

Between Kasache and Geneva:
The Multi-sited *Voyage* of
Climate-resilient Development in Malawi



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It matters what stories make worlds, what worlds make stories.

(Donna Haraway, 2016)

Declaration

This thesis has not been submitted in support of an application for another degree at this or any other university. It is the result of my own work and includes nothing that is the outcome of work done in collaboration except where specifically indicated. Many of the ideas in this thesis were the product of discussion with my supervisors Dr Saskia Vermeylen and Dr Giovanni Bettini.

Abstract

How are global discourses on climate change negotiated in national policy contexts, and how do they materialise ‘on the ground’, shaping adaptation at a local level? This is the overarching question that this dissertation addresses, as it traces the evolution of climate policy in Malawi since the establishment of an international framework for climate-resilient development in the late 1990s. Drawing on a theoretical framework that combines approaches from Science and Technology, Postcolonial, and Feminist Science Studies, this work spans across international, national and local spaces of knowledge and policy production, revealing the material and often unintended consequences of *global scientific* constructions of climate change. Fieldwork in Malawi, including interviews with policymakers in Lilongwe and climate-affected communities in Kasache, has revealed tensions at various stages and scales, examined here through a multi-sited ethnographic approach that situates local weather and climate practices in the lineage of colonial and postcolonial narratives and relations. The findings indicate that the discourse on climate change is a mobile, power-laden and socio-cultural practice transversally connecting spatial (international, national, local), historical (colonialism, neoliberalism) and epistemological (élite/subaltern, gender) localities. The exclusion of locally produced knowledge and meanings (by decision makers, farmers, women and elders) from national mainstream adaptation programmes obscures how vulnerability is locally produced, foreclosing opportunities for context-relevant decision-making. While formally increasing women’s participation in local decisional structures, gender and climate change interventions disregard the presence of biophysical and socio-economic factors, including ‘global’ essentialising narratives, which can exacerbate unequal power relations. At the same time, women in Kasache have engaged in collective responses outside international frames of gender empowerment through informal networks that build on historical matrilineal solidarity and democratic participatory practices. Several ‘policy recommendations’ on how to decolonise and democratise climate adaptation interventions can be drawn from the findings of this work. In a nutshell, interventions should be based on the identification

of underlying causes of vulnerability and adaptation strategies across societal groups (rather than on homogenous conceptualisations of climate risk exposure) and should acknowledge and address the forms of marginalisation and human agency produced by the discourse of climate-resilient development.

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List of Abbreviations and Acronyms

- AEAS: Agricultural Extension and Advisory Services
- AFDB: African Development Bank
- AOSIS: Alliance of Small Island States
- ASRA: Agricultural Sector Risk Assessment
- CBA: Community-Based Adaptation
- CCA: Climate Change Adaptation
- CDKN: Climate and Development Knowledge Network
- CISONECC: Civil Society Network on Climate Change
- COP: Conference of the Parties
- COOPI: Cooperazione Internazionale
- CRD: Climate Resilient Development
- CRU: Climate Research Unit
- CSAG: Climate Systems Analysis Group
- DCCMS: Department of Climate Change and Meteorological Service
- DFID: Department for International Development (UK)
- DoDMA: Department of Disaster Management Affairs
- DRM: Disaster Risk Management
- DRR: Disaster Risk Reduction
- ECBI: European Capacity Building Initiative
- ECHO: European Commission's Humanitarian Aid Department
- EU: European Union
- FAO: Food and Agriculture Organisation
- FGD: Focus group Discussion
- FSTS: Feminist Science and Technology Studies
- GAD: Gender and Development
- GCF: Green Climate Fund
- GEF: Global Environmental Facility
- GHGs: Greenhouse Gases

GIZ: Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (Germany)

GNP: Gross National Product

GoM: Government of Malawi

GVHs: Group Village Heads

ICCG: Initiative on Climate Change Policy and Governance

IISD: International Institute for Sustainable Development

IMF: International Monetary Fund

IPCC: Intergovernmental Panel on Climate Change

JFM: Joint Forest Management

JICA: Japan International Cooperation Agency

LCBCCAP: Lake Chilwa Basin Climate Change Adaptation Programme

LCPC: Local Civil Protection Committee

LDCs: Least Developed Countries

LEG: Least Developed Country Expert Group

MDGs: Millennium Development Goals

MDPC: Ministry of Development, Planning and Cooperation

M&E: Monitoring and Evaluation

MNSSD: Malawi National Strategy for Sustainable Development

MDBs: Multilateral Development Banks

NAPAs: National Adaptation Programmes of Action

NAPs: National Adaptation Plans

NGOs: Non-Governmental Organisations

NGP: National Gender Policy

NMHS: National Meteorological and Hydrological Service

NORAD: Norwegian Agency for Development Cooperation

NSO: National Statistical Office

ODA: Official Development Assistance

ODI: Overseas Development Institute

OECD: Organisation for Economic Cooperation and Development

PCSTS: Post-Colonial Science and Technology Studies

SAP: Structural Adjustment Programmes

SDGs: Sustainable Development Goals

SHG: Self-Help Group

SIDS: Small Island Developing States

SSC: South-South Cooperation

STS: Science and Technology Studies

TA: Traditional Authority

UK: United Kingdom

UN: United Nations

UNCTAD: United Nations Conference on Trade And Development

UNDP: United Nations Development Programme

UNEP: United Nations Environment Programme

UNFCCC: United Nations Framework Convention on Climate Change

UNITAR: United Nations Institute for Training and Research

UNV: United Nations Volunteer

USA: United States of America

USAID: United States Agency for International Development

USSR: Union of Soviet Socialist Republics

WB: World Bank

WFP: World Food Programme

WMO: World Meteorological Organisation

WTO: World Trade Organisation

Chapter 1

Introduction

1.1 Encountering climate change in Malawi

In the late summer of 2011, I was living and working in Lilongwe, the capital city of Malawi. A year and a half earlier, immediately after graduating in Social and Economic Studies for International Cooperation and Development from the University of Rome (Italy), I had been selected for a year-long internship as a Programme Analyst for Climate Change with the United Nations Development Programme (UNDP) in Malawi.

My assignment was to assist the Government of Malawi (GoM) with devising an *evidence-based* strategic framework for a national policy response to climate change. Recent analyses (Text box 1) show that Malawi is particularly prone to climate hazards – whether anthropogenic or due to natural variability. Like many other contexts in sub-Saharan Africa whose economies are based on natural resources, Malawi faces a disproportionate share of climate change impacts, with especially direct consequences on water, food and health. A new knowledge management system (MDPC 2010), mainly sponsored by donor-driven programmes, was expected to fill critical information gaps in national adaptation and mitigation policy planning.

Most of the government officers I interviewed for my research were convinced that a successful response to climate change was intrinsically linked to spatially and temporally refined climate data and information (Chapter 5). They perceived climate change as a linear management issue requiring technologies and capacities that were easily accessible through multilateral development programmes. Their assumption was that climate information would effectively support public policy, providing a means of improving people's lives in the face of a changing climate. Likewise, many of the framing concepts I was introduced to in my workplace (project management techniques, stakeholder-based participatory approaches, etc.) seemed to be tailored to a measurable, homogeneous,

social and environmental reality in which development planning was expected to produce positive results.

My practical experience in the ‘field’ proved otherwise, as what I encountered was a rather elusive, messy, and often conflicting landscape. The socio-cultural complexities of climate-affected communities were at odds with the linearity of national climate-resilient development strategies.

When I participated in field missions to the most ‘disaster-prone’ areas of Malawi, it became clear that local narratives were quite nuanced and multifaceted, and sometimes in contrast with those of government officials. In April 2011, for example, I attended a post-flood assessment in the area of Karonga, in northern Malawi. During consultations, district government officials kept emphasising the need for weather forecasts as a panacea for local disaster preparedness. Conversely, spokespeople from resident communities were concerned about selective vulnerabilities to seasonal or sub-seasonal climate variability. In their eyes, access to health and sanitation, awareness and education, as well as women’s and children’s protection were not adequately addressed by national and district disaster management responses. Thus, while national and subnational decision makers conceptualised climate change mainly as a biophysical adjustment to be addressed through technology or capacity transfer, local communities talked about it in terms of public service delivery. A variety of understandings associated with climate change started emerging.

In my role as a research student, I encountered several additional ways of signifying and experiencing climate change at the local level. During interviews in the village of Kasache (Chapter 6 and 7), a group of elders described their experience of climate change: “We obviously see a change...We think that God is the main cause, and that God has decided it” (FGD, 8 August 2012). Unlike government officers in Lilongwe and the affected communities in Karonga, the elders were not worried about the lack of climate scenarios

Text box 1 – Malawi: a socio-economic outlook

Malawi: a socio-economic outlook

Malawi is a small land-locked country bordered by Tanzania to the north, Zambia to the west and Mozambique to the east and south. The country's topography is highly varied: the Great Rift Valley runs north to south through the country, containing Lake Malawi. The country's climate is tropical, but the influence of its high elevation means that temperatures are relatively cool (Mc Sweeney et al. 2008). The semi-arid or dry areas total nearly 3 million hectares; droughts are common (Stringer et al. 2010).

From a socio-economic perspective, Malawi is one of the 49 Least Developed Countries (LDCs); it is one of the poorest countries in the world and has one of the lowest per capita incomes. Its population is approximately 17.5 million, the majority of which is dependent on rural farming (Brown 2011; World Bank 2014; NSO 2018). The country is characterised by an extremely low-yielding smallholder agriculture, maize as a staple crop and tobacco as an export crop (Bryceson 2006; Drimie et al. 2011). Local food production, imports and aid are the main food sources. Overall, the level of economic activity in the rural areas is quite limited due to the risks associated with the lack of diversification, infrastructure and communication, which make Malawi particularly vulnerable to natural shocks (Dorward and Kydd 2004; Drimie et al. 2011).

Both the country's economy and the livelihoods of its citizens are almost entirely dependent on agriculture, which employs 80 percent of the workforce (Stringer et al. 2010; Brown 2011). The Government of Malawi recognises that heavy dependence on rain-fed agricultural activities makes Malawi highly vulnerable to climatic variability and extreme weather events such as droughts and floods, which, over the past two decades, have increased in frequency, intensity, and magnitude (GoM 2006; Stringer et al. 2010). Projected climate change scenarios from the IPCC 5th Assessment Report (2014) on Impacts, Adaptation and Vulnerabilities (Working Group II) suggest that Malawi is likely to experience higher temperatures and greater rainfall variability than other countries in the sub-Saharan Africa region (Stringer et al. 2010; Brown 2011; IPCCa 2014).

Increased droughts and floods may exacerbate poverty levels (Phiri and Saka Alex 2005). GDP losses of almost 1 percent every year are expected, with much higher economic losses in the event of extreme droughts. Shorter rainy seasons will potentially lead to more frequent failures in maize cultivation, which in turn will have significant implications for food security (World Bank 2014). Accordingly, the majority of the population will be particularly vulnerable to climate change, especially due to resulting impacts on food security, water availability and health (e.g. outbreaks of malaria, cholera and malnutrition).

Chapter 5 will outline key climate change policy actions in Malawi (at both international and national level), while Chapters 6 and 7 will describe how local communities, and more specifically farmers (women and men), perceive and have historically dealt with climate variability and change.

or the weakness of humanitarian and disaster policy responses. What they worried about was God's willingness to determine climatic changes. The profound interrelation and complementarity between human beings, nature and gods was evident in their words, which also pointed to locally embedded cultures and worldviews related to climate. Furthermore, women in Kasache described feeling excluded from gender mainstreaming approaches to climate change. The desire to have their views and concerns heard led them to seek solutions outside the boundaries of official development assistance (Chapter 4). From that perspective, climate change emerged as connected to processes and structures through which political and socio-economic power is exerted at community level.

As I delved deeper – as a professional and researcher – into the realities of Malawi, I realised that the narratives on climate change adaptation are permeated with ambivalence and contrasting perceptions across different or apparently homogenous (e.g. women) societal groups. Conflicting and synergetic meanings are produced not only at the interface between national and local epistemologies – different spatialities – but also within similar segments of a community. It appears that the discourse of climate change went through numerous modifications when travelling across different sites – produced by those directly affected by climate variability and change and influenced by international development interventions. As my research shows, these multiple, mutually transforming and often contrasting narratives are spatially and temporally connected and at times dissolve, re-appearing under different forms.

From documenting differential vulnerabilities in the rural fields to facing institutional authority-knowledge legitimisation processes, my research project in Malawi was shaped by the tensions between development practices and climate change narratives. My positionality in-between academia and development provided a unique opportunity for a critical reflection on climate change adaptation, which, beyond measurable policy outcomes, emerged as a living, messy and moving element within broader and multilayered socio-political contexts.

1.1.1 Climate reductionism: tensions and negotiations

In Malawi, I directly experienced some of the critical issues that animate contemporary academic debate on climate change. During a training event organised by UN agencies for national and local (governmental and non-governmental) political actors from Least Developed Countries (LDCs)¹, some criticism came from the audience regarding the shortcomings in national stakeholder inclusion and participation, to which a UNFCCC National Focal Point responded using the argument of a lack of technical and scientific knowledge. In his view, technical and scientific capacities legitimate authority and the ‘right to speak’ in climate public policy processes (Chapter 3). Tensions and fragmentation were also evident in national mandates on climate change in Malawi (Kosamu 2013; Chapter 5), mostly resulting from unclear responsibilities between the environment and planning ministries. Management and coordination of climate policy issues across sectoral and government tiers were affected by siloed or hierarchical views of climate change knowledge. This may particularly hinder the applicability of natural and/or social sciences to public policy domains, as well as the identification and inclusion of relevant stakeholders in national or sectoral policy processes (Turnpenny et al. 2008; Berman et al. 2012).

Climate change narratives endorsed by international scientific and policy institutions (e.g. the IPCC, Intergovernmental Panel on Climate Change; or the UNFCCC, United Nations Framework Convention on Climate Change) largely build on a ‘one climate, one science, one policy’ approach, also defined as *climate reductionism* (Hulme 2011), characterised by the supremacy of predictive natural sciences over historical and social accounts of natural and social environments (Hulme 2011; Sarewitz 2011; Weisser et al. 2014; Eriksen et al. 2015; Hulme 2015).

Climate reductionism is underpinned by a host of assumptions on the relation between humanity and nature as well as by hierarchical conceptualisations of space and time

¹The specific location of the event is not disclosed here to protect the identity and opinions of the participants.

(Chapter 3). By postulating the existence of a unique and homogenous climate change phenomenon, which human ability is inherently expected to predict and master, they can hinder the solution of the Earth's climate crisis (Weisser et al. 2014; Eriksen et al. 2015; Hulme 2015). The approach I have here labelled 'climate reductionism' has several conceptual limitations due to its inability to: i) capture the tangle of different perceptions and knowledges (epistemologies) of climate change across spatial and temporal scales; ii) identify the existence of multiple ways (ontologies) in which climate change becomes significant to people. Most importantly, it fails to recognise that conflicts around meanings are linked to – and can hide – divergences of views on how climate change is experienced through historically stratified relations of power (Blaser 2014; Popke 2016; Goldman et al. 2016).

Disjunctions between policy processes, generally attributed to a lack or mismanagement of information, knowledge or skills, may also be related to discrepancies between what individuals *know* about climate change and how they *act* on the basis of crystallised cultural, political, social and economic structures and relations (Popke 2016; Goldman et al. 2016). Even the adaptation challenges I faced in my work and research in Malawi (perceived limited national adaptive capacity, pitfalls in disaster risk management, gender marginalisation) could be ascribed not only to issues of project, knowledge or stakeholders management, but also to a disconnect between meanings and practices in the public policy domain (among climate scientists, international development workers, policymakers, farmers, women, elders). For example, the fact that women in Kasache do not benefit from climate-resilient development projects is the result not only of a lack of formal participation (through gender balancing) but also of their substantial exclusion from community decision-making mechanisms, on which the implementation and legitimisation of international projects rely (Chapter 7).

Discourses mirroring climate reductionism have recently spread across the international development apparatus grounded in the post-World War II modernisation paradigm.

Climate-resilient development, which calls for the use of climate science and information in adaptation decision-making, has recently emerged as a ‘new’ dominant theme (Escobar 1995; Weisser 2014), with far-reaching consequences on the design and implementation of climate change projects at the local level (Eriksen 2015). In Malawi, for example, national to local adaptation interventions have been tied to the availability of *scientific evidence* and *technical capacity* (key words in the opening statements of many government documents on climate change) and mainly conceived as politically neutral responses to actual or expected biophysical changes. Several critical geographers recently argued that addressing climate change exclusively through scientific and technical inputs can lead to neglecting the underlying conditions of vulnerability, possibly aggravating marginalisation and oppression at the local level (Kelman 2014; Naess et al. 2015; Petheram et al. 2015).

There are key questions yet to be answered, such as: how does the diversity of understandings of climate change I encountered in Malawi relate to this form of orthodoxy, or *climate reductionism*?

1.1.2 Climate change as a travelling discourse

The state-of-the-art research in climate adaptation seems to reflect the limits of climate reductionism, having bypassed the wealth of analytical lessons offered by critical social science on the interaction between science, knowledge and policy in environment and society issues. The more recent works have mainly focused on the scientific or policy *global* dimensions of climate change, or on its *local-functionalist* elements (e.g. how to technically strengthen adaptive capacity in community *x*) (Anderson 2006). Empirical contributions and theoretical framings focusing on climate change as a socio-political process that moves across sites and is appropriated and re-signified by a multitude of actors in different locations are hardly incorporated into mainstreaming discourses (Eriksen et al. 2015).

In the past decades, several Science and Technology Studies (STS) scholars have analysed the process by which climate change knowledge is produced within mutually legitimising scientific and policy bodies (e.g. UNFCCC, IPCC), discussing the role and relevance of authoritative climate science in international policy decisions. Fewer have been the reflections about the impacts of global discourses at the national and local levels or the analyses of how climate change is understood and practised in the ‘interstitial’ spaces (neither exclusively global nor local). According to some, the academic and political reluctance to approach climate change in its negotiated – and contested – nature is mainly due to a lack of conceptual and methodological frameworks for the identification of socio-political and cultural traits in science-policy interactions (Weisser et al. 2014; Eriksen et al. 2015; Hulme 2015). My work will reveal the inadequacy of many concepts underlying the dominant climate change epistemology with a view to highlighting individual and collective understandings and experiences of climate change at multiple scales.

The narratives I collected in Malawi speak for a variety of worldviews, beliefs and practices on climate change, which are transformed, included or excluded when encountering the ‘all-encompassing’ climate change epistemology through international or national policy processes (Blaser 2014). Drawing on Blaser’s (2014) definition of stories as narratives that embody certain ideas about world dynamics and complement the official ‘hi-story’ of the encounter with European colonialism,² I will explore local *stories* as products of social, cultural and political forces. My aim is to account for forms of hybridity that run parallel to unifying and universalising approaches to climate change (Bhabha 1994; Latour 2004). The narratives I collected in Lilongwe and

² The terms colonialism and postcolonialism are frequently employed with reference to European colonialism, although colonialism as the conquest and control of other people’s lands and goods has been a recurrent and widespread feature of human history (Loomba 2005). This association refers to the historical fact that European colonialism was the most extensive among the different kinds of colonial contact in human history. By the 1930s, European colonies and former colonies covered up to 84.6% of the land surface of the globe (Loomba 2005). In this work, I will often use the term colonialism to indicate European and British colonial and postcolonial experiences, especially in the context of Malawi.

Kasache, backed by anthropological and historical analyses, will reveal how knowledges and experiences of climate change cannot be disjoined from the historical, socio-cultural and political processes that brought them into existence. They can counter and at the same time enrich the dominant view of climate change, shedding light on the underlying different but interconnected power relations.

1.2 Dismantling orthodoxies

Drawing on the wealth of Science and Technology Studies, as well as Postcolonial and Feminist Science Studies scholarship, this work will challenge several orthodoxies characterising global climate change discourse, such as: the presumed objectivity and neutrality of climate science; the idea that an increased amount of climate data and information can lead to more effective policy decisions, and the assumption that improved knowledge integration (e.g. North-South) guarantees more equitable and inclusive outcomes (O'Reilly 2011; Hulme 2017).

The *climate-resilient development paradigm* discussed in Chapter 4 was conceived as a neutral and a-political solution to improving people's lives in the face of a changing climate through science- and knowledge-based adaptation policies. However, several STS scholars argue that the international policy regime has so far only produced 'policy-based science' rather than an 'evidence-based policy' (Jasanoff and Wynne 1998; Nowotny 2003; Haas 2004; Demeritt 2006; Dilling and Lemos 2011), silently embedding and reproducing unbalanced (global to local) power relations and undermining national climate change policy and equality goals.

My work looks at the underlying rationalities and worldviews embedded in that knowledge as statements and relations of power (O'Reilly 2011), which need to be acknowledged and disentangled from socio-cultural or economic stakes if equitable results are to be attained by climate-resilient development initiatives (Kelman 2014; Naess et al. 2015;

Petheram et al. 2015). My reflections will provide analytical and methodological recommendations for those working at the interface between climate change science and policy, such as policymakers, climate scientists and technical specialists. This audience, perceived as the source of neutral and disinterested advice (Martin and Richards 1995; Cozzens and Woodhouse 2001), is often invested with the task of designing and implementing public policy interventions. Yet, globally ‘legitimised’ climate change discourses anchor these actors to a series of concepts and practices (e.g. participatory development, gender mainstreaming, knowledges integration) grounded in co-constituting Western-based³ dualisms (nature-culture, science-policy, masculine-feminine, public-private). Hence the necessity to dismantle the orthodoxies that, as shown by the case of Malawi, fuel disjunctions between multi-level knowledge and policy processes, generating marginalisation among societal groups.

By clarifying how climate change knowledge is related to social categories, cultural norms and economic structures, I will point to several knowledge assumptions that reinforce specific identities or practices, reproducing or challenging oppressing relations of power. The findings will raise awareness of the intersecting (power-laden) processes on which climate science-policy actors are asked to advise or decide (Chapter 8).

1.3 The thesis approach

1.3.1 Research questions

This work examines the discourse surrounding climate change, from global scientific and development institutions (Chapters 3 and 4) to localised and context-specific communities (Chapters 5, 6 and 7). By tracing different discourses across multiple research sites, I will identify a variety of knowledges that blend, conflict or negotiate

³ I will often use the word ‘Western’ to refer to the tradition of thought deriving from European positivism (Chapter 3). Despite its unavoidable use, I recognise that the term can essentialise a cultural tradition that is as various, multifold, historically and context-driven as any other (Ingold 2010). For this reason, I will clarify each time the specific object of my criticism towards Western thinking (e.g. humanity-nature or mental-material dichotomies). Furthermore, my theoretical approach, grounded in STS, postcolonial and feminist studies of science, will help me overcome the binary thinking (‘West/non-West’) deriving from a socio-constructivist approach (Chapters 3 and 4).

with climate reductionism. This can potentially enrich prevailing climate change epistemologies, promoting context-relevant narratives that may contribute to unsettling the underlying conditions of climate change vulnerability at the local level.

Key to my research work are the following guiding questions:

1. How does knowledge and policy production on climate change in Malawi interact with dominant discourses emanating from international scientific and policy frameworks for climate-resilient development?
2. How do interventions inspired by the climate-resilient development paradigm relate to temporally situated (colonial and postcolonial) and cultural framings on weather and climate in Kasache?
3. How are individual and collective vulnerability, adaptation and agency in Kasache enabled, limited or otherwise affected by international policy discourses on gender and community empowerment?

