. Conversely, some research has also shown how, under particular conditions, some neoliberal conservation practices have been shown to provide opportunities for social mobility for the most marginalised in a community. These differential dynamics help explain the presence, lack or type of contestation that may occur in relation to conservation (Holmes and Cavanagh, 2016), relevant for research in the context of the possible heightened push for conservation in the context of climate change, consolidation of carbon markets, and the finalisation of the post-2020 Global Biodiversity Framework.

Governance, rights, livelihoods and natural resources

Distributional outcomes of climate change responses are also shaped by existing and emerging forms of governance, and the role of the state. Much civil society response and critical research on dominant approaches to issues like agricultural development and conservation denounce the role of powerful northern institutions, governments, and corporations in foisting inappropriate development options on African states and populations that are less about their wellbeing and more projecting their own interest. However, recent literature is also turning to showing the agency of African states and national elites in actively promoting and shaping these approaches, rather than being passive recipients (such as ACB, 2021; Manda et al, 2019; Mdee et al, 2021; Huggins, 2014). While this paper has earlier mentioned issues re-

lated to the poor policy response of African states to climate change and the apparent low capacities to facilitate adaptation in various sectors, there is still the question of what the state *does* do on these issues in the context of climate change, with whom, the contestations, and the relationships of its actions to affected communities.

Whether or not these initiatives achieve their stated objectives, an often important outcome is their relationship to forms of governance and the operation of state power over rural lives and livelihoods. This is seen in the case of failed productivity drives, like in Ethiopia where a key modality through which the drive to increase smallholder productivity in the context of climate change proceeds is the importance of state power. In addition, the extent to which industrialising and commercialising agriculture helps to further articulate state power at local levels along political party lines, shapes who benefits and at whose expense (Berhanu and Poulton, 2014; Lavers, 2020). This is similarly illustrated in Rwanda, where state coercion is a critical lever in inserting farmers, livelihoods and natural resources into the national and global market (Huggins, 2014). Other research also shows how the reconceptualisation of forests and other natural resources to enact market environmentalism, also requires the concrete reorganisation of state governance, the social organisation of forestry or spaces of natural resources, and social interactions with the ecologies in question (Nel, 2015). Similarly, new forms of commodification introduced by agricultural development or conservation approaches often do not simply enter into previously non-commodified commons, for example. Often there is also therefore a question of how existing forms of marketisation interact with new forms, and in what ways they might provide new opportunities to those who have already benefited from previous forms of marketisation (Leach and Scoones, 2015). This topic raises further research questions about the intersections between climate change and forms of governance, and the impacts on, and interactions with, rural livelihoods and natural resource management.

Power, subjectivities and the politics of knowledge

This issue of governance points to the ways in which the financialisation of nature as a key response to the climate crisis, is about more than only creating an investment product for speculation and profit-making. It also involves other effects in a host of other arenas, including the disaggregation and recrafting of ecological and social relationships to make them available for marketisation. Hence an emerging theme is the more subtle operations of power beyond more overt coercion and corporate profiting. It challenges how many of the more powerful actors, pursuing their solutions under climate change, also seek to produce new subjectivities and behaviours, seeking to reorder existing relationships between livelihoods, ecologies, prevalent practices, and often, various institutions of the state. This is seen in the case of REDD projects where project implementers seek to modify and surveil behaviours in order to achieve the kind of ecological patterns they require to sell carbon credits (Arhin and Atela, 2015). Similarly, it is evident in insurance where new behaviours are generated and expected from different actors as historical circumstances change, as in the case of the shift of normative expectations and surveillance of the individual small farmer to the African state in the case of index-based agricultural insurance (Johnson, 2021), or the role of private sector insurers in creating structures to produce certain kinds of behaviours by farmers and households to mitigate their climate risk. Finally, it has also been highlighted in the case of neoliberal conservation, where support is built through various combinations of self-surveillance, incentive or compensation schemes, and employment opportunities. Key in this approach is bringing livelihoods into logics of marketisation and commodification as an alternative to activities that are seen as destructive to biodiversity (Holmes and Cavanagh, 2016:). What this produces, how far it achieves its ends and community responses is a subject of investigation.