My positionality in several international development agencies (first in Malawi, and later in Geneva at the UN European headquarters) has contributed an important added value to my research, allowing me to connect the local dimensions of climate change with global science, policy and development issues. Numerous STS empirical studies have explored the process of science-policy co-production in single specific locations, especially in industrialised countries,⁴ focusing, for example, on how scientific laboratories work or on the public perception of science (Marcus 1995; Hackett et al. 2008). Much rarer are observations of the science-policy relationship in multi-sited social and cultural spaces where the political significance of science is investigated from the perspective of international, national and local political actors (Gupta and

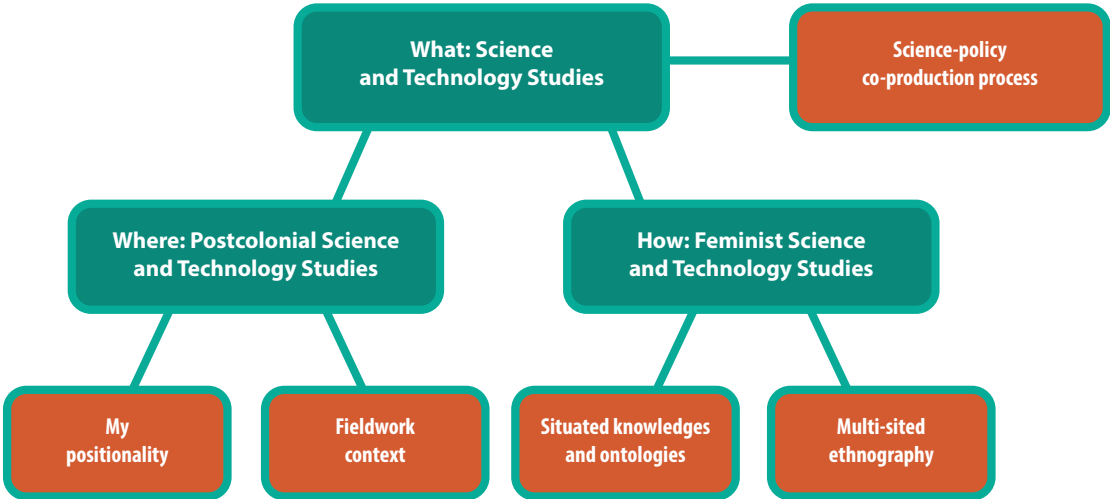
⁴ I will use the ‘North/South’ terminology developed in the context of the United Nations Conference on Environmental issues (Rio de Janeiro, 1992) and adopted in literature to mark the distinction between industrialised and non-industrialised societies as well as the geographical division between the northern hemisphere’s temperate and colder eco-climatic zones and the southern tropical and sub-tropical zones. However, while the category North/South replaces politically rejected classifications (First/Third World, West/Orient, and Developed/Underdeveloped), it does not account for the variety of social, cultural, and economic contexts, thus replicating the problematic binary of ‘Us’ and ‘Them’ (Escobar 1995; Karlsson et al. 2007; Harding 2008; Chapters 3 and 4).

Ferguson 1997; Cozzens and Woodhouse 2001; Marcus 2002). My positionality has helped dismantle the boundedness of locality to pursue a hybrid (Bhabha 1994) and multi-sited perspective (Marcus 2002; Chapter 2). Multi-sited work has allowed mapping climate change as a travelling discourse, as well as embracing a broad, confuse, messy and apparently incompatible set of connections and relationships in the narratives of local communities, national decision makers and global organisations.

1.3.2 Methodological map

While my work emphasises actors’ interests, perspectives and interactions to explain the role of science in the policy domain, it situates these processes in a multilayered social and cultural space. Therefore, I drew on multiple, complementing streams of research in Science and Technology Studies. The map below (Fig. 1) identifies the STS streams contributing to my work and facilitates the understanding of my methodological approach. The map is a heuristic tool that represents each stream’s contribution, historically and theoretically, to generating new sets of concepts, such as multi-sited ethnography or hybridity (see Chapter 2 for further details on my methodological approach).

Figure 1 – Methodological map



1.3.3 Multi-scalar interactions

My work discusses how specific conceptualisations of climate change (global, science-based, development-linked, etc.) influence the definition and engagement of research actors (Fig. 2) in discourses and practices of climate change, generating alternative sets of ideas and experiences. Three groups of actors are involved in my analysis:

1. International scientific and development organisations, such as the Intergovernmental Panel on Climate Change (IPCC) and various United Nations bodies that have historically defined the global scientific and policy terms of the climate change debate (Chapters 3 and 4). In the context of Kasache (Chapters 6 and 7), I also explore the role of Non-Governmental Organisations (NGOs) as the main implementers of internationally funded projects;
2. Government constituencies – specifically in the context of Malawi (Kosamu 2013) – recognised as the main players influencing the formulation of climate change-related policies at the national level (Gupta et al. 2007; Chapter 5);
3. Local communities (Malawi), described as those mostly experiencing the localised effects of climate change (Gupta et al. 2007; Chapters 6 and 7).

My work will initially deploy a three-level or hierarchical scalar model (Fig. 2) derived from Gupta et al. (2007) to simplify the identification of key climate science-policy actors. Until recently, climate change was analysed through physical hierarchical scales as a global, national and local issue (Bulkeley and Betsill 2005; Gupta et al. 2007) or through the polarised extremes of ‘global’ and ‘local’ (Herod 2010; Birkenholtz 2011). My analysis will go beyond these spatial and conceptual hierarchies, problematising the ontological nature of the scale itself (Fig. 3).

In each chapter, rather than simply shifting (vertically) from one scale to another, I will reflect on the overlapping and multi-sited science-policy interactions, exploring the material and discursive interplay between different localities (Fig. 3). I will argue, for example, that local actors embed themselves globally and/or locally with specific

Figure 2 – Main actors in my research work viewed in a hierarchical scalar way

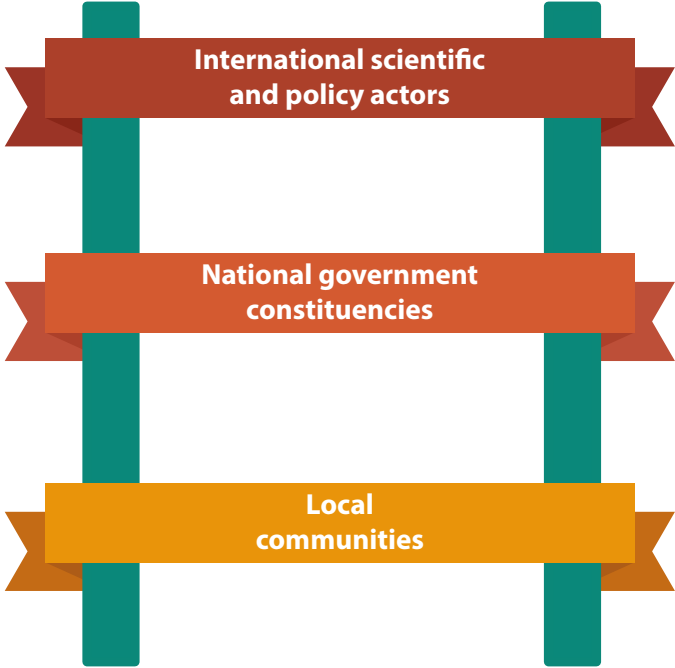
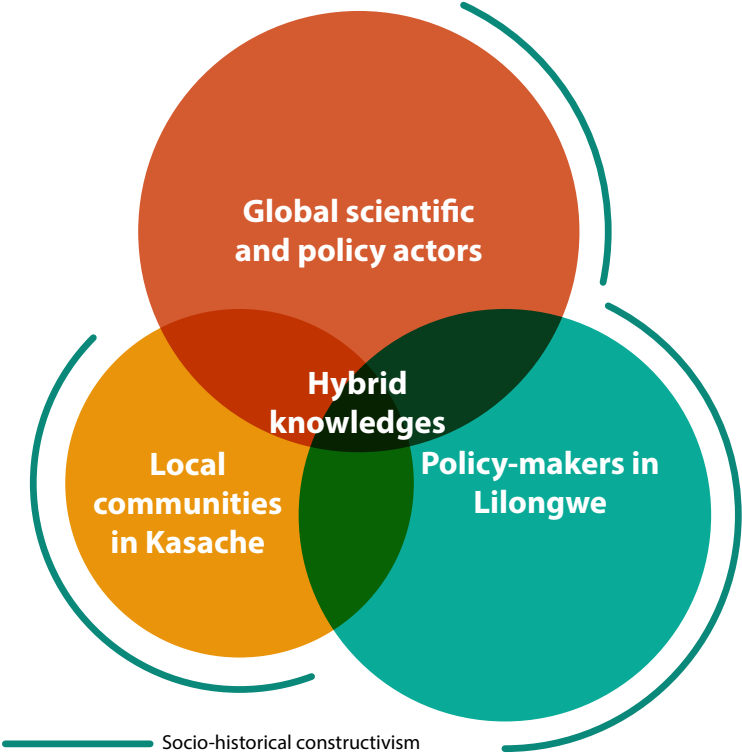


Figure 3 - Mapping climate change as a multi-sited cultural construction



purposes (e.g. *local* civil protection committees build dialogue with international NGOs using *global* narratives), generating hybrid meanings and practices and breaking down the polarised or binary classifications of global climate change discourses.

1.3.4 The thesis at a glance

Chapter 2 discusses contradictions (and opportunities) between my fieldwork location and my positionality as a development worker with an international agency in Malawi, as well as the methodological foundations of my thesis. This chapter makes the case for a multi-sited ethnographic approach, which allows understanding how large-scale narratives are embedded into concrete and localised life-worlds (Marcus 2002). Chapter 3 discusses the wide-ranging STS literature upon which this research is based, introducing the theoretical and methodological tools that allow identifying the genealogy, co-production and institutionalisation of a reductionist conceptualisation of climate change. Chapter 4 will further explore how global discourses on climate change came to be interwoven with development theory and praxis, trickling down to national contexts through practices of development support. This chapter will specifically introduce the climate-resilient development paradigm, discussing the conceptual shift from ‘science-based’ to ‘development-centred’ approaches to climate change, conceived by the international community as a means for safeguarding economic and human development from climate impacts. This evolution has introduced a number of development narratives (e.g. capacity building, gender mainstreaming) in global discourses on climate change, which may disregard or exacerbate the causes of vulnerability. Chapter 5 brings us closer to the case of Malawi, exploring how decision makers have internalised, used and reproduced climate science discourses in their country context. This chapter includes a critique of the ethnocentric character of colonial and neoliberal development interventions in Malawi. Chapter 6 focuses on climate-affected communities, exploring how climate change vulnerability is generated from within specific socio-political and historical contexts and making the case for regarding vulnerability as a local and contextualised phenomenon. Further,

Chapter 7 unpacks the dynamics of women's participation and exclusion in the village of Kasache, exploring how climate-resilient development interventions, aimed at addressing the negative impacts of climate change on women, have led to unintended consequences, exacerbating gendered relations and selective vulnerabilities within the community. Chapter 8 will offer some final reflections, focusing on the interaction between epistemological and ontological scales and highlighting several key emerging features of multi-sited narratives on climate change.

This research work will start as a *voyage*, moving from one place to another. Knowledge about climate change will emerge from this journey as varied and messy, inspiring and binding as the places, ideas, people and experiences through which it becomes 'real'.

Chapter 2

Methodology

2.1 Introduction

In Chapter 1, I outlined how my research experience started almost two years after the beginning of my assignment at the United Nations Development Programme (UNDP) in Lilongwe. Whilst conducting my PhD research as a part-time and self-funded student, I faced several financial and time constraints. Most notably, my full-time job prevented me from spending extended periods in close contact with informants. My life history and personal biography created structural research ‘dilemmas’ (Sherif 2001; Venkateswar 2001; Robert and Sanders 2005) and affected my possibilities *within* the ethnography, influencing the data collection process before (finding time and resources), during (multiple identities, see section 2.3.1) and after the fieldwork, since I have not had the opportunity to return to Malawi to discuss and share my research findings (section 2.5). In particular, I could not undertake the ‘standard’ ethnographic research experience, characterised by long periods in the *field* with local communities, participatory observation, and the construction of close relations with informants (Gupta and Ferguson 1997; Springwood and King 2001; Venkateswar 2001; Roberts and Sanders 2005; Simpson 2011).

The three-year life experience in Malawi, however, allowed me to get acquainted with many life situations. Although not in a structured way, I gathered a rich understanding of the country and culture. My idea of Malawi was initially influenced by standard prejudices that define cultures through all-encompassing categories such as ethnicity or nationality and do not take into account gender or socially differentiated *subcultures*. My daily interactions with people challenged my initial beliefs. For example, I expected that poverty would be especially concentrated in ‘rural’ areas – an understanding of social relations that reflected post-World War II economic development theories, which

assume countries whose national economy mainly relies on agricultural production as cut off from world markets (Escobar 1995). However, when I arrived in Malawi, I learned that logistical challenges such as lack of facilities and shortages of water, electricity, fuel and medicines, were a daily occurrence also in Lilongwe, the capital city. By observing these aspects of daily life, I readjusted many of my pre-constructed ideas. I learned that the *African reality* (homogeneous as it was initially in my mind) is much more layered and variegated than it is perceived by European imaginaries, and it is not possible to talk about *one* African reality. Similarly, my research suggests that climate change is far from being the purely natural event – independent of human actions – which can be isolated, dissected and managed by human rationality as envisioned in the international framework for negotiating climate policies. Rather, climate change emerged in my research as a travelling and hybrid construct that transcends the dualisms of Western positivist thinking (global-local; nature-culture), signalling the full entanglement of nature and culture (Chapter 8). I later realised that my early perceptions of Malawi were influenced by hierarchical categorisations of its geography (rural vs. urban), culture (West vs. non-West) and economy (formal vs. informal), which my rather ‘distant’ experience (exclusively based on readings and lectures) as a university student first, and later as a UN officer, had hitherto failed to dismantle.

My research experience greatly benefitted from my professional activity, which allowed me to fully immerse myself in a specific institutional setting, taking advantage of easy access to decision makers and climate-exposed communities. The international development agency in Lilongwe (UNDP) represented one of my actual fields, a place where I could establish close relationships and observe processes from an *insider* perspective (see section 2.2.1 for critical reflections on this concept), capitalising on daily ‘experiential learnings’ (Moore 2008). My multi-sited positionality allowed me to disengage from an exclusively global *or* local standpoint to embrace a broader set of connections and follow climate change discourses in multiple settings: local communities, national decision makers and global narratives. This perspective will

particularly enrich the understanding of climate change as reconfigured in the public policy context of Malawi, which, as I will explore in Chapter 4, has been heavily linked to the ideal of development as *modernisation* and to hierarchical categorisations of geographical, cultural and socio-economic spaces.

The construction of my identity as a research student went hand in hand with my experience of living and working in Malawi. The ultimate goal of my research was to critique the deep-seated beliefs about climate change that I encountered in my professional experience. In Chapter 1, for example, I described how national to local adaptation interventions in Malawi have been linked to the availability of scientific evidence and technical capacities, overlooking the causality between historical socio-political and cultural processes and the underlying vulnerability to climate change of specific groups. My research was thus shaped by critical feminist methodologies that propose using research as a means of constructive critique of society and suggest forms of direct and personal engagement of researchers in research sites such as private or public organisations (Harding 1998; Forsythe 1999; Hackett et al. 2008). In this chapter, I will discuss how this represented both an opportunity and a challenge for my work, influencing my research both at a theoretical level (through critical approaches to development and climate change science and policy) and from a more practical perspective, such as in the selection of methods for exploring climate change discourses in multiple contexts.

2.2 Multi-sited ethnography

According to Gupta and Ferguson (1997) and Fischer (1999), conventional single-site ethnography, by intensively focusing ethnographic observation and participation on the confined spaces of fieldwork, is inadequate to understand the challenges of the interconnected contemporary world. The traditional ethnographic focus on small-scale 'subjects' and societies, conceived in a holistic/universalistic manner as ahistorical and spatially bounded, should therefore be problematised. The idea of single-site fieldwork has been recently revised through the concept of multi-sited ethnography, which can be

deployed to study spatially dispersed phenomena that occur simultaneously in different locations and are apparently unconnected (Marcus 1995; Gupta and Ferguson 1997; Fischer 1999; Crate 2011).

My decision to use multi-sited ethnographies (Fischer 1999; Marcus 2002) was prompted both by my need to conduct fieldwork in a non-traditional way and by the struggle to map climate change as a travelling discourse across global and local contexts through classic modes of contextualisation (single-site ethnography). Multi-sited work particularly helped me to link research sites that are spatially and epistemologically disconnected (Marcus 2002). For instance, my ethnographic position in an international development context, rather than being restricted to a specific territoriality, was expanded to include an array of scales and locations, allowing me to follow the imaginary thread of climate change from localised communities to broader global narratives.

Multi-sited ethnography served the purposes of my research work from both a theoretical and an empirical perspective. Conceptually, it allowed me to link socio-cultural narratives in local communities to top-down, global and quantitative-based approaches to climate change. Methodologically, it helped me to represent and connect my various, mobile and overlapping identities within several localities: a climate change analyst in a multilateral organisation, a research student in a climate-exposed community, a Western development officer among Malawian decision makers. This methodology helped me to better articulate and somehow fix some of the asymmetries between my object of study, fieldwork, and written production that are less commonly found in traditional monodisciplinary ethnographic works (Marcus 2002).

The main challenge has been to conduct a multi-sited ethnography starting from a specific cultural context and moving towards a transnational dimension: the international development domain has indeed been traditionally exempted from ethnographic fieldwork because of the difficulties in observing and mapping transnational networks (Marcus

2002). Multi-sited ethnography, based as it is on paths, threads (often transnational) or juxtapositions of locations in which the researcher defines its object of study, can help trace cultural formations by following the links and connections suggested by multiple sites, thus downplaying the power of single-sited fieldwork (Marcus 1995). The primacy of participant observation is also reduced in multi-sited ethnography by the need to deploy social and cultural reconstruction strategies of multiple paths at different spatial and temporal scales (Fischer 1999; Marcus 2002).

Validation of fieldwork is not solely linked to the amount of time spent in a local context, but also to the attention devoted to social, cultural and political settings, also in their relations to other locations (Gupta and Ferguson 1997). A restricted focus on the global connections of locality, for example, contributes to explaining the limited ethnographic work done on transnational organisational settings, as well as the inadequate consideration paid to international or national political actors as *ethnographic subjects* (Gupta and Ferguson 1997; Marcus 2002). However, since my professional perspective was an integral part of the research landscape, reflexivity is critical to my methodology, and in the next section I will discuss the challenges and opportunities provided by my positionality as fully embedded in the terrain I try to map.

2.2.1 Ethnographic possibilities within my *field*

In recent ethnographic debates, there has been so much focus on the right amount of time spent trying to get access to interviewees, quantity of recorded material and amount of effort dedicated to entering and exiting the research field, that other issues affecting the quality of research outcomes were overlooked (Gupta and Ferguson 1997; Roberts and Sanders 2005). The archetypal idea of *field* as the domain of “a lone, white, male field-worker living for one year or more among native villagers” has not yet been fully dismantled (Gupta and Ferguson 1997, 12). Gupta and Ferguson (1997) argued how the concept of fieldwork is socially, historically and politically constructed and shaped by power relationships, availability of funds, as well as personal and gendered experiences.

For example, the radical separation of the field from ‘home’ or the hierarchy of field sites echo the Western epistemological project that values certain types of knowledges to the exclusion of others.

Fieldwork observation has been relevant in my work, although not central, as it represented a starting point for a wider socio-constructive analysis. The collection of narratives from decision makers and communities, and a reflection from my standpoint, provided the initial material for tracing out the links and comparing apparently distinct discourses. But what was the meaning of ‘field’ in my case?

My main *positionality* as an official from an international development agency determined where my research started off and unfolded. By directly supporting the Government of Malawi, I had the opportunity to get to know many of the government officials I would interview for my case study at a later stage. I decided to focus my research on decision makers because I knew that I would enter this group with relative ease through my job, overcoming one of the biggest challenges in social research: getting access to élites or individuals that hold powerful or privileged positions (Springwood and King 2001; Rice 2010). Studies on interviewing élites draw attention to the importance of the researcher’s institutional affiliation, use of personal connections and possibility of using influential sponsors (Rice 2010). These elements played indeed a fundamental role in facilitating my research work (see section 2.3.1).

My professional role provided me with critical insights on many embodied practices and routines in climate change policy and development institutions: as an insider I could take note of processes and daily routines and become a trained observer (Moore 2008). Experiences in work/corporate settings can allow researchers to become participants-observers and make sense of underlying worldviews, assumptions and generalisations in organisational settings. *Critical ethnography* (Springwood and King 2001), *militant ethnography* (Juris 2007) and *interpretative interactionism* (Moore 2008) particularly

value this type of ethnographic participation and learning. However, things tend to be a bit more complicated. To start with, the position as *insider* challenges the very idea of what makes a *field* in ethnography (Gupta and Ferguson 1997). For instance, if there is an *insider*, there cannot be a *field* – at least if the ‘field’ is defined in ways that reproduce the self/other binary of positivist thinking (see the concept of external great divide, Plumwood 1991; Cohen 1989; Karim 1993; Gupta and Ferguson 1997; Springwood and King 2001; Sherif 2001). Sherif (2001) highlighted the challenges that *half-insiders*, researchers with their origins in the field of study, face in fieldwork, such as the persistence of a double barrage of prejudices, showing that ‘home’ itself is a site of difference and conflict. According to critical ethnographers, it is no longer possible to classify the outsider researcher and the ‘native’ as two neat categories, since native scholars have been facing ambiguous experiences at home too. Similarly, non-native ethnographers have found other categories to build up relationships with informants (e.g. through gender consciousness), dismantling the assumption that *otherness* means uncritical difference and ‘home’ corresponds to *sameness* (Karim 1993; Gupta and Ferguson 1997; Venkateswar 2001).

Another tension stems from the fact that presence and observation in the field – regardless of how long they last – cannot *nativise* the researcher and transform him or her into an ‘objective’ authority (Hanna 2004; Longino 2004) and interpreter of a specific context (Karim 1993; Gupta and Ferguson 1997; Sherif 2001; Springwood and King 2001; Roberts and Sanders 2005; Rice 2010; Simpson 2011). This recalls the critique of the positivist ideal of scientific objectivity raised by FSTS that I will discuss in Chapter 3. By assuming the existence of an objective and independently existing reality (independent of human hopes, fears or expectations), objective empiricism proposes direct observation as a ‘rational’ method to truly represent reality (Hanna 2004). As highlighted by Blaser (2014), echoing critical feminist scholarship on empirical objectivity (Haraway 1988; Longino 2004), field experience should not aim at acquiring an objective viewpoint through which to describe a given reality, as this implies a neat separation between nature and culture/

mind. Field experience should help the researcher to explore alternative meanings and worldviews instead, the spaces (often marked by conflicting meanings or situations, see Chapter 6 and 7) of human and individual interaction where discourses, practices and power are interrelated, contested, produced and reproduced (Gupta and Ferguson 1997; Springwood and King 2001). This is particularly pertinent to my research work, which aims to revisit the existing concepts or categories (e.g. climate change as linked to the development apparatus, see Chapter 4) that may be inadequate to account for interactions, differences and conflicts between climate change epistemologies and ontologies.

While insider research can offer new insights and a deeper understanding, ethnographers will always remain *partial insiders* and their investigative work will be modulated by their biographies, gender and personal experiences (Sherif 2001; Venkateswar 2001). As my research intertwined with my professional life, my case shows that multiple research identities can co-exist, confronting specific challenges (external/internal/half-insider, Sherif 2001; Wallington et al. 2005; Roberts and Sanders 2005; Lavis 2010). My standpoint (Harding 2008), in particular, was between and within different institutions, disciplines and ways of knowing and doing things, often characterised by contrasts and ambiguity. Although in my research I provide a critique of reductionist approaches to climate change, in my daily professional life I am expected to ensure that policy decisions are based on sound *evidence* and best available science, oftentimes experiencing tension and anxiety. For instance, during a training event for LDCs, a UNFCCC National Focal Point countered criticism from the audience about the limited inclusion and participation of national stakeholders with the argument that there is a *lack* of technical and scientific skills (Chapter 1). As a critical geography researcher, I felt quite disappointed by the argument and the fact that it was used to silence criticism and requests for inclusion. However, as a UN representative I had to silently accept both. In Chapter 8, I will further discuss how the contradictory meanings and attitudes I encountered during my fieldwork can be used to identify the *modus operandi* of hegemonic cultural and political projects as well as opportunities to foster agency in everyday practices (Renegar and Sowards 2009).

My uncomfortable perspective – neither solely from an academic domain nor from a development sector – is what makes this research work an original contribution to the ongoing climate change science-policy and multi-sited ethnography debates. My hybrid and engaged participation helped me to appreciate the pluralism of values, interests, interpretations, epistemologies and practices in the specific context of Malawi, as well as the contrast with the internationally legitimised climate-resilient development discourse. In line with the FSTS concept of situated knowledges, my different positionalities represent an added value, since they helped me to draw new connections between well-known patterns of knowledge, providing a basis for the critical evaluation of the assumptions underpinning climate change global discourses.

Several risks come with an ‘insider’ position in a research context, such as potential biases, the perceived lack of academic rigour (from a traditional ethnographic perspective), and the prevalence of advocacy roles (Daston 1992). In my case, aspects of my researcher ethics and authenticity confronted the impossibility of being sincere and truthful during fieldwork (section 2.3.2). In the community of Kasache, for example, I chose not to disclose my professional affiliation to an international development organisation to minimise the risk of courtesy bias (see section 2.4).

2.3 Practising multi-sited ethnography: from methodology to method

Eriksen (2015) and Popke (2016) highlighted how methods to identify climate change multi-sited epistemologies and ontologies are still largely unexplored in the field of critical human geography. My study deployed a variety of qualitative methods to gather data, including interviews and questionnaires with government and non-government policy actors (section 2.3.1), focus group discussions with climate-affected communities (section 2.3.2) and reviews of academic literature and policy documents (sections 2.3.3 and 2.3.4). Data on interviewees’ seniority and demographic characteristics (age and gender), provided in Tables 1, 2 and 3, has allowed me to critically reflect on gender

mainstreaming efforts in international development policy and practice and to apply a critical feminist perspective to multi-sited ethnography. The following sections will discuss the practical steps I undertook during my fieldwork in Addis Ababa, Lilongwe and Kasache, describing the range of methodological approaches used to reach and represent each epistemic and ontological locality.

2.3.1 Encountering policymakers

2.3.1.1 Addis Ababa

In Chapter 5, I will analyse a set of interviews with government officers I conducted in Addis Ababa (Ethiopia) during a regional training workshop on National Adaptation Plans (NAPs) in April 2014. On behalf of my organisation, the United Nations Institute for Training and Research (UNITAR), I video-interviewed policymakers from 19 different African countries (Table 1) to investigate the perceived capacity gaps in relation to national adaptation planning. The interviewees were mostly senior representatives of the ministries of Environment, Finance, Economy or Planning in their respective countries. The gender breakdown in Table 1 points to the unequal access of women delegates to international capacity development activities (4 women versus 15 men). Significantly, the small number of women holding leadership positions in national governments may explain their limited participation and representation in international climate policy processes (IIED 2016b), as further discussed in Chapter 4.

Table 1 – Research informants consulted in Addis Ababa (2014)

N°	Country	Government institutions (Ministries or Departments)	Sex	Seniority/years of experience Senior: 10+ Mid: 5-7 Junior: 1-4	Modality
1.	Angola	Ministry of Environment	M	Senior	Interview
2.	Democratic Republic of Congo	Ministry of Environment	M	Senior	Interview
3.	Ethiopia	Ministry of Environmental Protection and Forest	F	Mid	Interview
4.	Gambia	Department of Water Resources	M	Senior	Interview

N°	Country	Government institutions (Ministries or Departments)	Sex	Seniority/years of experience Senior: 10+ Mid: 5-7 Junior: 1-4	Modality
5.	Guinea	Ministry of Environment	M	Senior	Interview
6.	Guinea-Bissau	Ministry of Planning	M	Senior	Interview
7.	Kenya	Ministry of Water, Environment and Natural Resources	M	Senior	Interview
8.	Lesotho	Ministry of Energy, Meteorology and Water Affairs	F	Mid	Interview
9.	Liberia	Ministry of Lands Mines and Energy	M	Senior	Interview
10.	Madagascar	Ministry of Environment	F	Mid	Interview
11.	Malawi	Ministry of Environment and Climate Change	M	Senior	Interview
12.	Mozambique	Ministry of Environment and Forestry	M	Mid	Interview
13.	Niger	Inter-sectoral Committee on Climate Change	M	Senior	Interview
14.	Rwanda	Ministry of Natural Resources	M	Mid	Interview
15.	Sierra Leone	Office of the President	M	Senior	Interview
16.	Somalia	Ministry of Fisheries, Marine Resources and Environment	M	Senior	Interview
17.	Sudan	National Council for Strategic Planning	M	Senior	Interview
18.	Uganda	National Planning Authority	F	Senior	Interview
19.	Zambia	Ministry of Lands, Natural Resources and Environment Protection	M	Mid	Interview

2.3.1.2 Lilongwe

In Chapter 5, I will explore how decision makers perceive the interplay between climate change science, knowledge and policy in Malawi. By *decision makers* I specifically refer to those individuals, mainly central government officials, actively engaged in international, national or sectoral policy work through their affiliation to specific institutions (e.g. the Least Developed Countries Group at the UNFCCC). While Chapter 5 focuses on government officials (from Malawi as well as from several other African countries; see Tables 1 and 2), I also spoke to representatives of international

organisations, consultancy companies, academia and local NGOs, which exemplify the different types of organisations working on climate change in Malawi (Kosamu 2013).

Table 2 - Research informants consulted in Lilongwe (2011–2012)

N°	Institution	Sex	Age	Nationality (per region/continent)	Seniority/years of experience Senior: 10+ Mid: 5-7 Junior: 1-4	Modality
United Nations and International Organisations						
1.	United Nations Country Office	M	40-50	Europe	Senior	Written interaction
2.	United Nations Country Office	M	40-50	Africa	Senior	Interview
3.	United Nations Regional Office	M	20-30	Africa	Junior	Written interaction
4.	United Nations Regional Office	M	40-50	Africa	Senior	Written interaction
5.	United Nations Head Quarter	F	30-40	Europe	Mid	Written interaction
6.	United Nations Regional Office	M	50-60	Europe	Senior	Interview
7.	United Nations Head Quarter	F	20-30	Australia	Junior	Written interaction
8.	United Nations Head Quarter	M	40-50	Africa	Mid	Written interaction
9.	World Bank Head Quarter	F	30-40	America	Mid	Interview
Education and learning organisations						
10.	Academia	M	40-50	Africa	Senior	Written interaction
11.	Academia	M	40-50	Africa	Mid	Interview
12.	Academia	F	30-40	Africa	Junior	Interview
13.	Academia	M	40-50	Africa	Mid	Interview
Non-Governmental Organisations and consultancy companies						
14.	International NGO	M	30-40	Europe	Mid	Questionnaire
15.	International NGO	F	50-60	Europe	Mid	Questionnaire
16.	Regional NGO	F	30-40	Asia	Mid	Written interaction
17.	Local NGO	F	20-30	Africa	Junior	Written interaction
18.	Local NGO	F	20-30	Africa	Mid	Questionnaire
19.	International consultancy firm	M	40-50	Europe	Senior	Interview

N°	Institution	Sex	Age	Nationality (per region/ continent)	Seniority/years of experience Senior: 10+ Mid: 5-7 Junior: 1-4	Modality
Government institutions (Ministries or Departments)						
20.	Environment	M	40-50	Africa	Senior	Interview
21.	Environment	M	20-30	Africa	Junior	Interview
22.	Environment	F	40-50	Africa	Senior	Interview
23.	Environment	M	40-50	Africa	Junior	Questionnaire
24.	Environment	F	40-50	Africa	Senior	Questionnaire
25.	Environment	M	30-40	Africa	Junior	Questionnaire
26.	Environment	F	20-30	Africa	Junior	Questionnaire
27.	Meteorological Services	M	50-60	Africa	Senior	Interview
28.	Meteorological Services	M	40-50	Africa	Senior	Interview
29.	Meteorological Services	F	30-40	Africa	Mid	Interview
30.	Meteorological Services	M	30-40	Africa	Mid	Interview
31.	Meteorological Services	M	40-50	Africa	Senior	Questionnaire
32.	Meteorological Services	M	30-40	Africa	Mid	Questionnaire
33.	Meteorological Services	M	30-40	Africa	Mid	Questionnaire
34.	Economic and Planning	M	40-50	Africa	Senior	Questionnaire
35.	Economic and Planning	M	40-50	Africa	Senior	Questionnaire
36.	Economic and Planning	M	30-40	Africa	Senior	Questionnaire
37.	Economic and Planning	F	30-40	Africa	Mid	Questionnaire
38.	Education	M	20-30	Africa	Junior	Questionnaire

As for consultations in Malawi, I contacted a total of 49 people between October 2011 and September 2012, mainly representing government ministries and departments but also UN agencies, NGOs and academic institutions, the majority of whom were living and working in Lilongwe. The respondents had different levels of experience (from junior to senior level), different duties (from technical specialist to programme officer) and different kinds of expertise (natural resource management, economic or development planning) (see Table 2). Between feedback from interviews, written interactions (e.g.

email exchange) and questionnaires (Annex III), I obtained answers from 38 individuals, with an overall response rate of 77.5%. While I had limited control over gender, age and seniority representation among research informants in Addis Ababa, since these were government officials appointed to regional capacity development activities, in Lilongwe (Malawi) I was able to ensure a more balanced representation and the inclusion of multiple perspectives. However, since I especially targeted people working with climate data and information (e.g. IPCC assessment reports, climate models) for national policymaking, coordination and international negotiation processes, the feedbacks were still skewed by a predominantly male representation (66%) among respondents. Interviews unfolded around a number of guiding questions (Annex I) aimed at exploring the perception of authority of global scientific assessment bodies such as the IPCC in shaping the formulation and implementation of national climate policies. However, I rarely adhered to the pre-planned structure of the interviews, since I did not want to excessively steer or hijack the conversation with questions I had personally drafted. Most of the time, I would ask the first question and then the conversation would become more casual but still recorded through field notes. The improvisation factor allowed a more independent performance of the narrative.

Although I started with the idea of basing my work exclusively on oral interactions, I had to reconsider my decision, constrained by the lack of physical and time availability of many participants, often dispatched on official missions overseas. I was therefore forced to administer on-line questionnaires – which were returned to me via email – to those who were not available for in-person interviews. The questionnaires contained a total of 24 multiple-choice and open-ended questions (Annex III), through which participants could express their views about the interplay between global climate change epistemologies and national policy processes. Participants who were unable to take the questionnaire were asked for feedback on a short abstract (200 words) of my research containing some of the questions used for the interviews. Thus, different interviewing tools were selected according to the availability of research participants. In Chapter 5, I will review participants' observations from questionnaires and conversational interviews whose recorded notes I

analysed through narrative and thematic approaches (sections 2.3.3 and 2.3.4).

Face-to-face interviews were mainly held at the UNDP premises or back-to-back to national technical government meetings. Most of the time interviews were improvised and decided on the spot, usually at the end of an official meeting, and therefore informal. Before both back-to-back interviews at official meetings and ad hoc research consultations, I would introduce myself revealing my double role as UNDP officer and research student. Usually, the people I contacted knew me exclusively through my work experience and only later discovered that I was also a research student. My position at the UNDP certainly helped me to gain access to and connect with some of the highest personalities in the public sector, and I could partly overlook some of the government official protocols for personal presentation and interview arrangements (Rice 2010; Lavis 2010). In fact, most of the time interviews were improvised and I did not need to spend much time introducing myself. This of course had positive aspects (e.g. no need for an appointment); the main drawback was that the interviews were held in a bit of a hurry, assuming that we would soon have another opportunity to continue our discussion (which oftentimes never materialised).

The informality and unpredictability that characterised most of my work with decision makers can potentially raise ethical issues (Simpson 2011). Interviewing officials who are in a position to influence decision-making processes could have placed me in an unequal power relation in that the input I received may have been the result of attempts to steer relationships and representations. However, I was never cut off, nor did I have concerns or experienced patronising, etc., and interviewees always seemed relaxed and open about their views. They did not hesitate to express criticism of global UN scientific or policy bodies such as the IPCC (Chapter 5). The informality of the setting may have helped, as did the fact that, for instance, I sometimes was not able to record the oral interactions because I did not have a recording device with me. One of the challenges in interviewing élites is that often researchers find themselves reinforcing existing patterns of knowledge construction and distribution by giving voice to powerful groups (Rice 2010). By choosing to also explore

community narratives in Kasache, I not only managed to offset the potential knowledge asymmetry deriving from exclusively consulting decision makers but was also able to give space to historically and socially disparate – and often marginalised – perspectives.

Free-flow interviews allowed me to understand the priority issues linked to the debate on science, knowledge and policy development among national policymakers. As Chapter 5 will show, most of the decision makers' narratives focused on issues of scientific and institutional capacity and related gaps in the climate change arena. The fact that I was working for a recognised aid and development agency may have influenced some of the feedback I received, and the interviewees' emphasis on capacity gaps may have been related to my perceived influential position in a donor organisation. On the other hand, a well-established and confidential relationship probably allowed government officials to be quite open and frank in their criticism of the international climate change science-policy system. Although I was coming from a European country and representing a multilateral development organisation (generally associated with Western countries), during interviews informants often expressed their criticism about the supposed hegemony of global climate knowledge. Their openness was seemingly facilitated by a relationship of trust between us, an element that is considered fundamental in narrative research (Pile 1991; Simpson 2011).

The main drawback of my free-flow interviews with policy élites was that I did not entirely succeed in asking some crucial questions about the role and influence of global narratives in local contexts. When discussing the interplay between global and contextual knowledges, interviewees tended to focus on the most 'visible' or taken-for-granted aspects, such as the need to integrate local climate data into climate change global and regional models. Deep issues such as perceptions of climate change science rarely came up spontaneously. The reason for this was twofold: the multi-layered nature of the narrative process, which makes it difficult to distinguish external considerations from internalised or sub-conscious evaluations, and the possible discrepancy between the speaker's and the listener's values, experiences and interpretations.

To overcome this challenge (and increase the chance that interviewees would be available), after the first round of interviews I decided to design questionnaires aimed at investigating in depth some of the issues barely touched upon in free-flow conversations (i.e. authority and legitimacy of global climate change science; see Chapter 5). My goal was to understand why those issues were not mentioned, which was very significant and represents a research finding in itself.

2.3.2 Encountering communities in Kasache

My empirical chapters (6 and 7) also explore the narratives on climate change at the community level in the context of Malawi. In this work, I use the term ‘community’ to describe a group of people who share common resources, environment and aspirations while living in the same geographical area (Mercer et al. 2010). The aim of my research was to understand how communities reflect on climate change in the context of their own lives, priorities and beliefs.

My experience at the community level came after a few months of research with decision makers and was facilitated by my contacts with an international NGO that acted as a ‘gatekeeper’ (Roberts and Sanders 2005; Lavis 2010). I first learned about COOPI

Figure 4 – Map of Salima District



Source: Google (2018).

Text box 2 – Salima, Msosa, Kasache: a socio-economic outlook

Salima, Msosa, Kasache: a socio-economic outlook

The Fourth Integrated Household Survey 2016–2017 (NSO 2017) highlights the socio-economic characteristics of households in the Salima District. In Salima, 76 percent of households are headed by men and 24 percent by women, with an average household size of 4.1 persons. Salima has one of the highest dependency ratios among districts (1.4), calculated as the ratio of the number of dependents aged under 14 and over 65 years to the working-age population (15–64 years old). The percentage of orphans is relatively high (about 10 percent, compared to 17 percent in Mulanje). Salima had the country's lowest Net Enrolment Rate in primary and secondary education (77 percent). Among the reasons cited for non-attendance were: lack of money, lack of parental permission, the need to help with household chores and the school's distance from home. School attendance in Salima is higher among pupils aged 6 to 13 and starts to decline in secondary school, with lack of money cited as the main reason for dropping out.

As regards distribution of the most frequently reported diseases in the Central Region, 50 percent of those who reported an illness or injury in Salima suffered from fever and malaria. Asthma was the most frequently reported chronic illness (28 percent), followed by HIV and AIDS (12 percent). Salima ranked among the lowest in the nation for adequate food consumption and housing conditions. At the district level, 72 percent of households in Salima reported receiving inadequate healthcare services.

In Salima, 89 percent of the population is engaged in income-generating activities, while 79 percent also engage in household agricultural or fishing activities. Nationally, there is a higher proportion of female-headed than male-headed households engaged in agricultural activities (87 percent versus 81 percent). In Salima, 92 percent of female household members contribute to the agricultural labour force (versus 80 percent of male members). About 53 percent of households are engaged in casual, part-time or *ganyu* labour (see also Chapters 6 and 7). The survey shows that 39 percent of the population aged between 15 and 64 years participated in the collection of water and/or firewood, with a higher proportion of women. Salima, and especially its female-headed households, also experienced very low levels of food security (61 percent). Food shortages reportedly due to droughts, erratic rains, floods and waterlogging affected 76 percent of the local population.

According to Malawi's 2018 Census Preliminary Results (NSO 2018), the Msosa Traditional Authority has a population of 9,369 (4,622 men and 4,747 women). The Kasache Group Village Headman (GVH) oversees 6 villages located along the shores of Lake Malawi, about 46 kilometres north east of the town of Salima. With a total population of 3,700, the villages of Kamphinda, Kasache, Matali, Moses, Palahari and Salim comprise 731 households with an average of 5 persons per household (COOPI 2018).

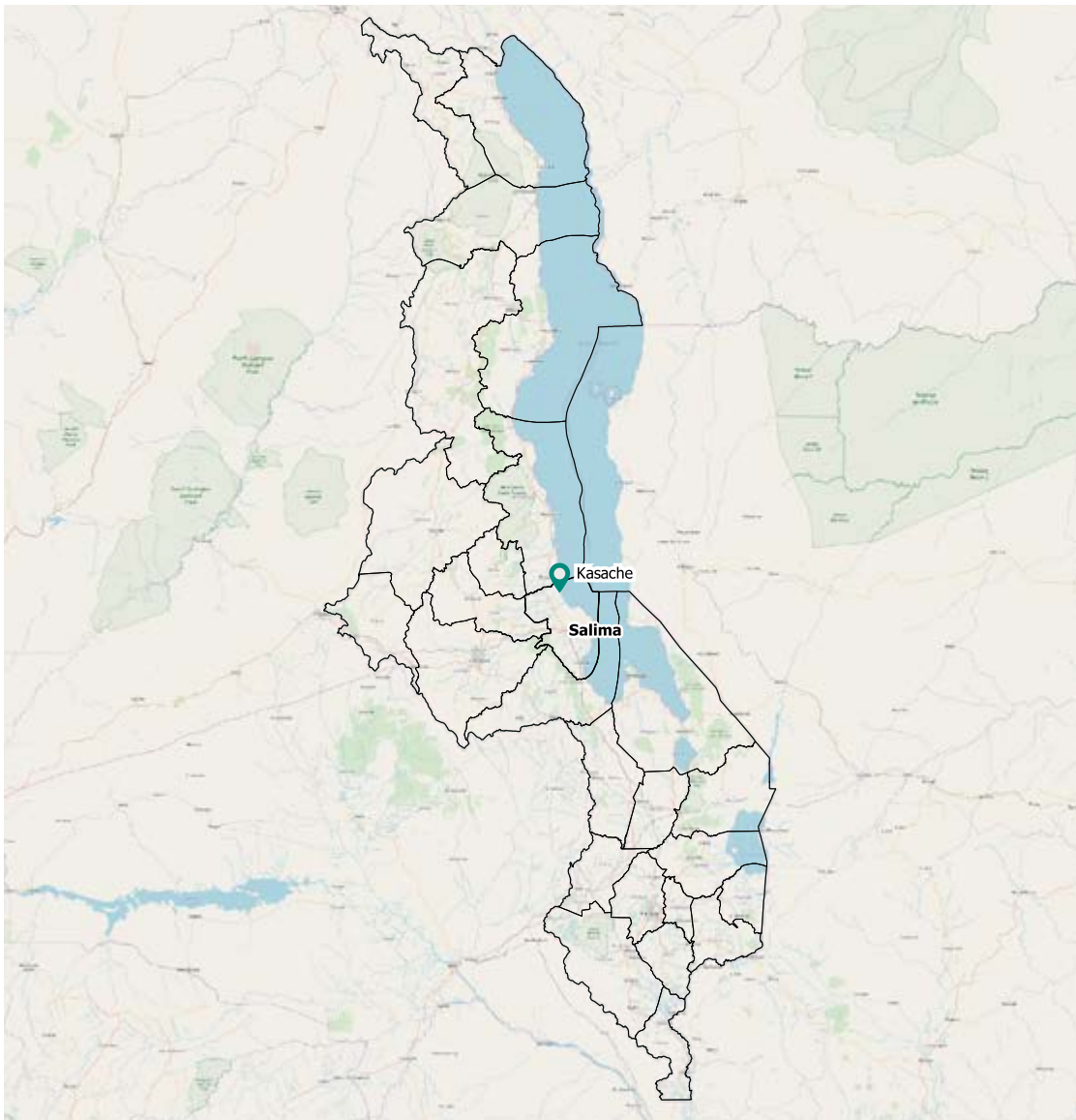
The village of Kasache has a population of 689 living in 150 households, with a prevalence of male-headed (113) versus female-headed households (37). The average age is 42 years, and the average family consists of about 4 people (COOPI 2012).

The dominant tribes are the Yao and the Chewa. Most households practice subsistence farming with maize as the staple crop, followed by rice as mostly a cash crop. Other crops favoured by local farmers include legumes such as beans and soy beans, tubers such as sweet potatoes and cassava, vegetables such as tomatoes, and other leaf vegetables. Other income-generating activities include fishing, piecework labour (referred to as *ganyu* in Chichewa), and small businesses.

The nearest healthcare facility is in Khombedza, about 15 kilometres from Kasache on the Salima–Nkhotakota road. On Fridays, a mobile clinic run by Islamic Development provides free medical services especially targeting children. One primary school serves the needs of the 6 villages under the Kasache GVH.

The area is crossed by the Lingadzi river and is often affected by flooding, a major cause of displacement and widespread crop destruction.

Figure 5 – The Salima District and Kasache village



Source: Wilson (2018).

Cooperazione Internazionale thanks to its collaboration with UNDP. The NGO, which had been operating in Malawi since 2002, focused its efforts on food security, climate change and disaster risk reduction issues. Through several informal interactions with the Country Director, I managed to identify a possible location for my fieldwork and secure some logistical support (a four-by-four vehicle, a field assistant and a room in a shared apartment to use as base camp). I decided to explore the Msosa area in the district of Salima, central Malawi, which has been described by the National Adaptation Programme of Action (GoM 2006) as one of the country's most disaster-prone areas. The Department of Disaster Affairs (DoDMA) has a comprehensive list of over 350 disaster-related events going back more than fifty years, with a predominance of floods (UNDP 2012). Salima has a land area of 2,196 square kilometres, with Lake Malawi forming its eastern border. The latest census (NSO 2018) assessed the population of the district at approximately 478,346, and the projected population for 2030 is almost 650,000. The majority of the district's population is engaged in maize subsistence farming. My choice of Salima was also motivated by the presence of individuals and communities exposed to climate change adaptation projects. COOPI's endorsement was also instrumental in introducing me to the community of Kasache (section 2.4).

In July and August 2012, I undertook two separate field trips from Lilongwe to Kasache. On my first trip, at the end of July, I had an introductory meeting with the COOPI Disaster Risk Reduction (DRR) Project Manager in Salima, where I gained a better understanding of the local impacts of climate change, types of disasters, institutional settings for early recovery and relief, as well as awareness and knowledge of climate change within the local communities. We identified and visited a suitable location for my field study: Kasache, a village located about 30 km from the main road connecting Salima with Nkhotakota, and around 85 km from the capital city, Lilongwe. The second trip took place in the first half of August 2012 and consisted of a seven-day sojourn in Salima, during which I conducted most of the interviews in the community.

As I only had a week to spend in Kasache, I could not engage in a lasting dialogue with the research participants (Roberts and Sanders 2005). However, these encounters allowed me to get a sense of the socio-cultural ramifications of climate change on a different scale and explore the narratives embedded at a more local level. I had the opportunity to consult a total of 68 people during the whole field trip, although not everybody participated in group conversations (Table 3).