Running through these cases is also the politics of knowledge – solutions to climate change at various levels involve a particular body of knowledge that constructs problems and proposes solutions in certain ways, often linked to particular interests and conceptions. Certain ideas are brought to the fore, while other sources of ideas are suppressed, or integrated in partial or convenient ways. This impacts the nature of interventions and how their impacts play out (GAFF, 2022; IPES-Food, 2016). The role of knowledge systems in the concrete livelihoods of relevant communities in the context of climate change could therefore be a consideration in research.

Slippages between policy proposals, existing policy implementation dynamics, and social realities

As this should make clear, global narratives and stated policy proposals are translated across governance scales, and implementation is shaped by existing institutional conditions and priorities, and the interaction with localised social dynamics. Much of the contestation around dominant solutions and programmes is based on the array of interests and forces that have structured their framing, purpose and activities at the global level, such as climate-smart agriculture. How their implementation is grasped and plays out on the ground may not always simply reflect as a mirror image of the needs of capital accumulation and the objectives of global planners. An important aspect is who the key actors in a given context are. For example, across locations in southern Africa, organisations of differing interests and priorities may have adopted the term CSA to describe their work, but are not directly connected to the interests of capital that have organised the frame globally.

The re-shaping of local relations, practices and ecologies as a result of climate interventions does not only happen in a one-way direction, but is also determined by the 'unruliness' of affected populations in how they respond to projects (Leach and Scoones, 2015: 5). How the consequences of intervention play out are therefore a function of the interaction between the nature of the intervention, the features of the ecosystem, the historically constituted features of the landscape in question, existing modes of negotiation around land and resource access, and the other social and political relations. This raises the question of a landscape perspective informed by political ecology in interrogating the dynamics of climate-justified interventions.

Outcomes are also shaped by contextual- and scale-specific state dynamics. For example, Newell et al (2018) examine in the case of CSA implementation in Kenya, where the actual agricultural pathway chosen is shaped by how local level state actors have to make trade-offs in response to the contradictions between CSA's supposed 'triple wins', given resource access, priorities and local demands. Similarly, even where community-based approaches to natural resource management are promoted by donors, in some cases carbon and conservation projects can provide new impetus to officials who had otherwise hankered after a more exclusionary, militarised approach to conservation (Winnebah and Leach, 2015).

Reordering of Labour Processes

One of the ways in which technical interventions interact with social context is via labour processes. For example, existing patterns of labour can affect who is able to participate in and benefit from new opportunities that climate-related interventions might provide. For example, in Zimbabwe, those who successfully increased yields through conservation agriculture under difficult climate conditions, depended in part on the ability to exercise the required labour input. There is also a gender dimension to this – women from poorer households were less able to participate in conservation agriculture projects because of the reproductive labour responsibilities they already carried in the household (Hove and Gweme, 2018). Further research may also focus on how climate-related interventions re-shape labour processes and their implications for differentiation and rural livelihoods.

CONCLUSIONS AND WAY FORWARD

Thus far this overview has surveyed what we know about the impacts of climate change on agrarian livelihoods and agro-food systems in Southern Africa. Now we turn to what we can do. The trends and problems identified require a strong and co-ordinated response. In the pages that follow we set out what we think we can contribute. We describe an agenda for an integrated process of research and policy engagement that confronts the risks, obstacles and difficulties presented by the crisis – an agenda that seeks to build the foundations for a transformative approach to climate justice.

A statement of the problem

The climate crisis needs to be confronted on many levels and requires many courses of action. Our take on what needs to be done is a specific and situated one. It is based on our identity as a university-based research institution in the Global South, and it seeks to identify the most important places where we believe an energetic and imaginative programme of critical enquiry and engagement can make a difference. From this point of view, we highlight the following issues for critical attention:

- **Agro-food systems in Southern Africa are already changing because of climate change.** Despite contributing less than 4 % of global greenhouse gas emissions, Africa is likely to experience significant impacts from climate change in coming years, in two very different ways: Firstly, large numbers of people, many of them poor, vulnerable and marginalised, live in ecosystems and on landscapes adversely affected by the direct biophysical impacts of extreme weather events and climate variability. Secondly, they will also experience not only the *direct* consequences of climate change, but also the *indirect* ones. These include many costs and impacts of the regulatory measures and policies of climate change response currently being promoted and implemented on the global stage.

- **These changes are already shaping the economic, social and political future of the region.** The impacts of climate change (and the unintended consequences of climate change response) are already having profound social and political consequences on African landscapes. Not everyone feels these impacts in the same way. Existing social inequalities influence who bears the costs of climate change, with the poorest and most vulnerable often bearing the brunt. Climate change is exacerbating existing inequalities and vulnerabilities, driving new and complex dynamics of conflict and social differentiation. As a result, climate change and responses to it will be a major engine of social and economic displacement. It is already reconfiguring rural and urban politics, fuelling new forms of political contestation, leading to the rise of new social claims, and catalysing far-reaching processes of state-making and -unmaking in the region. Perhaps most urgently, it is inaugurating a new politics of emergency and disaster management that poses severe challenges to democracy.

- **Climate change response is dominated by the priorities and interests of transnational corporations, and of Northern governments, donor agencies and NGOs.** This means the conversa-

tion is deeply skewed. Mainstream climate change thinking defines the crisis in purely biophysical terms, placing natural science at the centre, and ignoring the social and political processes whereby vulnerability, risk and harm are produced and distributed. 'Green industrial revolution' policies, for example, tend to draw on ideologically predetermined narratives of development and progress, that are out of touch with rural and social realities. The processes of policy and strategic deliberation that seek to govern African agro-food systems and rural landscapes largely ignore the views, local knowledge and expertise of smallholder farmers and rural African people themselves. Poor, marginalised or vulnerable populations, particularly in rural areas, are mostly approached as mere bystanders or victims in this process: effectively excluded from the global forums and corporate decision-making processes that guide international policy discourse, and often lacking voice and significant agency in their national and regional contexts. As a result, policy priorities and funding are often skewed. And despite the fact that rural Africa makes a minimal contribution to climate change, and the high level of vulnerability to the results of climate change, policy programming and funding have been overly focused on climate change abatement, rather than on adaptation, crisis response, social security and household level resilience.

- **Capacity within the region to respond to these problems is weak and fragmented.** While mainstream policies are hotly contested, opposition to 'green industrial revolution' discourse often struggles to move beyond critique. Debate often focuses on narrow questions of technical production (agro-ecology versus climate-smart agriculture, or 'convivial conservation' versus CBNRM), eschewing the complex choices that drive adaptive and maladaptive decisions on the ground. A serious problem is that both at national and more local level, representative and political institutions in Southern Africa often lack capacity and are at times dysfunctional. What is missing is the social and political agency necessary to represent the interests of local populations or marginalised people, which is required to shape and drive the content, design and implementation of appropriate policy frameworks at regional and landscape level.

- **This undermines adaptive response and leads to inequitable outcomes.** Already it is clear that despite significant expenditure of funds and efforts by donor agencies, the private sector and governments, impact on the ground has been low. On the ground, uptake of 'climate smart agriculture' by smallholder farmers has been halting and slow. Beyond the local level, the dominant role of donor and transnational agendas means that there is little coherent operationalisation of policies, resulting in fragmentation and a lack of local ownership. Quite aside from the risk of policy failure and the adoption of maladaptive pathways of change, this exacerbates the uneven and inequitable distributional impacts of climate change response, and further enables corporate or elite capture of resources and programmes intended to support resilience and adaptation.

- **Achieving climate justice in rural Africa requires solutions that go beyond technical fixes or broad, paradigmatic statements.** Policy and implementation needs to be able to design fit-for-purpose frameworks and programmes that address the real needs of vulnerable and marginalised populations and African farmers on the ground. This requires an understanding of the needs, knowledge base and actual adaptive resources that these groupings dispose over. It is not enough to get the content of policy right. It also re-

quires an understanding of political economy and social processes. Work has to be done to rebuild the social, political and institutional capacity to drive and integrate policy approaches at various scales.

How can research make a difference?

These challenges cannot be changed by research alone. However, the struggle for equitable change, transformative adaptation and climate justice needs to be grounded in a detailed and critical understanding of the complex social, technical and empirical realities faced by social actors. Here, research can help in at least four distinct ways:

- **Research can help policymakers and practitioners understand the social and political dynamics of adaptive response.** Climate change adaptation and amelioration is not a design problem, it is a political one. Policies and programmes cannot be based simply on technical considerations. What such plans do not take into consideration is the complex political, social, gendered and power laden dynamics of the contexts in which they are implemented. And those contexts are not well understood. This is why it is necessary to challenge the domination of the climate change agenda by the natural sciences: our understanding of the biophysical processes underpinning the crisis needs to be supplemented by a detailed, empirical understanding of the role of politics and power in shaping outcomes - both at the transnational level of the political economy of global climate response, and in the local interplay of social forces and interest groups in the landscapes where vulnerable groups, other actors, and non-human beings, co-exist.