Table 3 – Research informants consulted in Salima, Msosa and Kasache

Date	Place	Informant	Sex	Age	Modality
28 th Jul 2012	Salima	COOPI Project Manager	1 F	30-40	Individual interview
	Salima	Field Assistant	1 M	20-30	Individual interview
	Kasache	Group Village Head	1 M	40-50	Individual interview
	Msosa	Traditional Authority	1 M	50-60	Individual interview
29 th Jul 2012	Kasache	Farmers (n=12)	7 F 5 M	20-50	Focus Group Discussion
	Kasache	Group Village Heads (n=3)	3 M	40-50	Focus Group Discussion
	Kasache	Local Civil Protection Committee (n=13)	5 F 8 M	20-50	Focus Group Discussion
06 th Aug 2012	Kasache	Individual household	1 M	40-50	Individual interview
	Kasache	Individual household	1 F	70-80	Individual interview
	Kasache	Individual household	1 M	20-30	Individual interview
	Kasache	Individual household	1 F	20-30	Individual interview
	Kasache	Individual household	1 F	30-40	Individual interview
07 th Aug 2012	Kasache	Farmers (n=9)	9 M	20-60	Focus Group Discussion
	Kasache	Elders (n=3)	3 F	60-80	Focus Group Discussion
08 th Aug 2012	Kasache	Farmers (n=12)	12 F	20-60	Focus Group Discussion
	Kasache	Elders (n=4)	2 F 2 M	60-80	Focus Group Discussion
09 th Aug 2012	Kasache	Local Civil Protection Committee	1 F	30-40	Individual interview
	Kasache	Local Civil Protection Committee	1 M	30-40	Individual interview
	Kasache	Local Civil Protection Committee	1 M	30-40	Individual interview
	Msosa	Traditional Authority	1 M	50-60	Individual interview
10 th Aug 2012	Salima	Field Assistant	1 M	20-30	Individual interview
	Salima	COOPI Project Manager	1 F	30-40	Individual interview

In Kasache just as in Lilongwe I worked hard to ensure a balanced gender and age representation reflective of different perspectives and experiences. Focus Group Discussions (FGDs) – gatherings of men and women farmers of different ages, elders, the Local Civil Protection Committee (LCPC), and local chiefs, including group village headmen – were held at a meeting place where people convene during weather-related emergencies and LCPC meetings. Individual interviews with men, women, elders and the Traditional Authority were held in their respective homes in Kasache and Msosa (see pictures in Annex IV).

The Focus Group Discussions (FGDs) with women, men, the Local Civil Protection Committee (LCPC) and the local chiefs, including Group Village Heads, took place at a local meeting point where people gather during weather-related emergencies and LCPC meetings. The individual interviews with men, women, elders and the Traditional Authority were held in their respective homes in Kasache and Msosa (see pictures in Annex IV).

My research method, as well as translation and interpretation issues, were discussed during a meeting with Ganizani Chibwana, a district officer from the Malawian Ministry of Agriculture, Irrigation and Water Development who used to support COOPI locally. He was officially introduced as a research assistant and was especially helpful with cultural and linguistic matters in Kasache. Ganizani's positionality is emblematic of the mixed and fluid identities often at play in fieldwork (Rice 2010; Simpson 2011): he was a government officer supporting an international NGO and translating for an academic researcher in local communities. His multiple roles in the field reduced the possibility of being 'transparent' with the people interviewed and fully disclosing all the related identities and power dimensions, lest they influence the interviewing process (I will further discuss fieldwork identities in section 2.4).

Interviewing modalities were also addressed at the meeting with Ganizani, and it

was agreed to focus on FGDs, key informants, and interviews at household level. The interviews would be recorded both with a voice-recording device and with field notes. I shared a list of guiding questions (Annex II) to structure the interview process and asked Ganizani to avoid as much as possible the use of the English expression ‘climate change’ and preferably refer to a broader climatic or environmental change in order to avoid specific narratives attached to existing and potentially super-imposed interpretations. My aim was to avoid the emergence of traditional power relationships between researchers and research participants (section 2.4), as well as identifying the research subject together with the informants through fieldwork practice, acknowledging that the community was best positioned to report on its own situation (Pile 1991; Scott et al. 2005; Watertone et al. 2006; Lavis 2010; Mercer et al. 2010).

One of the main challenges of my field research in Kasache was related to the translation and interpretation of interviewees’ responses. Wiles et al. (2005) recognise that miscommunication is a common problem in cross-cultural interviews and data collection. As for the expression ‘climate change’ – *kusintha kwa nyengo* in the local language – we noted that this was indifferently used to refer to both short- and long-term variability (see Chapter 6 for further reflections), thus complicating feedback interpretation. Ganizani helped with interpreting, translating all the questions from English to Chichewa; however, just as with many other local languages, this practice often changes the meaning and connotation of key concepts conveyed during interviews (Mercer et al. 2010). Several times during the interviews in Kasache, I had to stop and reformulate my questions, because they were either not making sense to my audience or not successful at achieving effective two-flow communication (especially those related to adaptation or external/indigenous knowledge). The reason for such difficulties may be related to the nature of the languages spoken in Malawi, which are mainly an oral medium of communication, with words that have no direct English equivalent (Launiala 2009).

The translation process itself had the potential to change the narrative meanings. Thus, I asked Ganizani a word-by-word translation of the audio scripts so that I could analyse them in depth and with less filters. This aspect is particularly challenging in the context of multi-sited ethnography, where the capacity to make connections between meanings from site to site relies heavily on translation and tracing processes. Most multi-sited work has indeed been developed in monolingual contexts in which translation and interpretation are unproblematic (Marcus 1995). Several resources available from traditional fieldwork strategies proved to be helpful, such as coupling oral interviews and feedback analysis with historical, social and cultural literature review to control the process of cultural reinterpretation. In Chapter 6, I will explore the anthropological meaning of *kusintha kwa nyengo* by looking at the relational ontologies expressed through traditional rain-shrines in Malawi.

The possibility of misunderstanding, mistranslation and cultural reinterpretation should be carefully addressed through quality control procedures for questionnaires and training of research assistants (Mercer et al. 2010). Unfortunately, I could not provide my assistant with this kind of training and preparation. Rather, I applied an iterative approach by which, at the end of each interview, Ganizani and I would have the opportunity to discuss and learn from what was working and what was not and improve the process.

2.3.3 Narrative analysis

In multi-sited ethnography, given the absence of specific field delimitation (Marcus 1995), narrative methodologies are used as heuristic tools to physically frame multi-sited fieldwork by exploring it through people's perceptions of places and situations (Pile 1991; Wiles et al. 2005; Lavis 2010). Narrative analyses focus on how people talk about and evaluate natural environments, phenomena and experiences (Pile 1991; Wiles et al. 2005). The interviewing process, which is a qualitative method commonly used in several disciplines, is placed at the basis of narrative methods. My observations

in this case study stemmed mainly from informal and spontaneous interviews with decision makers and focus group discussions in climate-affected communities. Free-flow conversations can be coupled with narrative analysis (Roberts and Sanders 2005) to identify and interpret the layers of meaning in an interview and their connections: through casual conversations I was able to investigate the embedded meanings and interpretations that individuals attach to climate change, limiting the obtrusion of my external viewpoint (Wiles et al. 2005). In line with critical feminist research methodologies, upon which my work builds, the emphasis was on the importance of reducing the researcher's filtering to allow situated perspectives from research participants to emerge spontaneously (Spivak 1985; Haraway 1988; Longino 2004; Harding, 2009; Reid and Taylor 2011).

As key steps in narrative analysis, I identified who was speaking and how they were speaking, taking into consideration the overall context of the interview itself, for example the situation of the interviewee and to whom they believed they were speaking. I focused on repetition of words and on themes, bearing in mind the kind of relationship between myself and the interviewee and what this would entail in terms of social and personal expression (e.g. capacity gaps were often emphasised during interviews with decision makers, which may have been related to their awareness of my position in a donor organisation).

I then reviewed all the interview transcripts as a collective – and often colliding – set of narratives (Foucault 1972; 1982) rather than stand-alone accounts, coding the conversation sections according to key themes (e.g. knowledge gaps, capacity building, participation, etc.). This approach allowed me to pinpoint a level of meanings and perceptions triggered by my questions and defined *a priori* (e.g. I did ask questions about knowledge platforms and information sharing). It also revealed a layer of meanings made visible by my interpretation process *a posteriori* (e.g. I did not ask any question explicitly related to informal labour networks, but the topic came up

while talking about adaptation strategies to climate change), as well as allowing me to cross-compare different parts of the interviews and different interviewees.

2.3.4 Thematic analysis

The following step entailed a thematic analysis of the narrative (Roberts and Sanders 2005), linking the climate change narratives that recurred most frequently in interviews with relevant anthropological and historical literature on the country and specific topics raised by the interviewees. For example, reading women's narratives in Kasache through the historical literature on drought and famine in Malawi allowed me to understand the nature of *ganyu* labour. Though not directly related to my research questions, the issue was often mentioned by women farmers as a hunger coping mechanism and livelihood diversification strategy. A review of historical and anthropological literature allowed me to connect single conversations and statements to the larger social, historical and political contexts. For example, Stoler's (1995) feminist historical accounts, linking conceptions of gender and morality during European colonialism, helped me to explore the historical evolution of matrilineal societies in Malawi – and women's increased vulnerability to climate shocks – via the division between public and private spheres introduced by British colonial rule. Furthermore, the analysis of language (words and expressions used) provided important insights into interviewees' perspectives. In Chapter 6, my discussion of the Chichewa expression for climate change, *kusinthā kwa nyengo*, may lead to reflections on contextual worldviews and alternative human-nature relations. The narratives I collected provided a situated storyline anchoring the socio-cultural landscape traced by climate change or, in other words, a historical, geographical and socio-political foundation for my multi-sited investigation.

One of the biggest limitations of narrative analysis is the inevitable loss of the unique contextual nuances of people's experiences. The richness and messiness of talk (Wiles et al. 2005) can be reduced by the nature of the recording devices (audio-recorders, field notes, translations, etc.). On the one hand, this process can produce very dense narratives

of the subjective world and its networks of meanings; on the other hand, it makes it hard for the researcher to report, synthesise and relate it to multiple layers of understanding, from deeply unconscious to highly conscious (Pile 1991). Furthermore, critical feminist methodologies value and deploy the reporting of messy realities to enrich understanding and interpretation (Law 2004). This approach would facilitate the incorporation of epistemological and ontological plurality and ambiguity into the research process, a central argument that I retained in my analysis. Resisting the rationalist appeal to eliminate or hide the ‘background noise’ that characterises oral interviews to offer a clear and clean picture, I preserved part of the heterogeneity in the answers from the same groups of interviewees (e.g. not all decision makers perceived climate change knowledge in the same way, Chapter 5) or in the silences, embarrassed pauses and attitudes during interviews with women and elders in Kasache (see Chapter 7).

Nonetheless, there is a risk that the researcher’s authority may be lost in the attempt to incorporate the many voices of research participants (Springwood and King 2001; Wiles et al. 2005). In my work, I stated my position as researcher mainly through material presentation and organisation. My personal contribution emerges from the approach I used to analyse, compare and link the interview material with the existing literature, social and cultural context.

2.4 Identities, ethics and emotions

My experience with the community of Kasache highlights the fluidity (Rice 2010) of my identity as a researcher and the fact that its construction was not entirely under my control, as interviewees also played an active role in creating it and possibly influenced the unfolding and outcome of some interviews. I arrived to the field (Salima) with a pre-existing identity, which was mainly defined by my profession. However, in order to establish relationships in Kasache, I had to take on a rather different and context-specific role, that of the *student*. I also experienced unintended identities, as several interviewees associated me with the NGO that introduced me to the community.

Unlike with decision makers, who already knew me professionally, I decided not to disclose my affiliation to UNDP with community members in Kasache, lest interview statements be shaped by the kind of ‘constructed needs’ usually shared with development and foreign organisations (Scott et al. 2006). In the context of international development, external researchers are often seen as a potential source of benefits, both financial and material, through their connections with the outside governmental, non-governmental and international communities (Mercer et al. 2010). For example, Ganizani told me that there had been complaints in Kasache that I did not provide any monetary or material compensation for interviews, probably due to a false assumption that I was working for the NGO COOPI. In some contexts, this courtesy bias is an expression of *reciprocity* (Launiala 2009; Reid and Taylor 2011), where individuals who share time and information expect something in return, which may be in the form of actual goods. This bias can also influence the research process, as interviewees may feel compelled to provide answers that they believe are desired by an NGO representative.

A representative of the LCPC, usually the chairman, was present at all times during interviews and visits to houses in the community, though always keeping a discrete distance and ready to act as a mediator, if necessary. All research was basically carried out under the supervision of an authoritative representative of the village, who would oversee the interviews on behalf of the community. Although this did not affect my personal performance or the kind of questions I wanted to ask, it probably influenced the interviewees who may have at times felt obliged to give socially acceptable answers, especially during FGDs. Nonetheless, the LCPC chairman’s demeanour made internal power dynamics more explicit and gave me a cue to further investigate intra-community relations. This also demonstrated that informants are conscious and active agents in field studies and can exert forms of power, control and resistance over the enquiry process, especially when research work implies readings within networks of power and privileges (Springwood and King 2001).

The local protocol required meeting with the village chiefs and the LCPC to discuss and agree on a detailed agenda of meetings and appointments before actual research could begin, and I obtained oral consent to proceed with data collection and interviews from the Traditional Authority (TA) and Group Village Head (GVH) before entering the community. My work strictly followed the Code of Practice for research established by Lancaster University in 2009, which sets out ethical principles and practices concerning acceptable sources of funding, dissemination of results, care of human participants, proper management of finances and research workers¹. Lancaster University's Code of Practice seems to reflect a standardisation process initiated in the UK in recent years (Simpson 2011) to establish uniform ethical procedures for different disciplines and sources; for example, it requires individual participant consent to be obtained in writing or orally communicated before interviews. In my case, I had to negotiate two levels of entry in order to get access to participants, both of which were on a collective basis – the first with the village heads and the second with the chief of the LCPC.

Unlike in Europe, where informed consent commonly hinges on the idea of individual self-determination and autonomy (Simpson 2011; Smith 2012), consent was not provided to me by single individuals for a particular research project or set of questions, but for a person or group of people. In any case, lest I be questioned about the legitimate decision of the village chiefs over the community's willingness to speak and establish a relationship with me, I deemed it necessary to always check orally with each participant. Thus, although the Lancaster Code of Practice seems to have been formulated to be applicable to different contexts and circumstances, I coupled it with a practice of dialogue and community consultation, not immediately envisaged by standard ethical codes.

My experience resonates with feminist and postcolonial reflections (Reid and Taylor 2011; Smith 2012) on the limits of ethical standardisation processes in effectively ensuring community participation, self-determination and cultural autonomy in academic

¹ A formal ethics opinion for my research project was provided by the Faculty of Science and Technology Research Ethics Committee (FSTREC) of Lancaster University in July 2019.

research, particularly within indigenous contexts. Critical feminist methodologies (Bannon 2009; Lavis 2010; Smith 2012) suggest that research ethics should be grounded in care, compassion and reciprocity. The ethic of care and love is not imposed by external agencies, it rather rests on the individual researcher's accountability and on the uniqueness and emotionality of dialogue established between researcher and research participants (Smith 2012).

While the first part of my research was done in collaboration with government officials with whom I had a continuing professional relationship, individual interviews in Kasache were totally different in that they allowed me to get closer to participants' lives and viewpoints, thus experiencing new emotions and feelings. While I had been relaxed and spontaneous when interviewing government representatives, I felt rather uncomfortable and shy in the rural community. The main emotions I brought into the process were anxiety and fear of saying or doing something that would hurt the interviewees' feelings or cause offence. Not only was I concerned that participants might relive distressing or uncomfortable experiences, I was also conscious of the 'distance' that might emerge in my conversations with the community members (would I be able to deal in a tactful and sensitive way with individuals who had experienced hardship?). These reflections led me to conduct my research with empathy and respect of community values, norms and cultural protocols; my own empathy and sensitivity led me to try to establish relationships based on care and responsibility. This process required a high level of respect, reciprocity and critical attitude, acknowledging the different subjectivities of the interviewees. When facing potentially embarrassing situations, for instance, I never insisted on getting feedback at all costs.

Despite my cautious attitude, discussing issues of power balances in the community and women's and elders' involvement in knowledge-management platforms proved challenging – probably due to the fact that it was hard to reach an adequate level of intimacy, trust and connection in the context of a short interview and with very limited

interaction. Certainly, interviewing people in a context of distress (Simpson 2011) challenged my multiple subjectivities, since it forced me to dig into more personal and intimate values and qualities, unpacking additional identities. This experience shows that multiple research positionalities can co-exist and compete even within a single interview or research setting. Additionally, specific research contexts and unforeseen circumstances may produce distress or embarrassment, thus ethical practices cannot merely consist in applying codes of conducts or protocols (e.g. informed consent) but require a higher degree of integrity (Lavis 2010; Simpson 2011).

2.5 Conclusions: dissemination and outreach

This chapter highlighted some of the social and power structures that influenced my status of researcher, including poor accessibility of the field site and scarcity of time. All these elements played a substantial role in compounding the difficulties of conducting my research and determining final research outcomes. The reflections presented in this chapter helped me to critically reconsider the scope of the structural dilemmas I faced during fieldwork. The peculiar and changing conditions during fieldwork, for instance, facilitated the emergence of alternative ethnographic approaches, which are especially needed to understand the challenges of a mobile, non-localised and transversally connected world (Gupta and Ferguson 1997; Fischer 1999; Marcus 2002).

Mobile ethnography, however, posed specific challenges. Addressing climate change as a socio-cultural and mobile discourse required an inter-disciplinary approach, due to the lack of a distinct theoretical perspective able to link global climate change epistemology with local ontologies. Particularly challenging was the need to: i) give account of both the global science-policy framework and the fragmented and (apparently) unconnected lived experiences in Malawi; and ii) identify and follow the connections between spatial, temporal and epistemological scales without losing sight of the integrated and continuous relations between them. By coupling STS theoretical concepts with the contextual architecture (assembled through desk review, fieldwork and experiential

learning) offered by the case of Malawi, I was able to trace climate change constructs in space and time, rather than being focused on a single-site perspective.

My hybrid positionality helped me to overcome the risk of analytical fragmentation. By situating myself in different worlds (e.g. headquarters, country office, development, academia), I experientially learned from parallel situations, achieving a broader view of the tensions and connections between various contexts. The simultaneous experiences in Malawi and in international development agencies mutually enriched each other, pointing to ‘unexplored’ (by somebody working exclusively in development *or* academia) paths of connection. My choice of spaces and sites of investigation was prompted not only by personal opportunities, but also by the way climate change is conceptualised and actioned – both in the context of development and in science-based organisations.

My positionality, although extremely useful in connecting various locations, was at times problematic, as I had to continuously shift from one context to another and provide meaningful ‘translations’ (of meanings) between sites. The research problems I identified often appeared to be related to managerial or technical issues (e.g. pitfalls in communicating early warning messages to communities) linked to my professional activity and perhaps not considered problematic from an academic viewpoint. Likewise, what was considered well-established from an academic perspective was still a novelty or unexplored in the context of international development (e.g. critical approaches to gender mainstreaming, Chapter 7). My experience shows that the broken connections between academia and policy are not accidental, but symptomatic and revealing of those hidden power relations that multi-sited ethnography attempts to uncover, as further discussed in Chapter 8 in relation to the policy implications of my research work.

Furthermore, the nature of multi-sited ethnography reduces the possibility of disseminating and sharing research findings across research levels. Usually, feedback on the results involves those who participated in the research process (NGOs, local

communities, etc.). One of my concerns, for example, is the impossibility of going back to Malawi to discuss and disseminate the research results, which many of the interviewees in Kasache explicitly asked for. While I expect to be able to share my findings through COOPI, the NGO that introduced me to the community, not being able to do it in person could affect the process of knowledge-sharing and feedback collection.

On the contrary, since COOPI managers can more easily be contacted via email and distance-based tools, sharing my findings with them may help foster innovative outreach action (Lamphere 2004), collaborative research, and the development of educational material or new climate change community projects – currently characterised by knowledge-sharing or decision-making formats that restrict women’s and elders’ participation. Outreach and policy-oriented activities may be envisaged as part of my PhD research dissemination or exit strategy, as is customary in many applied anthropology PhD programmes (Lamphere 2004) where researchers devote their time and skills to assisting the NGOs, communities and government agencies that supported their fieldwork. In the context of international development organisations, this would be most effectively achieved through day-to-day input to the creation of knowledge products and training activities, definitely a less visible and academically rewarding (in terms of publication metrics) but probably more meaningful role (see Chapter 8).

Certainly, my fieldwork experience served as an opportunity to identify possible methods for applying a multi-sited ethnography, an approach that is still partially explored in critical human geography. A key open question is: how can better comprehension of climate change as a multi-sited socio-political process facilitate transformational adaptation at different levels? My empirical chapters will respond to this question, showing how global climate change narratives circulate across spatial, temporal, epistemological and ontological localities, allowing alternative ways of knowing and experiencing climate change to emerge and be politically recognised.

Chapter 3

The legitimisation of global climate science

3.1 Certifying climate science

The relevance of scientific advice has been one of the salient traits of the climate change public policy domain (Jasanoff and Wynne 1998), mirroring the increasing importance of science and technology in contemporary societies (Martin and Richards 1995; Latour 2000; Nowotny 2003; Haas 2004). The majority of policymakers I consulted during my research in Malawi described climate change as a *scientific* issue whose legitimate knowledge and expertise should come from *globally* accredited organisations. In their view, this would lead to objective, neutral and credible policy decisions. Some also highlighted the skewed geographical distribution of the capacity to generate climate change knowledge. Chisomo Bera¹, a junior female officer from the Environment Affairs Department, claimed:

Climate change knowledge produced through IPCC reports influences climate change knowledge generation and policy formulation in Malawi, because Malawi has not sufficiently generated its own knowledge... IPCC reports have been established as the global authoritative source on climate change knowledge on the assumption that they do not represent just the North, but the entire globe (Questionnaire, 13 March 2012).

This view partly echoes the dominant ‘one-climate, one-science, one-policy’ narrative on climate change (Hulme 2011; Sarewitz 2011), which reflects a positivist interpretation of science, or the belief that legitimate science produces truth (section 3.2). This tendency is not new in the public policy arena, since expert knowledge has been historically (section 3.2.1.1) perceived as a neutral and disinterested arbiter of scientific and technical public disputes (Martin and Richards 1995). According

¹ I will employ fictitious names to protect the identity and opinions of the individuals who contributed to my field study.

to Rayner (2003), policymakers worldwide perceive climate change science and knowledge as trustworthy when it is grounded in and produces quantitative and numerical thresholds (e.g. finer spatial scale scenarios, seasonal climate information) that can be invoked to trigger action or justify inaction. For that reason, scientific bodies such as the Intergovernmental Panel on Climate Change (IPCC) have assumed a special role in the public policy domain as the source of objective and reliable policy decisions (Cozzens and Woodhouse 2001). Nonetheless, Chisomo points out how scientific authority plays a crucial role in shaping the modes by which climate knowledge is produced, articulated, included or excluded in the dominant climate change scientific frameworks. The hierarchy of knowledge determines how climate science is generated in the Global North and disseminated across the Global South as a supposedly universal (“they represent the entire globe”) and legitimate truth. In the case of Malawi, it is linked to the political and economic relations that developed during and in the aftermath of British colonial rule.

In this and the following chapter, I will identify the theoretical and methodological tools grounded in Science and Technology Studies (STS) that will help me answer the following questions: where does the epistemological authority of a global (Northern/Western) and scientific approach to climate change come from? Why is this approach recognised as an inherent element of ‘good’ climate change science and decision-making by policy actors in Malawi? And how is global climate change knowledge interacting with other types of knowledge?

According to STS scholars (Martin and Richards 1995; Roosth and Silbey 2008), scientific ideas are not universal or unassailable facts, but the outcome of material and social conditions determined by socio-economic interests relevant to a group’s survival (Restivo 2001). They are shaped by the meanings and interpretations that people in particular historical or cultural contexts assign them (Harding 2008). Scientific knowledge is imbued with the worldviews and assumptions of scientists

and policy actors (including multilateral and bilateral public funders in the case of climate change, see Chapter 4), which are taken for granted by millions of people (Restivo 2001). The global concern about highly non-linear and potentially abrupt environmental threats has put Earth science centre stage in sustainable development policies and agendas (Sachs 2012), shaping international development budgets and allocations.