- **Research can play an essential role in ground-truthing competing paradigms.** Too much of the debate on climate change response is based on abstract and untested, ideologically overdetermined, and normative theories and assumptions, about the nature of social change and the pathways towards the social good. We need careful, fine-grained investigations of the real world of adaptation. Research allows us to reality-test the different slogans and normative models, to see how they perform in the context of the messy and complex dynamics of actual adaptive (and maladaptive) pathways, and the processes of contestation and competition that shape them.

- **Research can surface existing repertoires of adaptive response on the ground.** Rather than dreaming up technical solutions that need to be 'adopted' by those facing crisis, researchers can approach poor and marginalised people as resourceful agents in their own right - people who often have access to reservoirs of situated knowledge, and local experience. Policies for adaptation and amelioration should engage with and build on people's own understanding, and the risk management strategies that work for them.

- **Research can help to develop broader social and political agency.** Social research is not simply about producing knowledge. It is about making sense of the evidence and putting it to use. This is not the prerogative of academics and experts, rather, it involves the co-creation of situated understandings that bring together scientific research, lay knowledge and the lessons of experience, in contexts where practical problems need to be solved and decisions taken. Approached in this way, research can help reduce the current levels of political, social and institutional fragmentation, and build the capacity for integrated, transformative response where it matters.

What should our research focus on?

Four issues are particularly important:

- **The social dynamics of adaptive (and maladaptive) change on the ground.** It is particularly important to understand change and contestation at landscape level. 'Landscape' is necessarily an open-ended term, but it captures the fact that eco-social change, political contestation, land-based livelihoods and climate hazards always come together in a specific place, where different interest groups - and non-human beings - co-exist, contend and compete. While scientists understand the biophysical factors that shape (for example) the flow of river catchments or the dynamics of fire regimes, there is little social science research that explains how vulnerability to flood, drought and fire hazard is politically and socially produced, and how responses to risk, cost and opportunity interact in a power laden and gendered context .
- **The way in which these shifts are changing the nature of politics in the region.** It is not enough simply to look at changes in the social organisation of livelihoods. We also need to understand the new forms of politics that are emerging in the context of the climate crisis. What are the political and social consequences of the harms that are being experienced and the new forms of vulnerability that are being created? What contests and conflicts are arising, and what forms of solidarity? What new forms of emancipatory - and reactionary – politics are emerging? What new claims on the state are arising - and how are states themselves, and the relationships between states, citizens, subjects and residents being reshaped by events?

- **The political economy of mainstream climate change policy in the region.** Climate response in Southern Africa needs to be informed by a critical understanding of the changing nature of corporate strategies of processes of capital accumulation, and of how powerful players in agro-food systems are positioning themselves to reduce their own risk profile - and possibly prosper - in the context of rapid eco-social change.

- **The new politics of emergency and disaster management that is shaping the content of political response and resource flows.** It is important to develop a critical understanding of the strategies, forms of knowledge production and systems of decision-making that are being forged in a context where 'exceptional' conditions of rule and intervention are becoming the norm. Who makes the decisions about 'making live and letting die' that are central to these biopolitics, and how?

Re-centring African research on adaptation and resilience

One of the most serious issues undermining long-term capacity for transformative and adaptive response is the domination of the climate change agenda by 'Northern' agencies — and Northern knowledge. Very little funding for research on adaptation and mitigation is funnelled towards African institutions, and the bulk of climate change research in Africa is spearheaded by northern institutions. This aggravates the lack of internal research capacity on the continent to inform and shape policy formulation. It also contributes to a lack of opportunities for inter- and intra-institutional collaboration between African academics and researchers in production of knowledge about climate change and adaptation. Far too little collaboration is taking place between African academics and other major partners such as corporates, governments, and civil society organisations. In-depth and systematic homegrown knowledge production in the area of cli-

mate change, is needed in order to engage in meaningful and productive debates around the trajectories of environmental crisis and their projected impacts in the rural areas of Africa. This requires skilled and adaptive scholars who can work collaboratively and in an interdisciplinary manner to identify needs, build partnerships, and provide both evidence and solutions regarding these trends. We hope that PLAAS - in partnership with other research and civil society elsewhere in the content, can play a role in this process of intellectual decolonisation.

Proposed Programme Strategy

Overview

PLAAS proposes a coherent programme of in-depth social science research, social dialogue, and institutional learning aimed at developing institutional and social capacity for transformative adaptation, resilience and mitigation in rural Southern Africa.

As has been done in our collaboration with the Network of Excellence in Land Governance in Africa (NELGA), we will use the insights that arise from fine-grained qualitative social science research in carefully selected case study sites, to inform action-oriented reflexive deliberation with practitioners, community organisers, social activists, government officials and policy makers. In this way we will promote approaches to landscape governance, agro-food regulation, land reform and rural development that can achieve climate justice.

High level aims

- To contribute to our **knowledge** of the real-world, landscape-level dynamics of actual climate change response 'on the ground' in a range of rural African contexts.
- To support a democratic and informed process of **debate and contestation** around appropriate forms of climate change response on the continent.
- To support the development of effective social, **political and institutional agency** to enable the formulation and implementation of coherent landscape-level responses to climate change.

Theory of Change

Effective climate change adaptation cannot simply be driven in a top-down fashion. The actual course of real-world change is crucially determined by the political economy and social dynamics of processes of change that unfold across different scales, including local and landscape level. But this is not all. Ensuring appropriate adaptive response also requires effective institutions and robust civil society organisations that can constitute effective forms of social agency at local level.

Ensuring climate justice will require working across and between scales, using local-level lessons to ground-truth and test the claims of contending paradigms - and building local nodes of effectiveness that can coordinate action and facilitate the development of shared purpose even in contexts of broader institutional malfunction. Interventions therefore require more than high-level policy messaging: as important is the ability to work alongside and in support of local change agents both inside and outside formal structures, enhancing their ability for effective action and for learning-by-doing.

Core activities

The programme of work will be built around four interlinked streams of activity:

1. PLAAS and its partners will conduct **research** around the social and political dynamics of local adaptive response in a series of carefully selected case study sites.

2. The insights of field-based and other research will inform a programme of **teaching and training** activities aimed at providing practitioners with an understanding of the real-world dynamics of adaptive response, and with the conceptual tools necessary to understand climate change impacts and policy.
3. PLAAS and its partners will participate in process of **public engagement and contestation** around the nature and aims of climate change response, supporting democratic processes of thought leadership to ensure local ownership and engagement.
4. Our research, teaching and training will be linked to processes of **institutional learning** and **reflective practice** among activists, change agents, implementers and other practitioners to support the coherent implementation of equitable and adaptive responses to climate change at local and landscape level.

Research themes

Research will focus on three broad areas of focus:

1. **Livelihoods and employment:** Research is needed on the social dynamics of adaptation and maladaptation within poor and vulnerable populations. This is vital, particularly if policy is to be informed by a clear understanding of the nature of vulnerability and the policies that can ameliorate negative impacts and build resilience. Such evidence is essential for the ability to ground-truth and critically test the claims, narratives and paradigms that are at the centre of political and ideological debates about climate change response.

    - The consequences for poor and marginalised rural people of the **direct impacts** of the climate crisis. Particularly important here is to understand the consequences for the ways people live on the land: What are the implications for tenure security? How does it affect farming systems? Which adaptive strategies make for resilience, which don't? What is happening to rural labour markets?
    - The nature and the implications for the **indirect consequences** of climate change. To what extent, for example does climate change response lead to new barriers to trade? What new policies are being rolled out, and with what consequences? And how does this influence outcomes on the ground? Who, in other words, are the winners and losers from regulatory and financing responses to climate change?