If approached through STS theoretical tools such as the social constructivist approach (Cozzens and Woodhouse 2001; Restivo 2001), Chisomo's statement seems to revolve around three key concepts: authority (e.g. the IPCC in the case of climate change), knowledges (Northern/Western and Malawian) and agency ("Malawi has not sufficiently produced its own knowledge"). Authority, knowledges and agency indeed interact in shaping responses to climate change. Different socio-cultural, geopolitical and historical factors determine which kinds of knowledge are considered authoritative and relevant to decision-making (Eriksen et al. 2015). Although climate science has been accorded authoritative status by the science-policy actors that generate, legitimise, reproduce and/or refute climate change knowledge, other types of knowledge can also enable or limit individual and collective agency – the process that creates the conditions for social change, including the resolution of inequalities (Foucault 1982; Prabhu 2007). I will explore these processes through the concept of hybridity (Bhabha 1994), bringing it into conversation with the STS approach with a view to overcoming the rigid binary scales (North/South), knowledges (Western/non-Western), identities (experts/non-experts) and socio-political orders (developed/developing countries) often stemming from constructivist approaches (section 3.2.1.1).

In the empirical chapters, I will draw on methods from STS to explore how individual and collective aspirations and initiatives are shaped by global authoritative knowledge in the context of Malawi.

3.2 The question of climate science ‘universality’

3.2.1 Science and Technology Studies (STS)

STS offers valuable tools to conceptualise the relationship between science, knowledge and policy. Focusing on the history, social organisation and culture of science and technology (Roosth and Silbey 2008), STS recognises that science, as well as many other human activities, is socially and contingently constructed – being the outcome of collectively organised human labour and decision-making rather than an asocial and impersonal activity (Edge 2001).

STS originated in the debates between supporters of universal and transcendent methods for understanding nature and those claiming that access to nature is inevitably filtered through collectively created forms of cognition and communication (Roosth and Silbey 2008). In the second half of the nineteenth century, these debates informed two of the main traditions in the philosophy of science: empiricism and positivism. While empiricists argued that scientific truths are based on empirical observations, positivists believed they can only stem from a rigorous set of logical relations that describe representations of reality (Law 2004). Both approaches ultimately reflected a single underlying assumption: the separation between human and nature (Plumwood 1991; Merchant 2006; Ingold 2010; Blaser 2014; Glazebrook 2016). This dualistic foundational view defines the whole Western thought and scientific apparatus, which places the human mind at the centre of life (anthropocentrism) or ‘outside of nature’ as its master and controller, treating nature as merely instrumental to human interests (Plumwood 1991; Ingold 2010). Sharply separated categories are emphasised in this perspective, such as those opposing mind and body, reason and emotion, masculine and feminine (Plumwood 1991; Renegar and Sowards 2009; Lugones 2010; Glazebrook 2016).

The early STS debates are very relevant in the context of international climate change policy negotiations. During the negotiations for the Paris Agreement (2015), heated

discussions arose about whether climate change should be considered in isolation or in relation to economic and social issues, human rights, gender equality, and the rights of indigenous peoples and local communities (whether exclusively ‘natural’ or also ‘social’, ‘cultural’ and humanitarian) (ICCG 2015). Many social issues were barely acknowledged as related to climate change in the final version of the agreement.

There is a tendency in the negotiation processes surrounding the United Nations Framework Convention on Climate Change (UNFCCC) to project the idea that science and policy are two distinctively defined and separate worlds, drawing a distinction between social and physical worlds (Hulme 2017). The international framework for negotiating climate policies has operated on the assumption that anthropogenic change in climate is a distinct extension or modification of natural climate, mainly dealing with the causes and consequences of elements of climate change that are of anthropogenic origin (Hulme 2011). For the UNFCCC it matters whether hurricanes are natural or anthropogenic in origin, hence caused by elevated concentrations of greenhouse gases in the atmosphere. Yet, as argued by Hulme (2011), the weather cannot be sharply dissected into different causal elements. Furthermore, Article 7 of the Paris Agreement (UNFCCC 2015) states that “Adaptation planning should be based on information and scientific knowledge on climate, including research, systematic observation of the climate system and early warning systems, in a manner that supports decision-making”. The assumption behind the idea of informing is that knowledge is not constructed, but simply and passively transferred from science to policy as a form of legitimisation (see also section 3.3). The relationship between climate and society reflects the tension between the distinct roles assigned to nature and culture in positivist thinking. In predictive and projection simulations of future climate change, for instance, climate is extracted from the matrix of interdependencies that shape human life within the physical world. As a product of human reason, it is thus elevated to the status of universal determinant of future ecology, economic activity, development, national wealth, social mobility and human behaviour (Hulme 2011).

Key to this process is that Western dichotomy usually polarises differences in binaries (e.g. mind-body) and minimises shared characteristics, drawing lines of superiority/inferiority whereby the superior side must separate from and dominate the lower side (Plumwood 1991). In the human/nature dualism, for instance, despite humans having both biological and mental characteristics, only the mental are taken as ‘authentic’ and representative of the human dimension, whereas the human sphere (synonymous with mind and reason) should control the natural (and irrational) sphere. In the climate and culture/society binary, polarisation often arises between the known (e.g. short-term or predictive) and unknown (e.g. long-term) future. For instance, while little predictability exists in climate impact assessments in terms of nutrition or health, global heat balances can become the one known variable in an otherwise unknowable future (Hulme 2011). In Chapter 4, I introduce a wider critique of the positivist conceptualisation of time (Blaser 2014), arguing that the emphasis on short-term horizons in climate change policy planning (e.g. NAPAs, the National Adaptation Programmes of Action) provides a shield from the openness, contingency and multiple possibilities of the future to conform with the shorter time spans necessary for political decision-making and economic operability in the global marketplace (Pepper 1999; Cannon and Müller-Mahn 2010).

The ascendancy of abstract and universal reason also led to favouring epistemological approaches to science, which assume that there is only one reality (ontology) that can be observed from culturally different viewpoints (Ingold 2010). The positivist perspective recognises knowledge statements as scientific and universally valid only when confirmed by empirical data and detached from cultural life-worlds (Latour 2004; Roosth and Silbey 2008). According to this view, a ‘certified’ science is grounded in impersonal criteria, disentangled from local, social, economic and political stakes, as well as strongly differentiating between empirically proven facts and political or cultural values (Jasanoff and Wynne 1998; Latour 2000; Law 2004; Demeritt 2006).

The positivist approach encouraged a division of labour between academic disciplines dealing with human, linguistic, social and cultural products and those dealing with the structure and composition of the material and physical world. With regard to climate science, the hierarchy of disciplines seems to have affected climate change research patterns, favouring natural science applications such as remote sensing and climate modelling (Shackley and Wynne 1996). In climate change policy discourse, as further explored in the next chapter, the ‘rules of evidence’ governing what can be claimed as objective and true tend to be implicitly transferred from one domain of knowledge (physical and predictive sciences) to another (socio-cultural) without any in-depth theoretical or analytical review (Jasanoff 1995; Shackley and Wynne 1996; Demeritt 2006; Dilling and Lemos 2011). Failing to understand the interactions between biophysical and socio-political processes, this approach tends to reduce the different ways of knowing and viewing climate change to homogenous and simplified forms (Hulme 2011). Most importantly, reductionist approaches allow (culturally biased) prescriptive claims to implicitly enter scientific discourse, diminishing the likelihood that situational individual and collective knowledges and initiatives will emerge and be recognised. By reviewing postcolonial approaches to science, Chapter 4 will explore the possibility of re-evaluating and reintegrating the epistemologies and ontologies that Western positivism dissected, denied or obliterated during colonial rule. In the second part of this work (Chapters 5, 6 and 7), I will further explore the implications of intertwined Western-related dualisms for the recognition of expert/non-expert climate change knowledges or gendered (feminine/masculine) climate change impacts in Malawi.

3.2.1.1 The rationale for a social constructivist approach

In the second half of the twentieth century, the social constructivist theory (Cozzens and Woodhouse 2001; Restivo 2001) – one of the key STS scholarships – introduced the dimension of power in the science-policy interface, describing how specific interests (commercial, political) are able to exert their authority in the public policy domain and settle any scientific dispute in their favour (Martin and Richards 1995). Social constructivism

highlighted, for example, how the mathematically founded, rationalised empiricism of Protestantism legitimised Western science, emphasising the historical and institutional roots of the scientific revolution that gave rise to modern Western science (Restivo 2001). This element is particularly relevant to my analysis, since it allows me to acknowledge the roles of science and religion during colonial rule in shaping environmental belief systems. In Malawi, Scottish missionaries deployed ‘climate discourses’ (Hulme 2008) within a framework of moral economy that equated ‘heathenism’ with environmental and moral decay (Endfield and Nash 2002a, 2002b).

Michael Foucault (1972; 1982) further explained the mechanisms through which power operates in relation to knowledge, marking a fundamental break with Western epistemological and ontological dualism and introducing a process-based ontology (Caldwell 2007). The process of objectification transforms human and non-human beings into narrative and material objects through power relationships in which authoritative subjects generate discursive strategies that systematically create the object of which they speak, assigning the latter a taken-for-granted value (‘objective’) (Foucault 1972; 1982). In Chapter 5, I will discuss how the discourse on a North-South knowledge divide shapes the way scientific, technical and policy capacities are perceived among decision makers in Malawi, determining the strategies and venues for accessing financial and technical support. Discourses, according to Foucault, represent power structures linked to socio-economic interests, which generate unifying narratives upon which hegemonic practices and institutions are created and power is exerted. More specifically, discourses are syntheses, meant to divide or group sets of phenomena according to specific (e.g. cultural) principles of classification or normative and institutionalised rules. For example, a succession of scattered historical events or phenomena can be grouped or linked according to the same organising principle. Accordingly, in climate change discourse women as a group are generally deemed to be more vulnerable to climate change impacts (Chapters 4 and 7).

These groupings are not seen as consequences of collective historical and socio-political processes but normally accepted before any examination, and their validity is recognised from the outset. Foucault, however, recognises that the legitimacy accorded to the discursive links is not intrinsic, autochthonous and universally recognisable, but rather the means through which subjective power is exerted – by naming, showing, hiding, revealing. The unbalanced relation between subject and object originates subjection, one of the major forms of power described by Foucault, in that individuals are tied to their position/identity in the social system and are not conscious of their subjectivity and submission. The issue of space (narrative and material) for individual action and human agency in the subject-object dialectic and struggle is one of the key points around which postcolonial and especially feminist critiques have built their scholarly reflections.

Influenced by the Foucauldian process-based ontology (Caldwell 2007), the social constructivist approach sees in the negotiations between researchers and political actors the mechanism that generates scientific knowledge. This theory stresses that motivations and behaviours in any given institutional sphere (such as religion, economics or politics) are intertwined with interests, motivations and behaviours from other institutional spheres, such as science (Restivo 2001). In Chapter 5, I will highlight how the increasing pledge to enhance the ‘climate scientific rationale’ of public finance investments, recently emphasised by several multilateral climate and development funds, serves to comply with international criteria for ‘good governance’ and financial accountability (Nowotny 2003; Rayner 2003; Kandlikar et al. 2011). The science-policy negotiation process unfolds through government-supported scientific research, which enables the flourishing of specific scientific ideas and exerts symbolic authority over public opinion (Cozzens and Woodhouse 2001).

In the case of climate change, for example, the construction of the 2°C target was highly debated and negotiated among climate modellers and social scientists within the scientific community. Although scientifically ambiguous and contested,² it has emerged as one of

² Van der Sluijs et al. (1998), for example, point out that the questioning of scientific judgements was not welcomed in early climate change world conferences such as the Villach’s one.

the key features of climate policy negotiations in the past thirty years (van der Sluijs et al. 1998; Boykoff et al. 2010). Global surface temperature was selected by the UNFCCC to monitor progress in the implementation of the Paris Agreement (World Meteorological Organisation WMO, 2018). However, in the WMO and IPCC scientific communities, the essential features of climate change are described through a set of fifty-five ‘Essential Climate Variables’, indicators that track the state or level of some aspects of climate. Indeed, the Earth’s surface temperature reflects only part of the increases in energy in the global system. Shifts in patterns of global precipitation and water cycles will more evidently determine the effects of floods and droughts at the local level (WMO 2018). Nonetheless, the 2°C target represents a threshold for the increase in global average temperature, allowing policymakers and the general public to better understand humankind’s contribution to climate change, and the nature and degree of such change. As such, it allowed parties to the UNFCCC to negotiate temperature goals for the entry into force of the Paris Agreement (2015). According to van der Sluijs et al. (1998) and Boykoff et al. (2010), the 2°C target operated to represent and simplify the risk of climate change in a way that was easier to understand for policymakers, overshadowing the contested process of scientific knowledge construction and translation.

A social constructivist lens helps to explain the socio-economic interests and struggles that trigger the formation of scientific statements. In the context of my case study, this approach clarifies the origins of the epistemological authority of physical accounts of climate change and the mechanisms through which it has been reproduced. In the next section, I will discuss the institutionalisation of a global and scientific view of climate change.

3.3 Climate reductionism in the driving seat

A substantial body of work has emerged from STS in the 1970s to challenge the positivist and empiricist approaches to climate change (Shackley and Wynne 1996; Jasanoff and Wynne 1998; Saloranta 2001; Demeritt 2006; Grundmann 2007; Wynne 2010; Hulme 2011). According to these critiques, global narratives on climate

change are distinctively characterised by the hegemony of empirical sciences over contingent, historical and social accounts of the natural environment. Indeed, they portray climate change as a physical fact belonging to the realm of natural sciences. According to Hulme (2011), reductionist approaches to climate change originate in the idea of ‘climate determinism’, a corollary to the positivist paradigm of science, which assigned to physical climate and related sciences the power to explain the performance of environments, people and societies. The two forms of determinism are, however, distinct.

Climate determinism, which became particularly widespread at the beginning of the twentieth century, contended that climate is the dominant determinant of racial character, intellectual vigour, moral virtue and the ranking of civilisations (Hulme 2011) – a systemic essentialism that was especially criticised by postcolonial STS. In Chapter 5, I will provide an example of climate determinism in the context of colonialism, exploring the Scottish missionaries’ narratives about the relation between physical climate and morality in Malawi.

Contemporary climate reductionism, on the other hand, through the epistemological authority assigned to global bodies of scientific knowledge assessment (section 3.3), retains some forms of the explanatory power of climate in determining the “behaviours of biophysical and socioeconomic systems” (Hulme 2011, 253). Climate reductionism – similarly to climate determinism – idealises climate science as a highly disciplined way of ensuring objectivity and disinterestedness in decision-making processes (Edge 2001; Demeritt 2006). Reductionist approaches are particularly visible in analyses of conflicts, human migration or spread of diseases, in which physical climate science is given a prominent role in explaining humanitarian crises (Hulme 2011).

The hegemony of natural sciences in climate narratives manifests itself through the pivotal role of numerical weather and climatic predictions/projections and GHGs modelling in

policymaking (Hulme 2011). Since the 1980s, impact and emissions scenarios have been employed to understand the risks and impacts of major biophysical change and identify policy options that are robust to uncertainties. These methodologies build on controlled observations of nature and climate, such as computer-based simulation models of future climates. Through mathematical equations and computing technology, climate is isolated from the matrix of interdependencies characterising human life within the physical world and extracted as the primary determinant of past, present and future system behaviour and response (Hulme 2011).

The assumptions underlying climate models and predictions envisage a linear interaction between climate and society and favour predicting future climate over understanding the present and future nuanced interplay between cultural, social, political and environmental changes (Hulme 2011). In this regard, Kim et al. (2017) highlight how the first significant attempt to address adaptation to climate change in the context of the UNFCCC in the 2000s was prompted by a ‘climate-first approach’, in which climate science, data and information lead to policy planning through short-term and project-level interventions that do not necessarily address national development concerns. The climate-first approach first materialised in National Adaptation Programmes of Action (NAPAs) – approved by the UNFCCC Conference of Parties in Marrakesh in 2001 to support Least Developed Countries (LDCs) in addressing urgent and immediate adaptation needs through climate vulnerability assessments (Kim et al. 2017).

In Chapter 5, I will highlight the challenges posed by the climate-first approach in Malawi’s NAPA, which focused on short-term, project-level and risk management measures at the core of climate change policy planning without accommodating the multiple values and interests of the local communities. In Chapter 4, I will outline how in the last decade, also in acknowledgement of the limitations of NAPAs (ECBI 2007; Stringer et al. 2010), UNFCCC negotiation processes have started to promote a ‘development-first’ or climate-resilient development approach (Bahadur et al. 2013; Kim

et al. 2017) where climate risks are first assessed against national development priorities. Yet, as I will discuss in the empirical chapters, in Malawi's case a development-first approach still neglects the social, political and economic relations affecting agency and equity in communities.

While the IPCC defines scenarios as “plausible and often simplified descriptions of how the future may develop” (Rosentrater 2010, 253), several authors have highlighted some of their biggest disadvantages. For example, scenarios are not able to account for qualitative changes in nature-human relationships (since they assume that the future will be a linear continuation of the past) or fail to capture historically contingent features or socially relevant meanings of climate change, fostering a limited involvement of local knowledge producers (Berkhout et al. 2002; Biggs et al. 2007; Rosentrater 2010; Hulme 2011). Interestingly, what reduces the credibility of climate scenarios with the public opinion – since individuals perceive such scenarios as too distant from everyday life (Rosentrater 2010) – is the same abstract quality that is so appreciated by policymakers (Chapter 5).

This tension is symptomatic of the discrepancy in timeframes between two types of adaptation processes. The first one, responsive adaptation (Cannon and Müller-Mahn 2010), refers to the spontaneous and routinised reactions that people, especially farmers and pastoralists, perform in response to extreme weather events (within seasonal or sub-seasonal time spans) and climate variability (within yearly timeframes). The second points to anticipatory adaptation: through the use of numerical models it seeks to predict and address climate risks (e.g. sea level rise, droughts) that may arise in the long term (from decades to centuries) and are not yet perceived at present (Cannon and Müller-Mahn 2010). The latter is particularly appreciated in adaptation policymaking.

Such divergence also has implications for the relationship between climate change adaptation and development explored in Chapter 4. While recent efforts in the UNFCCC attempt to integrate the two processes (Janetos et al. 2012; Bahadur et al. 2013; Kim

et al. 2017), my work will expose the difficulty of linking adaptation to development. My empirical chapters will argue that neither the climate-first focus of Malawi's NAPA (GoM 2006) nor the climate-resilient development framework (Kim et al. 2017) – still grounded in present or foreseeable time spans (e.g. five-year electoral cycles) (Cannon and Müller-Mahn 2010) – entirely improve individual livelihoods in the face of a changing climate.

Briefly, climate prediction methodologies and techniques reinforce the positivist assumption of science as the unique occupant of a distinctive niche in the intellectual domain, while other knowledge-producing activities, such as a religion or politics, are seen as secondary and complementary (Gieryn 1983). In Chapter 6, I will show how current climate change initiatives in Kasache tend to overlook the existence of spiritual explanations for climate change, mostly linking adaptation to rationalist and techno-managerial solutions.

Rationalism and 'scientificity' (Cannon and Müller-Mahn 2010) are not the only salient features of the international debate on climate change. The IPCC has recently acknowledged the spread of a global form of climate change knowledge that is monopolising "the planning and development strategies and rendering other forms of knowledge subordinated to a form of climate reductionism" (2014, 20). This observation echoes Chisomo Bera's statement (Questionnaire, 13 March 2012) claiming that knowledge and policy formulation processes in Malawi are heavily influenced by the "global authoritative knowledge" [sic] provided by the IPCC, which claims to represent the entire globe.

3.3.1 The creation of a global knowledge consensus

The idea of climate change as a global issue can be traced back to the late 1980s debates describing it as a long-term, technical, irreversible and human-induced threat, not immediately relevant to development concerns (Janetos et al. 2012). The global nature

of the problem was emphasised in the first political declarations on climate change, such as the Toronto Declaration (1988), the Second World Climate Conference Declaration (1990) and the UN General Assembly Declaration (1990). The IPCC remarked on the necessity of global policymaking with the release of its first assessment report in 1990 (Gupta et al. 2007).

Specifically, climate change began to be considered as a global issue in view of the scientific understanding that only a global commitment to reducing GHGs emissions would provide a solution to the warming of Earth's atmosphere, irrespectively of the source, location and amount of greenhouse gases emitted (Gupta et al. 2007). The international community worked on establishing a multilateral mechanism for negotiations on emissions reduction, which materialised in the creation of the UNFCCC in 1992, and the Kyoto Protocol in 1997.

Meanwhile, the need to systematically link science to policy resulted in the creation of the IPCC, with the assumption that a periodic state-of-the-art assessment of climate knowledge could fill the gaps in the action-oriented policy domain (Jasanoff and Wynne 1998). The relevance of IPCC scientific assessments grew hand in hand with the progress of UNFCCC negotiations: as policymakers' demand for unambiguous quantitative information increased, so did the pressure on scientists to supply certain and consistent scientific knowledge (van der Sluijs et al. 1998). The IPCC's 'mission' was to increase confidence and trust in climate science, as well as synthesising and consolidating scientific knowledge on the basis of scientific consensus and participation (Grundmann 2007; Ho-Lem et al. 2011).

According to Gupta et al. (2007), the global scientific consensus on climate change has been instrumental to mobilising political action under the UNFCCC international framework, especially in reacting to several states' (US, China, India) reluctance to multilateral solutions to climate change. Until the 1990s, the industrialised countries

that had conducted the bulk of research on mitigation were also the most involved in the climate change debate (Bodansky 2001). Only from the 1990s onwards did developing countries seek greater representation in the international arena, arguing that climate change needed to be increasingly viewed as a *development* rather than exclusively *environmental* issue.

Not only would climate change affect the Earth's physical and biological systems, it was argued, but also human well-being, especially for those members of society who depended on climate-sensitive resources. Furthermore, present development pathways would set the stage for future greenhouse gas emissions (Janetos et al. 2012). The development perspective was also supported by the fact that about 70% of GHGs since 1850 had been emitted by industrialised countries and the devastating effects had been mainly felt by developing countries (because of geographical latitude and climate-dependent socio-economic structures). Moreover, a development-centred focus (Janetos et al. 2012; Kim et al. 2017) would allow developing countries to shift the debate from the rather technical domain of the IPCC – in which they struggled to participate on an equal basis with industrialised countries – to the multilateralism of the UNFCCC. The first round of climate change negotiations was in fact initiated under the auspices of the UN General Assembly rather than the IPCC or the WMO, as developed countries would have preferred (Bodansky 2001).

However, it was only with the Copenhagen (2009) and Cancun (2010) UNFCCC Summits, where special emphasis was placed on synergies and trade-offs between climate policies and national development goals (Janetos et al. 2012), that the need for integrated climate change and development approaches was formally recognised. The Cancun Agreement specifically acknowledged the role of National Adaptation Plans (NAPs) in facilitating the integration of adaptation into national development planning and structures. Unlike NAPAs' short-term and project-level perspectives (section 3.3), the UNFCCC endorsement of medium to long-term strategic NAPs marked a shift

from a climate-first to a development-first focus in the international climate change policy community (Janetos et al. 2012; Kim et al. 2017). My professional experience and fieldwork in Malawi, mainly conducted between 2010 and 2012, will allow me to give an account of the critical challenges of linking climate change to development objectives in those transitional years.

While, according to the first IPCC and UN declarations, international multilateral or national institutions are the most appropriate level of governance to address climate change, more recent observations underscore the multi-scale nature of climate change and the need to deal with the challenge simultaneously at different levels (Gupta et al. 2007). According to Gupta et al. (2007), rather than focusing on spatially circumscribed resolutions or the optimal level for managing climate change policy – whether global, national or local – policymakers should focus on a joint multi-level governance response. This new focus on global-local interactions seems to go along with the growing debate in critical human geography where the concept of hybridity (Bhabha 1994) has been introduced to explain different ways of experiencing and practising climate change adaptation (Hulme 2010; Birkenholtz 2011; Burnham et al. 2016; Goldman et al. 2016; Popke 2016).

According to Popke (2016), Burnham et al. (2016) and Goldman et al. (2016), the emphasis laid on the global nature of climate change in international negotiation processes can lead to disregard of alternative spatial scales and knowledges. In the positivist scientific tradition (section 3.2.1), the ‘local’ and the ‘particular’ have been considered less relevant to policy decisions than the global and defined in opposition to the universal (Plumwood 1991; Herod 2010). As argued by Plumwood (1991), the ‘local’ has gained a negative connotation because of its proximity to the individual and emotional (feminine) spheres. The essential features of a positivist epistemological framework, conversely, are assumed to rely both on the primacy of human reason and on distance from the value-laden aspects of particular individuals or contexts.

My empirical chapters will critically explore this conceptualisation, showing how the origin of present framings of climate variability and change in Malawi cannot be polarised around spatial (global-local) and temporal (present-future) binaries. In fact, they are a hybrid of ‘universalising’ colonial practices and locally grounded knowledge traditions. While multi-level governance perspectives point to the inadequacy of binary spatial policy approaches to climate change (North-South, global-local), they risk shifting the process of essentialisation from the spatial scale to cultural or economic elements. In fact, Gupta et al. (2007) emphasise that a multi-level governance approach would be especially crucial to understanding the cultural drivers and livelihood issues affecting local adaptation and mitigation responses. In Chapter 7, I will examine in greater detail how even ‘progressive’ climate policy initiatives, inspired by principles of cultural and gender inclusion and formal consultation, have approached vulnerability through single variables (e.g. gender, culture, geography or economic status) and in isolation from wider power (and ontological) structures, potentially leading to exacerbation of inequality.

Scientific debates and international policy negotiations have contributed to defining climate change in very specific terms – mainly as a global environmental issue at one end of a spatial (universal/particular) and epistemological (West/Other) spectrum (see Chapter 4). These conceptualisations, however, should not be considered as ‘inherent’ features of climate change, since they stemmed from the interplay between domestic and international forces. My work will in fact recognise climate change as a hybrid socio-cultural construct escaping nature-culture dualisms and emerging from the contrasts, continuities and overlapping between spatial and temporal scales.

As illustrated by STS scholars through the concept of scientific paradigm, scientific claims do not overlap with policy agendas by coincidence. For instance, in his analysis of power in the climate science-policy interface, Richard (2001) argued that the global climate change policy regime emerged as a result of various issue-related and interaction-related factors. Among them were the development of scientific knowledge about

climate change, the transition of the issue from the scientific to the political agenda – as discussed in the next chapter – and the interplay between the international regime and national interests and negotiation tactics. Briefly, a global perspective served the purpose of ensuring that the authority of scientific bodies of global knowledge production such as the IPCC was recognised (section 3.3.2), as well as granting visibility to climate change public policy and protecting specific national economic interests (e.g. limiting GHGs emission reduction targets). Some of these conceptualisations overlapped: for example, developing countries shared a *global* vision of climate change centred on a *development* perspective, while European countries sustained a *global* conception focusing on the *scientific* aspects (Table 4).

Table 4 – Perspectives in defining the climate change issue

Perspective	Actors
Global	Early climate change knowledge brokers IPCC UN agencies SIDS/AOSIS LDCs European countries, Canada, Australia, and New Zealand
National	USA, Japan, Russia and oil-producing states
Environmental and natural science (research-based evidence)	European countries, Canada, Australia, and New Zealand; USA, Japan, Russia and oil-producing states
Development	Developing Countries

Source: adapted from Bodansky (2001).

3.3.2 The role of science in the international climate policy framework

In a context of rising global consensus on climate knowledge, the IPCC has emerged as a mediating force, able to neutrally enter the regulatory and policy domains thanks to its scientific expertise.

STS reflections on the ‘boundaries of science’ (Gieryn 1989; Latour 2000) provide particularly useful insights into the origin of the IPCC global scientific authority. The positivist conceptualisation of science assumes that non-specialised knowledges (outside

the boundaries of ‘certified’ climate science) do not possess the same explanatory value of scientific expertise (Cozzens and Woodhouse 2001). This process, defined as “boundary work” (Gieryn 1983; Restivo 2001), leads climate scientists engaged in policy advisory roles to extend their material and symbolic resources in order to simultaneously reinforce their standing, access to funding and professional autonomy.

Some of the narratives used by scientists to expand and protect their authority have focused on the utility of science for advancing technology or adopting impartial policies (Gieryn 1983). Shackley and Wynne (1996) noted that scientists increasingly need to justify their research in terms of its policy relevance in order to secure funding and meet global expectations for environmental science. Conversely, scientific evidence is used by policymakers to strategically or symbolically legitimise policy solutions by selecting the analysis that better conforms to pre-existing policy options (Rayner 2003; Grainger 2009; Juntti et al. 2009; Lidskog 2014). As a consequence, scientific knowledge is deployed to strengthen consensus around appropriate policy responses, while at the same time allowing policymakers to locate the bulk of responsibility for tackling climate change within the realm of science (van der Sluijs et al. 1998; Cozzens and Woodhouse 2001; Rayner 2003). As highlighted by Grundmann (2007), in this process knowledge claims are used instrumentally to achieve specific policy goals. What I described in this section is a circular process whereby politicians tend to legitimise policies through positivist science (numbers, models, etc.) and scientists are forced to produce results that can be used by politicians. Thus, science and policy become inextricably intertwined, especially with regard to their legitimacy, meaning that they need each other to be legitimised.

This brings back the issue of demarcation between science and expertise raised by Gieryn (1983) in the early STS debates. In particular, the fact that scientists define certain characteristics of science as inherent and unique is part of an ideological and constructed effort to distinguish their work – boundary work – and its products from

non-scientific intellectual activities. When the goal is the expansion of authority and expertise, the ambiguous boundaries of science heighten the contrast between science and non-science – or ‘pseudo-science’, such as indigenous knowledge. Shackley and Wynne (1996) noted that the uncertainties surrounding climate science may have been used by scientists both as a way to legitimise the IPCC’s special niche to reach a science-based consensus and to secure financial and political support for further research. For example, global to regional numerical models (‘climate scenarios’) provide the quantitative basis for climate change projections and associated risks – a plausible future climate constructed for investigating the potential consequences of human-induced change. However, as noted by the IPCC (2015), they overall have not yet reached the necessary maturity to fully represent future conditions that account for natural climate variability and, consequently, to be consistently used by the impact assessment community.

The epistemological influence of the IPCC may reside in its ability to act at the same time as an intergovernmental and a scientific institution (Grundmann 2007; Ho-Lem et al. 2011; Lidskog 2014). Although it was established in the 1988 by the UN General Assembly to allow governments to build consensus on the climate science production process, its first and most influential outcome was the 1990 scientific assessment of global warming, drafted by an international community of climate scientists (Bodansky 2001). The historical role of the IPCC has been to synthesise and consolidate scientific knowledge, in the belief that scientific consensus can ensure stable political outcomes from international negotiations (Grundmann 2007; Ho-Lem et al. 2011). Haas (2004), however, highlights the fact that policy actors in the IPCC play a fundamental role in shaping the science advisory process, appointing lead scientists or voting for the assessment reports. For instance, in 2002, the United States vetoed the appointment of a well-regarded American climatologist, Robert Watson, in favour of Rajendra Pachauri, based on the belief that Watson was too independent from the US administration (Hass 2004).

Although the degree to which the IPCC is able to assess policy-useful knowledge is politically circumscribed (Haas 2004), IPCC findings are presented as the best available science, disjointed from political action. Sharp boundaries are maintained between science and policy to gain credibility. As noted by Corbera et al. (2015), the IPCC is largely considered as the authoritative voice of scientific knowledge (see Chapter 5 for national decision makers' perspectives). What is often missing in the public perception, however, is a reflection on the wide array of socio-cultural processes involved in the preparation of the assessment reports. For instance, the writing and revising of the reports tend to privilege specific institutional affiliations (US- and UK-based), pre-existing scientific collaboration and training patterns (dominated by economics or engineering in the working group on mitigation) (Corbera et al. 2015).

The IPCC has gone from initially being the main reviewer of policy-relevant science to becoming the *only* dispenser of climate policy prescriptions perceived as reliable (Grundmann 2007), helping to define and legitimise specific conceptualisations of climate change (e.g. empiricist, positivist). The epistemological authority of the IPCC, however, has been criticised (Jasanoff and Wynne 1998; Grundmann 2012; Corbera 2015). Part of the criticism has been sparked by the email controversy³ – also known as 'climategate' – which involved the East Anglia's Climate Research Units (CRU) in November 2009. Lead climate scientists were accused of omitting specific findings to prevent uncomfortable research from being selected for peer review process and inclusion in the IPCC assessment reports (Grundmann 2012; Maibach et al. 2012). In reaction to the climategate, the IPCC undertook an institutional reform of its management structure. The Panel, in particular, shifted towards increasing transparency, data traceability and quality assurance in several areas, including the author selection process or citation of non-peer reviewed literature. The IPCC has been in fact accused of excluding knowledge claims generated in

³ In November 2009, thousands of personal emails and research papers were copied without authorization from a server at the University of East Anglia in the UK and posted on two internet blogs. An international scandal broke, involving leading climate scientists who were accused of having altered temperature reconstructions of past climates and recent observational records to increase public belief in anthropogenic climate change and legitimise the role of the climate scientific community. An investigation concluded that no fraud or scientific misconduct had occurred (Grundmann 2012; Maibach et al. 2012).

domains outside certified predictive science (indigenous knowledges, religious beliefs, etc.) (Grundmann 2007; Ho-Lem et al. 2011), as well as overlooking national, geographical and gender diversity in the authorship groups (Corbera et al. 2015; IPCC 2019).

The broad patterns of national participation in the IPCC show a predominance of authors and specific worldviews from North America and Europe, just as in the WTO, and hence from richer and more populous countries that have greater financial and human resources to devote to its processes (Haas 2004; Ho-Lem et al. 2011; Corbera et al. 2015). In 1995, the IPCC started making efforts to improve participation from developing countries, requiring that the chairmanship of each working group be shared between authors from developing and developed countries (Ho-Lem et al. 2011). Although geographic representation has increased, Corbera et al. (2015) note that actors and institutions from the Global North still play a hegemonic role. Most of the underlying research is carried out in northern universities and institutes (Biermann 2002; Haas 2004; Kandlikar et al. 2011; Pasgaard and Strange 2013). In Chapter 5, I will reflect on the limited capacity of Malawi's scientists to participate in the IPCC, arguing however that merely ensuring epistemological diversity within IPCC working groups does not revert the hierarchy of knowledges and disciplines.

As further explored in my empirical chapters, the rationalist ontological armature shapes not only international negotiation practices but also the value systems through which climate variability and change are experienced in Malawi. The IPCC example highlights how the definition of specific characteristics of climate change not only influences the type of knowledge flowing into policymaking (e.g. science-based) but also how the parties to the conventions design and perform negotiation strategies. In particular, specific epistemological assumptions (e.g. the primacy of natural sciences) underlying climate knowledge determine what competencies are needed to effectively negotiate in international policy regimes or to translate it into

relevant national policies. The epistemological tensions in the IPCC knowledge-producing committees (e.g. what type of knowledge matters for climate change) could point to more profound ontological conflicts, such as the unbalanced distribution of economic, cultural and political power in international policy processes.

From an STS perspective, the boundary of science is shifted and used to protect claims of expertise by arguing that only specialists can evaluate the relevance and usability of scientific knowledge in the policy domain (Gieryn 1983; Shackley and Wynne 1996). Other STS scholars note that the flaws in the IPCC management structure relate to a binary model that linearly links science to policy, allowing policy actors to “cherry pick” (Grundmann 2012, 285) the scientific evidence needed to advance their policy cases. The result is a politicisation of climate science where disagreements in policy values (e.g. communication and presentation of findings for public consumption) appear as disputes over scientific knowledge, such as in the climategate. As recognised by Hulme (2017), a positivist approach to decision-support (through social, economic or climate modelling) tends to reduce the space and recognition for human agency and the evolution, adaptation and innovation of values, cultures and practices, as further discussed in the next sections.

In section 3.3.1, I emphasised how, since early negotiations, developing countries advocated for a development-centred view of climate change both to draw attention to the impact of climate change on development and to counter the primacy of the Western scientific and technological apparatus supported by the IPCC. The next chapter will argue that shifting the core of the negotiations to a policy- rather than scientific-based forum was not sufficient to increase developing countries’ negotiating capacities, nor did it bring about extensive change in international political balances and development pathways. The political changes in the climate policy regime that developing countries hoped for, such as a more equal representation of knowledges and interests, did not entail questioning the overall

ontological apparatus the regime was built upon. Thus, the *developmentalisation* of climate change did not put an end to the patterns of knowledge and financial dependency initiated during the colonial era but actually reinforced them, as further discussed in Chapter 4.

3.4 Conclusions

This chapter has problematised the concept of science-based decision-making in the context of climate change, outlining how this idea has emerged as a socio-cultural and political construction from a number of partial and politically contingent discourses. The narrative on *global* climate change emerged from the international political negotiations that defined climate change as an essentially long-term, irreversible and human-induced threat occurring on a wide scale. This conceptualisation stemmed from a scientific consensus on the global nature of the climatic challenge following international negotiations between scientific- (e.g. IPCC) and policy-oriented (e.g. UNFCCC) actors. Industrialised countries supported a focus on the global and scientific dimensions of climate change to aid the quest for a multilateral climate policy response. Developing countries gradually entered the international climate change arena, stressing the importance of a development-driven view of climate change.

The STS theoretical framework provides a means for reflection on the tensions between climate change knowledge and policy production. From an STS perspective, claims to scientific authority can be dismantled, assuming that there is no way to separate science from values in any policy area, as any boundary is artificial, temporary and convenient to the purposes of the individuals or groups with authority to draw lines (Cozzens and Woodhouse 2001). By criticising positivist and rationalist approaches, STS outlines the roots of the epistemological and ontological authority of natural science (stemming from the human mind's supposed ability to objectively know and control nature) to frame climate change

as a biophysical phenomenon that can be linearly mastered by neutral techniques and expertise.

In the empirical chapters, the social constructivist approach will allow me to explore climate science as a social and contingent construction in the context of colonial and postcolonial relations, facilitating the identification of political or institutional interests in the production of a global climate change knowledge. Through a postcolonial critique of rationalism, STS will enable a counter-narrative perspective on the achievements of Western science and technologies from a Global South point of view. Furthermore, feminist STS will provide helpful insights to reflect on the links between anthropocentrism and androcentrism (Plumwood 1991; Harding 2008), outlining how women's and nature's marginalisation is grounded in positivist rationalism and in the hierarchical binomials of mind-body, universal-particular and public-private.

Chisomo Bera's statement at the opening of this chapter arguably summarises some of the key issues flagged up by STS branches since the third quarter of the last century and explored in this chapter. Her claim reflects a tension between the desire to comply with the IPCC (Western-based) recognised authorship and the propensity to deploy local (and possibly culturally emancipated) knowledges for national climate change policy design. How can these multiple and contrasting aspirations for a usable and reliable science be accounted for?

If the concepts of 'globality' and 'scientificity' emerged as representative of the consensus on climate change global knowledge (in section 3.2.1 I discussed how the positivist scientific thought usually polarises differences in epistemological binaries, drawing hierarchical lines of superiority and inferiority), what are the alternative epistemological features left out by the international policy and scientific frameworks? How does this omission shape individual and collective ways of

thinking and acting upon climatic changes? The combination of several theoretical and methodological tools offered by STS and its postcolonial and feminist critiques to science will emerge as increasingly compelling as I gradually move towards the exploration of the many different ways of knowing and acting on climate change I encountered in the context of Malawi.

Chapter 4

The rise of the climate-resilient development paradigm

4.1 The key features of an ‘all-encompassing’ climate change

Within the recent Paris Agreement it was stressed that, without science and research from the Global South, ‘universal’ (sic) climate science is unachievable (IISDa 2015). This statement sheds light on the geographic and political hierarchy characterising international relations in the climate policy regime, which materialised in the Annex I/ non-Annex I Countries framing within the UNFCCC (section 4.2). While attesting to the importance of acknowledging the structural power marks embedded in the current climate change knowledge production processes, it endorses the positivist ideals and aspirations for a *universal* science that can be transferred along a North-South *binary* (section 4.3). Climate change, which initially emerged as a scientific issue, came to be gradually defined by the UNFCCC as intertwined with development issues, especially through the North-South approach sustained by both developed and developing countries.

This chapter will explore the international climate and development policy architecture through an STS theoretical lens, laying the groundwork for the investigation of how specific conceptualisations of climate change materialise in the context of Malawi. As discussed in Chapter 3, the climate change epistemology endorsed by the international bodies of science and policy production seems to be characterised by a series of features – rationalist, positivist, anthropocentric – anchored in the dualistic foundational view defining the Western epistemological and ontological apparatus (Plumwood 1991; Ingold 2010; Blaser 2014). The bulk of positivist rationalities generates a sort of ‘all-encompassing’ (Blaser 2014) narrative on climate change that tends to exclude contextualised knowledges, neglecting the interconnectedness of climate change and

historically contingent and power-related issues, as well as the replication of neocolonial relationships in Malawi. In fact, this chapter argues that the key narratives defining international climate change knowledge originated in the political, cultural and historical interactions between the positivist scientific apparatus and knowledges ‘situated’ in national stakes or contextual epistemological positions (gender, indigenous).

Thus, the supposed primacy of global climate scientific epistemology can be either criticised or enriched by pointing to the historical contingency of Western scientific and political traditions, from which global climate change knowledge mainly originated. This is crucial to shedding light on how contextual and alternative knowledges and experiences, erased or neglected by dominant epistemologies, can be better identified, expressed and sustained (Chapter 8).

4.2 The climate and development policy architecture

With the establishment of the UNFCCC in 1992, the classification of global climate change actors crystallised into two opposing categories: Developing Countries (non-Annex I countries) and Industrialised Countries (IC, Annex I and II countries). Several developing countries were further classified as Least Developed Countries (LDCs) – their current number is 47 – on the basis of statistical indicators: gross national income per capita; human assets (nutrition, health, education and literacy); and economic vulnerability (natural and trade-related shocks; physical and economic exposure to shocks; smallness and remoteness) (Cornell 2010; Gupta 2015).

Climate change has thus been framed as a North-South issue since early negotiations,¹ echoing a hierarchical organisation of geographical and socio-economic space featuring the Western ‘external’ (modern-traditional) great divide. This spatial binary is especially sustained by developing/non-Annex I countries, whose priority in the UNFCCC is to

¹ This was not done without contention. For example, between 1991 and 1996 scientific controversies arose about the definition of survival vs. luxury emissions (terms coined by China at COP-3 to emphasise equity aspects); the possible inclusion of the right to development clause; the mechanisms for adaptation finance and implementation (Gupta 2015).

maximise financial assistance for capacity-building and climate change adaptation as well as technology transfer from developed countries (Richards 2001). During negotiations, for example, LDCs often emphasise their need for technological and financial support to reduce the rate of emissions and facilitate adaptation, as well as developed countries' historical responsibilities for GHG emissions (Richards 2001; Gupta 2015).

Because climate change was initially framed as a global and technical problem, its links to climate change and development pathways revolved especially around the need for governments and corporations to limit greenhouse gases emissions in their pursuit of economic growth and profit. Until the early 2000s, international negotiations focused on emissions reduction and the need for non-emitting energy technologies to be transferred to developing countries (Janetos et al. 2012).

The Cancun Agreements (2010), and more recently the Paris Agreement (Article 12, UNFCCC 2015), have restated the importance of 'capacity building' and transferring technologies and capacities from Annex I to non-Annex I countries. Although the semantic distinction between Annex I and non-Annex I countries is less marked in the Paris Agreement (the Parties in the Agreement are defined as developed and developing countries), capacity and technology transfers still serve as a way to compensate the latter for the former's historical responsibility for GHG emissions (reflected in the principle of 'common but differentiated responsibilities').

The UNFCCC country classification according to gross national income, as well as its focus on national development pathways and capacity transfer, recalls the 1950s classical and neoclassical concepts of *development* as economic growth (Lélé 1991; Escobar 1995; Redclift 2006). These theories equate development with Gross National Product (GNP) growth and conceive development as a process of constant but directed economic *change* (Lélé 1991) with high levels of industrialisation, urbanisation and technology transfer (Escobar 1995; Pepper 1999; Cannon and Müller-Mahn 2010). The wealth generated

through capital accumulation by richer groups, they argue, would produce benefits for the poor by ‘trickling down’ through the economy and raising the income of the whole population (Escobar 1995; Pepper 1999; Cannon and Müller-Mahn 2010).

According to neoclassical economics, the goal of development is to “increase social welfare” (Lélé 1991, 609); however, the process of social change is measured in terms of economic outputs and material consumption. As noted by Escobar (1995) and Pepper (1999), in neoclassical (rational) economics, a country’s capacity to secure advancements in science and technology is seen a prerequisite for economic progress and development (see section 4.3 for further reflections on the neo-liberal definition of development). In lack thereof, sustained bilateral or multilateral transfers of skills and capacity become an important component of development projects (Escobar 1995). Capacity transfers assume uniformity of geographical, social, cultural and economic spaces, on the basis of which skills and technologies can be conveyed through a binary transfer from one context to another.

When defined as conventional economic growth (Lélé 1991; Escobar 1995; Pepper 1999; Cannon and Müller-Mahn 2010), development may however generate inequality and social conflict – because of the market economy’s tendency towards concentrating wealth and failure to redistribute it effectively (Escobar 1995; Kaplan 2000; Easterly 2002; Sharp et al. 2010) or because of environmental damage caused by increased greenhouse gas emissions, widespread use of fossil fuel, and consumerism (Pepper 1999; Redclift 2006; Cannon and Müller-Mahn 2010).

In the past decade, climate change international policy processes have started reflecting more critical conceptions of development. Following the 1980s post-development debates (see section 4.3), there is a growing consensus that development should aim at reconciling economic gains with individuals’ lifestyle improvements through redistributive policies focusing on poverty reduction, health and education (Cannon

and Müller-Mahn 2010). More specifically, development is believed to be ‘sustainable’ when it balances the needs of present and future generations without compromising the Earth system’s capacity to preserve and reproduce itself (see Escobar 1995, Pepper 1999, and Redclift 2006 for a discussion of the ideal of sustainable development proposed by the Brundtland Commission in 1987). As argued by Sachs (2012), “sustainable development embraces the so-called triple bottom line approach to human well-being” by which world’s societies should build on “a combination of economic development, environmental sustainability, and social inclusion” (2206).

Post-development critiques have questioned the actual progressiveness of sustainable development (Escobar 1995; Pepper 1999; Redclift 2006; Cannon and Müller-Mahn 2010), which, according to Pepper (1999), is nothing more than rational management of natural resources *within* the production of capital. The underlying principle of capitalist development, which revolves around profit accumulation at the expense of the Earth’s carrying capacity (treated as economic externality or hidden cost), would be incompatible with environmental protection and economic growth. Pepper (1999) argued that an ‘ideal’ model of sustainable development would limit the global marketplace (including transport costs and GHG emissions), favouring spatially closer market exchanges and social interactions. Furthermore, the longer time horizons demanded by sustainability principles are discordant with the short-term and sector-specific perspective necessary for political decision-making and operability in the global market (Pepper 1999; Cannon and Müller-Mahn 2010).

The links and synergies between climate change and sustainable development policies have been recently acknowledged by climate policy and science actors (Cannon and Müller-Mahn 2010; Janetos et al. 2012; Yim et al. 2017), considering that most LDCs within the UNFCCC are among the main recipients of Official Development Assistance (ODA) (Brautigam and Knack 2004). The 2001 IPCC Third Assessment Report explicitly accounted for the influence of climate change on human and ecosystems’ well-being in

terms of food supplies, water and energy, which in turn affect populations' prosperity, health and security. The 2007-08 UN Development Report, "Fighting Climate Change in a Divided World", indicates climate change as the defining human development challenge of the twenty-first century (UNDP 2007). The report emphasises how human development choices, through the emission of GHGs, will have a significant impact on the state of the climate system. Development pathways, correspondingly, will determine the ability of societies to adapt to the potential impacts of climate change (UNDP 2007). The linkages between climate change and sustainable development have been acknowledged especially as trade-offs between global economic growth per capita and the unprecedented stress it places on the Earth's ecosystem, particularly in low-income countries (OECD 2012). The Paris Agreement has recently established a global adaptation goal "of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development" (UNFCCC 2015).