2. **Government and politics:** We will map the consequences of climate change for local government and rural politics. This is vital, particularly as policy responses to climate change and other challenges need to be supported by coherent, responsive and legitimate institutions of representation and government. This requires a better understanding of the ways in which politics and contestations on landscapes affected by climate change reshape the relations between governing institutions and the populations they govern. Here, we address the following issues:

    - What new kinds of **vulnerability** are emerging? To what extent is exposure to risk and hazard purely a consequence of biophysical changes, and how much of it is socially and politically produced?
    - What are the new (rural and urban) **politics** that emerge from these disruptions and hazards? What forms of conflict emerge (and what opportunities for solidarity)? What new forms of political mobilisation - both reactionary and emancipatory - are taking shape?
    - How are these dynamics impacting **the re-**

lationships between states, subjects, citizens and residents? What new claims on the state are emerging? To what extent are these claims being met? How are the institutions of the state being reshaped, both at local and at national level? What new strategies of government and statecraft are emerging? What, for example, is the nature of the politics of emergency response?

3. **The political economy of climate response.** We will link this analysis of local-level shifts to an understanding of the realpolitik and the geopolitics of climate response at various levels, from local/county level and traditional authorities to national governments and transnational agencies. This is important because locally grounded and sensible approaches to adaptive response requires a critical analysis of and a coherent response to mainstream proposals and paradigms. Key questions to be addressed include:

    - Who are the central actors in the changing geopolitical arena of climate change response, and what are their agendas and interests?
    - How is policy discourse changing?
    - How is this reshaping the relationships between North and South? What opportunities are there for voice and agency ?

Methodology

To address these questions, we propose a research methodology that links ethnographic investigation of selected case study sites with action research and situated processes of institutional learning and adaptive change. The dominant role in climate discourse of the natural sciences, and the tendency to frame the challenge by way of abstract and delocalized references to 'planetary' processes needs to be balanced with detailed, qualitative research into the situated and power laden dynamics of adaptation (and maladaptation!) where it happens. This requires a critical ethnography which is attentive to affected peoples' agency and their political subjectivity, and which locates their responses within an account of agro-food restructuring, political contestation, and ecological change (Paprocki & Levien, 2022).

But, the aim here is to produce more than academic knowledge. Qualitative empirical research needs to be connected to processes of practice-oriented reflective deliberation in partnership with the actors facing the challenges of climate change response where these occur. These include activists and social movements on the ground, decisionmakers and practitioners within institutions of government inside and outside the state, and policymakers and thought leaders participating in national and transnational debate.

Site selection and scale

The programme of research will be designed to be multi-scalar, linking an understanding of the dynamics of local level change to an analysis of the political economy of transnational policy change and geopolitical contestation. A core strategy is that all research will be solidly grounded in a variety of carefully chosen local sites, in which PLAAS and its partners have an already established presence. The analysis of the real politics of adaptive change will in addition be focused on adaptive change and its politics at landscape level, how the interests and agendas of diverse social groups, institutions, state and non-state actors, private sector role players and so on come together to shape the outcomes of climate change and other interventions on landscapes affected by climate change. Building on our existing research and track record of fieldwork with partners in South Africa, Malawi, Mozambique, Namibia, Tanzania, Zambia and Zimbabwe, sites will be selected to represent different biophysical, political and economic configurations that shape the dy-

namics of landscape-level adaptive change, including for example local agro-ecological conditions (e.g. arid, rainfed, coastal, etc.), the nature of food and farming systems, the impact varying tenure regimes and the importance of political economy and of different configurations of the state. Among the localities we consider are:

- those where there are smallholder farmers producing local food crops;
- smallholders linked into global supply chains including through outgrower and contract farming arrangements;
- beneficiaries of redistributive land reforms; medium-scale commercial farmers;
- large-scale industrial agriculture and associated farm workers in primary production and downstream agroprocessing;
- users of common property natural resources including forests and rangelands;
- coastal artisanal fishers;
- inland fishers and aquaculturists;
- rural non-farm residents and traders;
- rural-urban and cross-border migrants;
- traditional authorities and non-state governance institutions;
- sites of transnational mitigation; and
- adaptation projects by development agencies, private companies and financial institutions.

The way forward

This is an ambitious and demanding research agenda. Making it a reality will require the development of a number of focused research and policy engagement projects that can support its high level aims. We will build strong co-operative links with partners who can support this agenda. For this reason, PLAAS is now engaging in discussions with donors about funding support and initiating discussions with possible partners and collaborators to flesh out specific research and policy proposals. We hope that this report can serve as a useful basis for such a conversation.

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