Adaptation has been especially conceptualised in terms of sustainability and development. As argued by Cannon and Müller-Mahn (2010), this relationship is manifold. As for development, adaptation involves *change* to maintain the capacity of individuals, ecosystems and societies to deal with current or future predicted climatic change (Nelson et al. 2007). Adaptation addresses the outcomes of biophysical changes to the environment, such as droughts, flooding, water quantity and quality, and degrading ecosystems. Their interaction with social and economic conditions – the other two interrelated dimensions of sustainable development (Pepper 1999; Cannon and Müller-Mahn 2010; Sachs 2012) – shapes individual vulnerability to climate change. For instance, climate change impacts are expected to affect people's opportunities to generate income. Furthermore, as pointed by Cannon and Müller-Mahn (2010): "Adaptation involves billions of people in less developed countries who are already the object of development policies for many NGOs, governments and donors" (622). According to a UNEP report (2016) on adaptation finance, in developing countries climate-resilience activities are often integrated into development interventions. For instance, the financial needs of adapting to climate change

result from the difference between the costs of adaptation and the financing available to meet developmental cooperation activities (UNEP 2016).

4.2.1 The dangers of resilience thinking

The concepts of climate change vulnerability and resilience² help to define the “development context” of climate change (Cannon and Müller-Mahn 2010). The IPCC (2012) report “Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation” acknowledges that anthropogenic climate change is rapidly hindering development in many countries. The report also defines vulnerability and resilience as the resulting products of economic, social, environmental and political processes. In the resilience framework, mathematical and modelling simulations are applied to natural resource management, focusing on relationships between components, disturbances and perturbations that contribute to the socio-ecological system’s susceptibility to change. Deriving from natural (ecosystem and landscape ecology) and technological (physics or engineering) domains, this approach emphasises the functioning of the socio-ecological system as a *whole*, as well as the biophysical conditions that put societies at risk of hazards (Nelson et al. 2007).

Cannon and Müller-Mahn (2010) argue that in the context of climate change adaptation, the resilience approach “is not sufficiently conducive to the inclusion of the *other* (my emphasis) risks and crises that affect the majority of people who are linked to the ecosystem through their livelihoods” (625). In fact, they add, it tends to neglect the functioning of individual components (e.g. societal actors, power relations, beliefs systems, etc.) of the socio-ecological system, while the concept of vulnerability clearly identifies the economically and politically induced conditions influencing people’s exposure to risk. Although the two concepts are frequently mentioned together in policy documents (e.g. see above the statement in the Paris Agreement), there are fundamental tensions between them. Because the resilience approach

² Nelson et al. (2007) define *vulnerability* as “the susceptibility of a system to disturbances determined by exposure to perturbations, sensitivity to perturbations, and the capacity to adapt” (395). *Resilience* is conceptualised by the same authors as: “the amount of change a system can undergo and still retain the same function and structure while maintaining options to develop” (395).

is mainly concerned with ensuring the flexibility of natural and societal systems to future climate change, issues of equity in adaptation processes and outcomes may be neglected.

In the mid-2000s, the UNFCCC shift from a climate-first (e.g. NAPAs) to a development-first (e.g. NAPs) focus in international climate change policy negotiations drove several multilateral and bilateral development organisations to design resilient approaches to climate change policies and programmes that would safeguard development from climate impacts. The United States Agency for International Development (USAID) developed its approach to NAPs based on a Climate Resilient Development (CRD) framework, emphasising that the design and support of adaptation plans should take account of each country's national development goals rather than focusing on exclusively climate-driven projects (Yim et al. 2017). In Germany, the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) designed a "Climate Proofing for Development" approach (Fröde et al. 2013) that advises on how to integrate climate change adaptation into development. In the United Kingdom, the Department for International Development (DFID) formulated the concept of "climate compatible development" (CDKN 2010) with the aim of creating new development landscapes supporting economic growth and social development in the face of the multiple threats posed by climate change (CDKN 2010).

Furthermore, the Sustainable Development Goals (SDGs) adopted in late September 2015 under the frame of the United Nations 2030 Agenda for Sustainable Development include 17 goals and 169 targets, many of which show the synergies between development and climate change policy agendas. Unlike the 2000-2015 Millennium Development Goals (MDGs), the SDGs place particular emphasis on the role of human activity (e.g. through economic and population growth) in influencing fundamental earth dynamics (Sachs 2012). Goal 13 specifically states the need to take urgent action to combat climate change focusing on five specific targets, each envisaging different measures. Under the post-2015 Development Agenda, poverty eradication is considered key for reducing vulnerability and building resilience to climate change.

With a focus on capacity transfer (see section 4.2.2) and poverty reduction as the means for reducing the vulnerability of socio-ecological systems, the climate-resilient development paradigm seems to build on both the neo-liberal development discourse and the systemic framework of resilience. The former assumes that the best way to reduce climate vulnerability is through improved economic activities, technology advancements and inputs provision, which are expected to automatically increase the extent to which losses and damages can be avoided. The latter, treating human response to environmental perturbations as an outcome of ‘rational’ actors, tends to remove the inherent power-related connotations of vulnerability (Cannon and Müller-Mahn 2010). Issues of justice, whether ‘distributive’ (who is harmed by climate change and benefits from adaptation) or ‘procedural’ (whose knowledge matters in identifying vulnerabilities) are overlooked (Nelson et al. 2007).

The interplay between development (sustainable or neo-liberal), climate change and adaptation has several implications. Whether climate-resilient development can help reduce climate risk or is itself responsible for generating vulnerabilities is still an open question. Whether these approaches are heralding radical or ‘ideal’ generations of sustainable development pathways or producing “green capitalism” (Pepper 1999), and whether they can effectively facilitate adaptation and vulnerability reduction at the local level (Bahadur et al. 2013), remains controversial (Cannon and Müller-Mahn 2010). In Chapter 7, I will show how climate-resilient development interventions that seek to address asset disparities (through the provision of farming technologies) actually increase individual vulnerability to climate change. In section 4.3, I will draw on the postcolonial, post-development and feminist critiques of STS to problematise the conceptualisation of the “development context” of climate change. This aspect is especially important, as it allows me to introduce my empirical chapters where I will discuss how the interaction between climate and development shapes the way *climate-resilient development* is translated into national policies in Malawi, affecting people’s livelihoods.

4.2.2 Mainstreaming climate universals into national contexts

The previous sections highlighted how international climate policy and scientific processes facilitated the gradual emergence of a climate and development policy architecture through a series of multilateral agreements. Multilateral and bilateral development actors have been particularly central to facilitating the development of climate policies within national and subnational contexts (Agrawala 2004; Janetos et al. 2012), aligning technical and financial support with the key pillars (e.g. capacity building, technology transfer, etc.) of the international climate policy regime.

In the UNFCCC and Paris Agreement, capacity building is emphasised as a major cross-cutting theme of climate-resilient development, since it *enables* developing countries to achieve the objectives of the conventions and participate in the international policy arena. According to a UNEP report (2016) on adaptation finance, funding for capacity building as a primary means to reduce vulnerability to the adverse impacts of climate change has now become a priority for donors. Total bilateral and multilateral funds for climate change adaptation in developing countries reached US\$ 22.5 billion in 2014.

Richards (2001) and Biagini et al. (2014) confirm that attention to adaptation in UNFCCC negotiations has been mainly focused on financing activities with a strong emphasis on capacity building, overlooking the importance of the implementation of adaptation actions. Biagini et al. (2014) note that too much attention has been paid to helping LDCs meet their official obligations under the UNFCCC, such as developing National Communications or National Adaptation Plans of Actions (NAPAs), and only limited support has been provided for developing and implementing actual policies. A coding exercise of 158 adaptation activities from 92 projects funded by the GEF (Table 5) shows that the most frequently funded adaptation actions are those related to capacity building, management and planning, and policy (Biagini et al. 2014).

Table 5 – GEF adaptation activities coding

Adaptation typology	Number of occurrence in Global Environment Facility project document texts
Capacity building	1310
Management and planning	474
Improve practice and behaviour	409
Policy	268
Information	219
Physical infrastructure	178
Warning and observing systems	170
Green infrastructure	99
Financing	76
Technology	49

Source: adapted from Biagini et al. (2014).

In the case of Malawi, understanding how climate change is integrated within a development planning and assistance context is particularly challenging (UNDP 2012; Kosamu 2013; GoM 2014). Kosamu (2013) observed that it is hard to distinguish how domestic and international resources are allocated to climate change adaptation, as activities and investments are often classified under a single ‘environmental’ budget code. More generally, Brautigam and Knack (2004) highlighted how, in Malawi, foreign aid has funded more than 40% of government expenditures on average for nearly 20 years. A recent “Report on Public Expenditure Review on Environment and Disaster Risk Management (DRM)” (GoM 2014) documents the public expenditure of the Ministry of Environment and Climate Change Management for the 2006–2012 period. The report interestingly remarks how Official Development Assistance³ supported the environment and natural resources sector to the tune of US\$ 99 million over the six-year period through direct support of 25 projects. While 86%

³ Malawi’s top ten development partners in the 2010-/11 financial year included: the United States Agency for International Development (USAID), the World Bank, the UK Department for International Development (DFID), the Global Fund, the European Union, the Norwegian Agency for Development Cooperation (NORAD), Japan International Cooperation Agency (JICA), the African Development Bank (AfDB), Centres for Diseases Control, and German Development Cooperation (GIZ).

of total environment and climate change financing by donors supported government projects, DRM financing to government institutions totalled 60%, with the remainder channelled through non-state actors. In most donor support modalities, the Malawi government directly manages all project activities and implementation, unless project implementation and financing are devolved, such as in the DRM proportion, to non-governmental organisations (NGOs) (GoM 2014).

This snapshot of Malawi's environment⁴ financial architecture points to the key role played by central government departments in national climate policy formulation and implementation (Kosamu 2013). By linking climate policy to development planning processes, UNFCCC international agreements assigned national governments a central role in the formulation and implementation of national climate change programmes and projects. In the case of Malawi, this pre-eminent position is reinforced by the substantial financial support provided by development partners to the Ministry of Environment and Climate Change Management. As argued by Biagini et al. (2014), this could also point to a tendency towards allocating resources for capacity building (or measures enabling the necessary conditions for an adaptive response) to line ministries (Planning, Finance or Environment) or governmental structures, rather than to policy activities that address the effects of climate change and the resulting vulnerability in communities.

My empirical chapters will further argue the influence of international and national policy mechanisms (NAPAs, NAPs) in shaping the ways adaptation is translated at the central government and community levels. The prominent guidance of international and national policy and planning mechanisms in Malawi (e.g. NAPA) may also clarify why national policy directives tend to be implemented on the ground by NGOs in Kasache through government-supported institutions such as the Local Civil Protection Committees (Kosamu 2013; Chapter 7).

⁴ The report also highlights the difficulty of distinguishing between environment and climate change programmes and expenditure, as in all ministries and departments, environment and climate change expenditures are coded under the same budget category.

In the attempt to provide assistance on climate change issues, however, the international community has faced a set of challenges common to development aid (section 4.3). In recent years, due to the global financial crisis and cuts in public spending, development aid has increasingly focused on concepts such as ‘value for money’ or ‘aid effectiveness’, continuing to deliver development within a neo-liberal framework (Escobar 1995; Easterly 2002; Sharp et al. 2010). This tendency has been gaining momentum in bilateral and multilateral aid, especially since the Monterrey Consensus (2002) stated that ODA can be effective only when supported by sound policies and good economic governance (Tendler 1997; Dollar and Levin 2006). This is not new. As argued by Escobar (1995), the institutionalisation of development put pressure on government officials in Latin America to transform the style and scope of their activities to meet the requirements of institutions such as the World Bank. In Chapter 5, I will explore how the international quest for good governance and accountability in climate change has shaped policymakers’ narratives in Malawi (e.g. about what constitutes usable knowledge or expertise), influencing the national capacity to formulate policies that are relevant to national or local contexts.

The necessity to focus on the issue of capacity is linked to the UNFCCC’s understanding of climate change as having physical and global features, as discussed in the previous chapter. The belief that skills and capacities can be benchmarked and transferred across regions underpins ideals of spatial homogenisation and North-South hierarchies, and a conception of the world as one interconnected space. The transfer of capacities may introduce specific development rationalities to national contexts, on the assumption that geographically, economically and socially vulnerable countries and communities cannot start implementing certain types of adaptation actions until they have created an *enabling* environment.

4.3 The controversy of the climate-resilient development approach

4.3.1 Postcolonial Science and Technology Studies (PCSTS)

The idea of capacity building endorsed by the UNFCCC is underpinned by the belief that human progress is linear and positive and reflects the conceptualisation of development as ‘modernisation’, first articulated in the late nineteenth century and then updated in the 1950s when the post-World War II development apparatus was established (Escobar 1995; Everett 1997).

Postcolonial Studies of Science (PCSTS) are central to unveiling how several scientific and policy narratives in the climate change debate are often considered universally valid (see Chapter 6 on soil conservation theories) despite being in fact very partial and selective and originating in particular historical contexts such as European colonialism (Feierman 1994; Edge 2001; Restivo 2001; Roosth and Silbey 2008).

More specifically, the modernisation ideal is grounded in rationalist and evolutionary explanations: just as the human species evolves from childhood to maturity, societies – as well as the “nonhuman world” (Plumwood 1991) – progress from tradition to modernity through stages of economic growth, increasingly separating the public and private spheres in the social domain (Escobar 1995). The notion of modernisation underpins the idea of time and evolution as linear and progressive and, as argued by critical feminist and STS scholars (Haraway 1988; Plumwood 1991; Latour 2000; Blaser 2014), along with the internal great divide (nature/culture) and the external great divide (modern/traditional), it is one of the core features of Western scientific and policy thought.

Blaser (2014), in particular, notes how the history of European culture is traditionally represented against a background of linear time, a pathway of progressive evolution, where modernity is equated with the present. Interestingly, approaches to climate

change and development substantially share a linear conception of time, too, although focusing on different time scales. While scientific analyses of climate change extend into the unknown future (e.g. projections target multi-decadal to centennial time scales) to include possible outcomes that are hardly perceived by most, development policies focus on the transformation of present issues such as poverty, malnutrition, health, etc., on the assumption that it will endure in the future.

According to Cannon and Müller-Mahn (2010), this discrepancy in time frames hinders the integration of climate change into development policies. For instance, while development involves an imminent promise of improvement, adaptation renders life possible under unknown though expected climatic changes (Cannon and Müller-Mahn 2010). This perspective may help to understand the challenges faced by NAPA in Malawi (Chapter 5), where a short-term focus on adaptation – reminiscent of the short time span of neo-liberal development efforts (Pepper 1999) – did not succeed in fundamentally challenging some of the root causes of climate vulnerability grounded in the historical experience of colonialism (Chapter 7).

The epistemology of climate change seems to have embraced the key features of the great divides in positivist thinking: a focus on predicting and mastering climate change (nature) through scientifically advanced human capacities; the modernisation ideal, through which societal abilities to adapt to and mitigate climate change are built via technology and capacity transfers; a linear and short-term conception of time (i.e. a focus on the present), especially in the programmatic approach to climate policy planning (e.g. NAPAs).

What emerges from this and previous chapters is an overall disconnect between the time frames characterising IPCC science (substantially multi-decadal and centennial) and the temporal spans addressed through UNFCCC policy mechanisms (annual or decadal) (Cannon and Müller-Mahn 2010). Thus, while the positivist perspective endorsed by the IPCC has played a major role in situating climate change within the neutral realm of

science, UNFCCC climate policy decisions are not automatically informed by longer-term scientific time frames, especially at the national and subnational levels. In that regard, the Paris Agreement (2015, sub-paragraph 7c), its subsidiary bodies, and the multilateral Green Climate Fund (GCF Board decisions 2014/07 and 2018/19) have recently called for an increase in the use of climate science and information – also defined as ‘climate rationale’ – in adaptation decision-making (WMO 2018; see Chapter 5 for further discussion).

From an STS perspective, this could point to political actors within the scientific and policy bodies using science for their own ends and exploiting only those parts of positivist discourse that would generate political benefits (e.g. the depoliticisation of climate change and an increase in aid flows) (Demeritt 2001; Sarewitz 2011; Weisser et al. 2014; Eriksen et al. 2015; Hulme 2015). On the contrary, the elements of climate science that could produce critical outcomes (long-term perspectives) have been mostly overlooked (Demeritt 2001). In fact, a long-range view of the past or outlook on the future could magnify historically grounded causes of climate change or fundamentally question future development pathways.

STS has particularly highlighted the key feature of traditional European thinking: the epistemological and ontological divides support each other in connecting political projects that would seem otherwise unconnected (Blaser 2014). For instance, the homogeneity of global space was deployed during colonialism to categorise the world into ‘civilisations’ and ‘barbarians’ (Feierman 1994, quoting McNeill, 1963, *The Rise of the West*). At the same time, the linearity of time served to define African societies as timeless and static products deriving from and dependent on encounters with the main Euro-Asian civilisations. According to this view, African development spreads from the North southwards, where ‘civilisation’ is seen as originating in European science and culture. The non-Western Other or barbarian was defined (negatively and in opposition) as *lacking* rationality and civilisation, backward and locked out of history. As argued

by critical feminist thinkers (section 4.3), the binary polarisation and the superiority of the upper-side (the North or the West) were achieved by rejecting and denying the characteristics of the non-Western.

With the introduction of historical, cultural and geographical dimensions in social constructivism, postcolonial STS emphasises how culture's position in regional and global political and economic hierarchies plays a relevant role in controlling the ways in which knowledge is generated, included or excluded in dominant scientific paradigms (Harding 2008, 139). For example, Harding (2008) highlights the tendency of Western rationalities to forget and repress scientific borrowings from other cultures and the fact that European sciences benefitted from the knowledge of the natural world accumulated by indigenous cultures.

PCSTS considerably elaborated on the idea of 'indigenous knowledge', a tool theorised by conventional European iconography to frame Western knowledge and identity (Broch-Due and Schroeder 2000; Neumann 2000; Ingold 2010). Historically, the concept of indigenous knowledge has been deployed strategically by colonial élites to represent stereotyped 'traditional' and pristine models of livelihood as inherently 'good' because they are close to nature and compliant with colonial environmental management (Neumann 2000). Or, in the case of Malawi (Chapter 6), to represent 'primitive' indigenous practices as environmentally 'destructive' and justify the enforcement of specific land conservation initiatives. As previously noted (Chapter 3), positivist thought focuses on the dichotomies between reason and nature, universal and local, to assess what is rational, universal and thereby authentic. Conversely, what is natural, local, or indigenous is perceived as ultimately irrational, and rejected, denied or removed (Plumwood 1991). In Chapter 6, I will highlight some elements of the environmental belief system in Malawi that were selectively appropriated by Christian missionaries to reproduce their religious and political power and authority.

PCSTS has shown how the growth of European science historically coincided with successive phases of expansion of European political power and ideologies. A case in point is the development of Western sciences, and especially astronomy, cartography and economic botany, which have relied heavily on the success of European exploration and colonisation. Through the extraction of knowledges from indigenous groups, European colonial authorities reorganised local socio-economic, political and cultural structures and drew the colonies into globally dependent relationships and flows that lasted well after colonial independence thanks to post-World War II financial and development policies (Escobar 1995; Loomba 2005).

The ‘voyages of discovery’ greatly benefitted from the exploitation and appropriation of contextual knowledges about flora, fauna, topography, geology, medical plants and diseases of newly explored areas, without acknowledging the contribution of accumulated indigenous knowledge to European scientific progress (Jasanoff 2004; Loomba 2005; Harding 2008; Roosth and Silbey 2008).

4.3.2 The problematisation of development as ‘modernisation’

While the ideal of development as modernisation flourished in one specific cultural and historical knowledge system, the Western one, marginalising and disqualifying the non-Western ones, it was endorsed by international aid agencies after the Second World War (Harding 2008, 131–133). In the 1980s, a mix of approaches labelled as ‘neo-liberal economics’ became dominant in the ‘Third World’ under the pressure of international development institutions such as the International Monetary Fund (IMF) and the World Bank (WB), which focused on the privatisation of state-owned enterprises and monetary stabilisation policies (Easterly 2002; Dollar and Levin 2006). The dissemination of positivist scientific rationality, at the basis of European economic growth, was assumed to lead to social and economic progress worldwide (Feierman 1994; Escobar 1995; Everett 1997). The industrialised nations of North America and Europe saw their model of development as the ideal model to be inherently and uncritically transferred to ‘Third

World' societies – often former colonies and newly independent states in Asia, Africa and Latin America (Escobar 1995).

Post-development scholars (Ferguson 1994; Escobar 1995) underscored the neocolonial character of these policies, designed and implemented to equip the Global South with northern technologies and know-how. Escobar (1995), for example, argued that international development was the result of a historically produced discourse: in the post-World War II period, Western experts and politicians had defined the conditions of certain countries as poor and backward, turning 'the poor' into 'the assisted' and designing the tools needed to study them and intervene. Development strategies were the outcome of this specific definition of the poverty issue and, especially in the former colonies, were employed to rebuild the relations between the newly independent states and the metropolises.

Post-World War II development strategies, for instance, emerged as specific modes of national, regional and sectoral planning, where growth was equated to investment, which in turn was financed by external aid (Easterly 2002). This called for a type of policy planning and institutions (e.g. national planning agencies) on the recipient side that would ensure the right allocation of scarce resources, correct market prices, and maximise savings. These tools were perceived as neutral, desirable, universally applicable and independent of political, cultural and historical content.

According to Easterly (2002), certain traits of the development aid community have remained virtually unchanged since its foundation, as it turned into a non-competitive cartel of organisations, yet with different objectives and agendas. Resistance to change within development bureaucracies, which is apparent in the lack of research, experimentation and critical evaluation (see Chapter 1 for some of my personal experiences), is triggered by a fear of aid budget cuts due to negative performances and feedback (Easterly 2002). Several studies (Ferguson 1994; Michalopoulos, 1999; Easterly 2002; Brautigam and Knack 2004) show the problematic impacts of development aid in developing countries.

Interviews with women in Kasache point to a tendency of international development actors towards overlooking the importance of supplies and long-term project maintenance that would allow climate-resilient development initiatives to operate after official development assistance has ceased.

Easterly (2002) explored the effects of aid bureaucracies on national government institutions, such as their tendency towards defining development outputs as money disbursed rather than service delivered; producing many low-return observable outputs like reports and frameworks and few high-return observable activities; placing enormous demands on management in national bureaucracies and treating national civil servants as a free good. Especially in financially constrained contexts, development aid can have distortive effects. The mechanisms deployed by development bureaucracies to incentivise civil servants' commitment to projects, such as daily allowances provided on the occasion of workshops and seminars, can negatively shape the impact of development efforts, fostering donor dependence or creating opportunities for misuse of public resources (Vian et al. 2013; Nkamleu and Kamgnia 2014). Although the pursuit of benefits deriving from per-diems is globally widespread, Nkamleu and Kamgnia (2014) observe that in the African context, the increasing amount of public spending for financial incentives has become a regular component of the development project system, fuelling opportunistic behaviours among civil servants⁵. The authors note that although daily payments are generally justified, their use and abuse negatively influence projects' and programs' design, management decisions, and employees' motivations and behaviours (e.g. which project they should work on, or whether they should go on field missions or focus on office-based work)⁶. Chapter 5 will draw on the narratives of national decision makers in Malawi to highlight the impact of specific conceptualisations of climate-resilient development on the formulation and implementation of national climate change policies. I will argue for example that in Malawi, the challenges of integrating cross-cutting issues such as

⁵ In Malawi, travel allowances accounted for a 21 percent of public officers' salaries in 2010 (Nkamleu and Kamgnia 2014).

⁶ As recognized by Nkamleu and Kamgnia: "Per-diem rates for donor-funded projects can be more than twice as the government system rate" (Nkamleu and Kamgnia 2014, 8).

climate change through joined sectoral policymaking can be partly ascribed to siloed or hierarchical views within academic disciplines and scarce attention to developing infrastructure for scientific research.

Post-development scholars (Kaplan 2000; Easterly 2002; Sharp et al. 2010) criticise the scope of planning and management strategies aimed at “achieving improved performance and demonstrable results” (UNDP 2009). The focus on cost-effectiveness criteria, one of the key components of the development apparatus, is also an attempt to respond to the growing demands for public accountability on how development assistance is used, what results are achieved, and how appropriate these results are in bringing about desired changes in human development (Escobar 1995).

In the climate change domain, Berkhout et al. (2002) claim that an emphasis on quantitative techniques – such as cost-benefit analyses at the project appraisal stage – has led to a lack of attention to the social side of climate impact assessments. Qualitative impact studies, linking physical scenarios with socio-economic factors, would generate a wide range of potential outcomes, with higher uncertainties and lower social predictability, and hence be less attractive to international development grants (Berkhout et al. 2002). A case in point is offered by the National Adaptation Plans (NAPs). NAPs were designed by the Least Developed Country Expert Group (LEG) of the UNFCCC in 2012 to help countries integrate climate change adaptation into development planning, budgeting, implementation and monitoring processes at national, sectoral and subnational levels. Despite not being ‘prescriptive’, NAPs (LEG 2012) link the identification and implementation of adaptation actions to certain policy processes, such as coordination structures, cross-sectoral committees or assessment techniques, climate data and evidence or capacity needs assessments. The NAP multi-step process provides that specific pathways can be followed by LDCs to kick-start climate-resilient development processes to reach an ideal situation.

As discussed in Chapter 5, despite having become standard in Malawi, aid-

effectiveness practices (including result-based performance and gender mainstreaming, as further discussed below) do not necessarily lead to better planning, decision-making and equitable resource distribution. Furthermore, external and donor-driven policy guidelines can undermine agency as well as confidence in institutional and individual capacity to influence local circumstances (Kaplan 2000; Easterly 2002; Sharp et al. 2010). I will analyse these aspects in regard to the Kasache case study, showing that ‘informal’ adaptation measures are hardly acknowledged or supported by either international development organisations or individuals. In particular, women’s vulnerability and experiences of climate change in Kasache shed light on the challenges of applying the climate-resilient development paradigm in the context of gender relations, as further discussed in the next section.

4.4 Gender and climate change in the international policy arena

In the context of the UNFCCC, the interlinkages between gender and climate change have only recently received formal recognition (Kajjser and Kronsell 2014; IIED 2016b). Out of the three multilateral environmental agreements emerging from the 1992 Rio Earth Summit, the UNFCCC was the only one lacking gender-sensitive language in its text (IIED 2016b). More than twenty years later, at the eighteenth session of the Conference of the Parties (COP 18) in 2012, the issue of ‘gender and climate’ was added as a standing agenda item, and it was agreed that it should no longer be considered on an ad hoc basis under ‘any other business’ (IIED 2016b).

According to some scholars (Röhr 2006; Arora-Jonsson 2011), the emphasis on women’s inherent vulnerability to climate change served the purpose of raising gender issues’ visibility in the international climate policy agenda. At COP 20 in 2014, the UNFCCC launched the Lima Work Programme, a two-year initiative aimed at promoting *gender balance* by encouraging parties to raise awareness among delegates and increase the participation of female delegates in negotiations.

In March 2018, the IPCC established a task group to develop a framework of goals and actions aimed at improving “gender balance and address[ing] gender-related issues within the IPCC” (IPCC 2018). The UNFCCC National Adaptation Planning Technical Guidelines encourage the use of gender-sensitive frameworks in policies and activities: “Integrating a gender perspective into the NAP process can help to ensure that there is *equal participation* of men and women in the decision-making processes, as well as in the implementation of adaptation activities” (LEG 2012, 17). Historically, the international climate change policy debate has focused on promoting gender balance and women’s formal inclusion through ‘gender mainstreaming’ (Hafner-Burton and Pollack 2002; Charlesworth 2005) rather than on the causes of gender inequality (Röhr 2006).

On that basis, gender is integrated into policies, plans and activities through the mentioning of women (*all women*) as a particularly vulnerable group (see Arora-Jonsson 2011; Kaijser and Kronsell 2014). Some policy documents from bilateral and multilateral policy actors in Malawi, which I will analyse in Chapter 7 (NORAD 2010 and FAO 2011), uncritically identify the *traditional* patriarchal society as the main cause of Malawi’s gender issues. This approach, as well as gender mainstreaming, tends to portray an ahistorical, unmediated (e.g. by socio-political factors) and deterministic idea of women’s agency and vulnerability, with little if any acknowledgement of the way relations of power intersect at different levels, from social structure to symbolic construction, determining a contextual gender-related vulnerability, as discussed below (Cho et al. 2013; Patil 2013; Kaijser and Kronsell 2014; Liska 2015).

4.4.1 Feminist Studies of Science (FSTS)

Critical feminist scholars argue that a number of interrelated Western-based dualisms are condensed in the universal notion of ‘woman’ (Plumwood 1991; Chandra Mohanty 1994). Chandra Mohanty (1994) contributed to this debate introducing the idea of ‘Third World Women’ as a homogenous and subjugated group constructed

under the social category of ‘average Third World woman’. Mohanty observes that, in development literature, Third World Women have been historically represented in contrast to Western standards for measuring progress (see also Chapter 7).

This stereotype is rooted in the homogenous and hierarchical categorisations of Western-based universalism and grounded in the separation between culture and nature, body and mind, human and non-human, men and women (Lugones 2010). With regard to the external great divide (Blaser 2014), the ‘Third World’ represents what is irrational, uneducated and tradition-bound (section 4.3); in the masculine-feminine binomial, ‘woman’ is the negation of all rational and masculine qualities. The feminine sphere as represented by the Western tradition is in opposition to masculine and rational domains, and hence emotional, unpredictable, unreliable and to be confined to private realms, yet in continuity with the merely physical, natural and animal (Plumwood 1991).

During European colonialism, indigenous people in African or American colonies were thought to be as wild and libidinal as animals (non-human); women (in both the Global North and South) were differentiated against a supposed male perfection marked by rational, heterosexual, Christian, public, rule-oriented and subjective/intentional features. This typification further classified Third World Women according to their deficiencies with respect to Western women (educated, free and in control of their bodies), implicitly projecting the former as domestic, family-oriented and passive victims of local and global patriarchal cultures.

The work of Ann Laura Stoler (1995) is particularly useful for understanding how gender, colonial and postcolonial relations co-constitute each other. She points to how colonial discursive strategies on sexual practices of the colonised flourished on the basis of the classification of colonial objects into distinct human beings, (e.g. the ‘libidinal savage’). Colonised societies were defined as morally declining and put in

stark contrast with the ideal male-headed family milieu of European bourgeois families. The discourses on sexual self-control assumed and produced racial distinctions and contributed to the making of European identity, as well as serving the colonising purposes of the European imperial project (Stoler 1995). In Chapter 7, I will show how the experience of colonialism in Malawi, by introducing Christian conceptualisations of family structure and household management, deeply transformed local matrilineal societies (*mbumba*), further imbricating gender relations into racial, colonial and patriarchal structures and increasing women's vulnerability to climate shocks – via the division between public and private spheres.

Mohanty (2003 and 2013) has recently called for an increased historical and cultural specificity in women's studies to take account of the intersections between systemic power structures and multi-folded inequalities (race, gender, class), avoiding forms of generalisation and reductionism.⁷ Lately, intersectional analysis has especially highlighted the interactions between gender, race, class, sexuality and other categories of individual and collective inequalities, and the structures of power and domination. Intersectional analyses make the fundamental point that individual identities are differently affected by multiple interacting systems of oppression and privilege, depending on the individual's societal position (Lugones 2010; Garry 2011). Intersectional scholars emphasise how single-axis frameworks (institutional, scientific, legal, analytical, etc.), which operate under the pretence of neutrality and neglect the power dynamics shaping identity formation, can rarely transform the conditions of marginality (Cho et al. 2013; Mohanty 2013; Kaijser and Kronsell 2014). Sandra Harding (2009), for example, noted that male-biased Western epistemologies tend to ignore the most significant changes in women's lives and neglect their role in social change. As a consequence, Western scientific projects have been historically characterised by the absence of women in the design and management phases, affecting the nature of scientific inquiries and generating socially regressive effects on women.

⁷ The systemic socio-historical and institutional analysis underpinned by the concept of Third World Women has also been criticised for being totalising and responsible for the creation of a unified and homogenous subject (Mohanty 2013).

More specifically, intersectionality can disclose the colonial legacies and deep biases based on race, class, and gender that permeate the methods, formulations of issues, and substantive positions of Eurocentric philosophy (Garry 2011). Recently, quests for a systematic intersectional analysis of gender and climate change have emerged that would allow including insights from various disciplines on the relations among humans and nature, as well as clarifying how contextual and multi-sited dynamics of power interact to produce ‘objective’ narratives and identities linked to climate change (Cho et al. 2013; Kaijser and Kronsell 2014; Liska 2015).

In Chapter 7, I will discuss some of the gender stereotypes (e.g. the ‘feminisation of poverty’ trope) deployed in climate change policy discourses, which risk categorising women as inherently vulnerable to climate change and substantially reducing their inclusion in development initiatives. In Malawi, these simplifications shaped the design of women-centred climate change projects, which, however, tend to neglect how women’s vulnerability and responses are historically and socially constructed not only by gender, but also by age, societal position and family networks.

In that sense, FSTS filled up some of the theoretical and methodological gaps left by PCSTS (e.g. binary North-South typification and gender-blind colonial analysis). PCSTS typically frames colonised identities and struggles as opposed to ‘Western’ historical and cultural ideals (Harding 2009; Sharp et al. 2010; Lazarus 2011). Mudimbe (1988), for example, pointed out the tendency of postcolonial African analysts to retain the epistemological categories characterising Western thinking, such as the coloniser-colonised binary relation, whereby the colonised can only exist and develop his/her identity in dependence/contrast to the coloniser (Sharp et al. 2010). The tendency in postcolonial studies is hence to criticise the Western conceptual framework while using its dualistic thinking structure (Loomba 2005; Harding 2009; Lazarus 2011). Some postcolonial accounts have failed to recognise the overall spectrum of social impacts, transformations (not only racial and cultural, but also class- and gender-

related) and agency generated by the historical, political and economic experiences of Western capitalism, such as colonialism.

4.4.2 Agency outside ‘mainstream climate change’

Gender difference has been historically constructed around a singular notion of male dominance, thus ‘naturalising’ female vulnerabilities and inequalities – that is, removing the human and political spheres – and denying women cultural and historical specificity (Mohanty 1994; Spivak 1994; Arora-Jonsson 2011). On that basis, women are also represented as sharing identical interests and needs. This narrative tends to present women as the inherent victims of certain socio-economic systems, without taking into account the interactions between gender and other forms of disadvantage (class, race, age, marital status, ethnicity) or the networks between women and women, and women and men, as the main determinants of marginality (Mohanty 1994; Leach 2007; Demetriades and Esplen 2008; Seppälä 2016). This view tends to portray women as incapable of solving their own problems, denying them agency and subjectivity in the history of power relations.

Similarly, the UNFCCC categorisation of Annex I and non-Annex I countries (section 4.2) tends to deprive the diverse political structures, economic positions, culture and political environment of any geographic and historical specificity, reinforcing the view of LDCs as unique and homogenous compared to non-LDCs. The use of reductionist approaches in the climate change international policy regime made the first ten years of climate change negotiations particularly challenging for LDCs, since they did not have a clear and well-defined vision of possible shared interests and positions (Richards 2001; Gupta 2015). As LDCs include a broad variety of countries from very different parts of the globe and facing different climatic challenges, the composition of LDCs groups (defined according to statistical criteria) made it hard to participate and be influential. This often resulted in the adoption of common positions based on defensive and limited negotiating strategies and on the highest of the lowest

common denominators or reserve position ('hollow negotiating mandate'), where LDCs were willing to subordinate their interests to those generally articulated and broadly acceptable to all developing countries (Richards 2001; Gupta 2015).

The *need* for developing countries to acquire technical skills therefore becomes a requirement for building partnerships and consensus and protecting national interests in international policy negotiations, as well as a key component of the narrative on capacity building. This narrative inevitably enforces a discourse centred on several deficiencies in non-Annex I countries – namely, the *lack* of climate data and information, public services, human resources, credit, technologies, skills and capacities in general – or, as in the case of 'women', a general inability to solve their own problems. Mainstreaming climate and development approaches not only influence collective negotiating positions (e.g. the LDC Group in the UNFCCC) and strategies. They equally influence the initiatives and aspirations of national policymakers at the very individual level.

The feminist reflections on the concept of agency, in that sense, can help carve out a space for freedom and subjectivity in Western binary relations (subject-object, North-South, men-women), where the *objectified* subjects also have opportunities for action, visibility, voice and legitimacy (O'Hanlon 1988; Haraway 1991; Mohanty 1994; Spivak 1994; Leach 2007; Carr 2008; Demetriades and Esplen 2008; Harding 2008; Arora-Jonsson 2009). According to critical feminist scholars, agency is embedded in daily processes of social engagement and expressed in routines, skills and habits through which individuals negotiate and shape their important choices within present circumstances informed by the past (Renegar and Sowards 2009; Lugones 2010; Alemu et al. 2018).

Through the concept of *embodied* and *situated* knowledges, which depart from the Foucauldian idea of the body as a site of power struggles (Caldwell 2007), FSTS

methodologies have transformed the logic of scientific enquiry, exposing implicit assumptions and potential reifications of specific standpoints and allowing recognition and critique of the responsibility of science for ethical and political outcomes (Haraway 1988; Longino 2004; Hanna 2004; Wallington and Moore 2005; Reid et al. 2006). In this view, power dynamics are decentralised to various and disperse relations, which build on the locatable and partial knowledges and experiences contingent to specific socio-historical contexts (Phelan 1990; Caldwell 2007).

The idea of situated knowledges can enrich emerging epistemological and ontological approaches to climate change, conceptually grounding tensions and interactions between different ways of knowing and experiencing climate change. The reflections on climate change contextual knowledges (e.g. from women, rural and indigenous communities) could, for example, identify creative spaces for agency outside the culturally dominant narratives of predictive natural and social sciences (Hulme 2011; Nightingale 2016). In Chapter 7, I will analyse the informal networks of female farmers in Kasache as an expression of individual and collective agency – the result of conflict and negotiation between women’s local and situational knowledge and formal participatory processes drawing on colonial and developmentalist essentialist practices.

The risk of depriving colonised people (and colonised women) of their identity in the history of power relations is an issue that has also been extensively discussed in the context of postcolonial criticism by Subaltern Studies (Prakash 1994b; Williams 2006; Louai 2012; Motta 2013). This intellectual movement was started in the early 1980s by a group of Indian historiographers who intended to re-examine Indian history taking account of the subaltern voices hidden or removed by official middle-class historiography (Prakash 1994b; Williams 2006). Subaltern Studies is grounded in Edward Thompson’s published work on the English working class (1963), which aimed to restore “the authentic experience of those sections of England’s pre-industrial working class absent from official histories, and to employ this recovered experience

to show how these groups were able, by recognising their essential identity and interests as a class, to become active historical agents, to exert some control over the conditions of their own existence” (O’Hanlon 1988, 198).

The term ‘subaltern’ also draws on Antonio Gramsci’s work referring to subordination in terms of class (Prakash 1994b). Later on, it also referred to subordination in relation to caste, age or gender (Spivak 1994) and was deployed to signify the centrality of dominant-dominated (or subject-object) relationships (O’Hanlon 1988; Prakash 1994b; Williams 2006). The concept of subalternity, despite the various shifts and usages since its formulation, was more specifically a response to the Marxist traditional difficulty in explaining how subaltern resistance could be constituted by and generated *within* the frame of dominant discourses and relationships (Prakash 1994b). Constantly confronted with the terms of Western history, development or modernisation, non-Western histories and knowledges were deemed to be incapable of reacting to a condition of subjection (Prakash 1994b).

In the context of postcolonial studies, Bhabha (1994) elaborated the concept of *hybridity* as a way out of this binary thinking and as a space for the agency of the ‘subaltern’ (Prabhu 2007). With the concept of cultural hybridity, Bhabha (1994) goes beyond the negative and oppositional idea of identity formation (West/Self-Other), arguing that colonial identities were generated in ambivalent and undistinguishable cultures, belonging neither to the colonisers nor to the colonised. Hybridity, especially in the domain of culture, emerges as a historical and contingent process involuntary generated by dominant institutions or actors (e.g. colonial authorities), where the resistant (e.g. the colonised) appropriates cultural elements in the interaction with the hegemonic narratives, and modifies products and processes for their own purposes. Cultural hybridity represents a way of resisting the cultural homogenisation of the Western model, which in fact, because of cultural hybridity, proves to be fractured, doubled and unstable.

The focus on the multiplicity of mechanisms and networks in which individuals are physically immersed (embodied) allows identifying localised sites of power that enable *all* individuals to exert forms of power (not only repressive, but also creative, productive and alternative) (Everett 1997; Caldwell 2007), as further discussed in the next section.

4.4.3 Overcoming binaries through hybridity

Growing attention has recently been paid by critical human geographers to the concept of hybridity in the climate change scholarly debate (Hulme 2010; Birkenholtz 2011; Burnham et al. 2016; Goldman et al. 2016; Popke 2016). Climate is increasingly conceived as a hybrid entity characterised by environmental and biophysical as well as socio-cultural elements (Popke 2016). As outlined by Popke (2016), climate change is described as an experience that, in various parts of the world, assembles diverse ways of knowing (global and local), variable spatialities and multiple temporalities (past, present and future). Burnham et al. (2016), for example, deployed the idea of hybridity to explore the tensions and interactions between smallholder perceptions of climate change (material, situated, partial and mediated by daily practices) and climate records for the same geographical areas, which hardly capture the local views and experiences of climate change.

According to Herod (2010), the hybrid spaces of dependence and engagement are specifically those areas where the actors build relationships and networks of association, interact with each other, and shift location according to their interests and needs. These sites of differentiation/resistance and integration, where identities are continuously renegotiated, have been named in different ways by several other authors: *network* or *artefacts* (Latour 2000), *hybridities* (Bhabha 1994), *cyborgs* (Haraway 1988), *virtual realities* (Cline-Cole 1998). They all share the characteristic of escaping from the dualistic boundaries of science/non-science, agential or passive (subject-object), living or inert, intentional or not (Latour 2000). From this perspective, a social and cultural construct does not oppose the natural, technical or physical, as

in positivist scientific thought, but emerges as a product of heterogeneous bundling of different spatial, temporal, physical, social and cultural elements (Latour 2000).

Most importantly, hybridity has been deployed to challenge the legacy of Western binaries (human-nature) in climate change reductionist discourses. Several scholars emphasise that the features of climate change are a hybrid, produced by collective and individual practices that bring together human and non-human elements and carry various definitions of nature and environment-human relationships (Popke 2016). Goldman et al. (2016) criticise the positivist epistemological approach by which there is one reality (ontology), which can be observed or known from multiple and different perspectives (epistemologies). 'Epistemological pluralism' assumes the possibility of translating 'scientific' data to local communities, of stakeholders co-producing knowledge, since it underpins the existence of an objective reality of climate change that can be interpreted through different knowledge perspectives. However, Goldman et al. (2016) question whether it is at all possible to distil and integrate indigenous or local views and knowledges on climate change into one climate science, as often prospected by international policy and scientific bodies. Weisser et al. (2014) reflect on the epistemology and ontology of adaptation from a spatial perspective. The authors discuss how the global idea of adaptation becomes local by interacting with situated, normative and symbolic processes. The central question posed by this body of scholarship is whether it is possible to dis-embed knowledge about the natural world from the indigenous and local ways of being in the world (Ingold 2010).

These reflections have deep political implications since, by recognising that there is not one unique epistemological and ontological reality on climate change but multiple ones, the Western dominant worldview of knowing and being legitimised by international policy processes becomes open to critique. In particular, a pluralist ontological approach (Goldman et al. 2016) recognises that multiple and diverse climate change ontologies are equally relevant and objective for decision-making as the 'certified'

climate science, thus destabilising the hegemonic primacy of Western scientific and political thought. These observations represent also a rich opportunity to unpack and reflect further on the mechanisms of power and social change that reproduce climate change vulnerability over time and space. Most importantly, exploring the climate change epistemology-ontology relation (Chapter 8) allows identifying and valuing the hybrid experiences through which people express their resistance towards dominant narratives (Lugones 2010). The concept of hybridity is central to exploring the individual and collective practices of compliance and resistance towards colonial and neo-liberal relations of power that I encountered in Malawi, and which are at the core of my research work.

This review has argued that the climate-resilient development paradigm, in its current formulation, seems inadequate to identify and address the political contents of the climate crisis. By relying on IPCC ‘certified’ climate science, it makes it hard to unveil the anthropocentric and instrumentalist conceptualisation of nature that levels out knowledge systems and worldviews about the role of humankind in relation to climate change. Or, by grounding in the centrality of capacity development in the UNFCCC and Paris Agreement, it reproduces the spatial and cultural primacy of the Northern/Western scientific and political thought, underpinned by unbalanced colonial and postcolonial international relations (Escobar 1995).

Contrary to expectations in the developing countries, linking climate change to the development apparatus did not entail a fundamental rethinking of international relationships and assistance paths. Rather, it replicated the epistemological and ontological dependency and essentialism of colonial times. The specific way climate change knowledge filters down into national contexts (as a scientific, global and developmentalist issue) shapes how international negotiations unfold, how funds are allocated, and how programmes are designed and implemented at national and local levels. Drawing on the case of Malawi, in Chapter 8 I will provide some guidance on

the way the all-encompassing climate change epistemology could be reframed to be more inclusive – and transformative – towards alternative knowledges and practices.

4.5 Conclusions

By reviewing the establishment process of the international climate change policy regime, this chapter has highlighted how the ‘developmentalist’ trait of global climate change narratives was brought into *being* by specific socio-economic, political and historical processes.

Since early negotiations, developing countries advocated for a development-centred, rather than science-based, view of climate change so as to facilitate their greater representation and negotiating capacity in the climate change international policy arena. The attempt from developing countries to *politicise* climate change led to its increasing encroachment into the discourse of development, linking climate change to an architecture that had hardly evolved since the 1950s. In particular, the interlinkages at the international policy level between climate change science, development theories and practices conveyed global climate change epistemologies to national development contexts through practices of development support and aid-delivery. This further anchored climate change interventions to positivist paradigms of Western rationality and objectivity, for example through coupling the concept of sustainable development with the *modernisation* ideal. The necessity to deal with a quantitative and science-based issue created for developing countries the *need* to depend on the analytical capacities and strengths of national institutions.

PCSTS and FSTS theoretical tools have been fundamental to exploring the historical origins and critical aspects of the nexus between climate change science and climate-resilient development, as well as stressing the gendered characteristics of colonial and postcolonial knowledge practices (Harding 2009). By shifting the focus to the role and agency of localised agents, feminist STS scholarship has emphasised the co-

existence and interaction of multiple epistemologies and ontologies, refocusing on the knowledges and experiences left out from Western rationalism. Reflections on situated knowledges make it possible to ground the critique of dominant narratives and worldviews that have historically informed (Western) knowledge for policy support, as well as identifying spaces for agency outside Western dichotomies and (unidirectional) knowledge-power relationships.

In the next chapters, postcolonial STS critiques will help me to discuss the modes through which global discourses on climate change have trickled down to the policy context of Malawi (Chapter 5). Feminist critical contributions will allow me to identify the opportunities for climate change knowledges and practices in Malawi to carve out agency in spite of the supremacy accorded to positivism in the international climate change policy regime (Chapters 6 and 7). Furthermore, the feminist situated or *standpoint* methodologies (Karim 1993; Harding 1997, 1998 and 2008; Lavis 2010; Reid and Taylor 2011; Smith 2012) have inspired my multi-sited ethnography of climate change, which looks at how large-scale narratives are embedded into concrete and localised life-worlds (Marcus 2002). This perspective is particularly useful for mapping climate change as a mobile cultural construct that links global perspectives to national and local narratives and practices, cutting across the global/local dichotomy and giving form to new ontological constructs, introducing more nuanced elements to the representation of identities and power relations in the research field (Marcus 1995; Gupta and Ferguson 1997; Fischer 1999; Crate 2011).

In effect, the narratives on climate change that I encountered in Lilongwe and Kasache carry the marks of historical encounters and relations with Europe and international development organisations. Yet, the grounded perspectives also speak for their own contingent hi-stories (Blaser 2014). In that regard, my empirical chapters will argue that, despite climate change having mainly materialised in Malawi through practices

of development support, national and local actors play an active role in redefining the issue, supporting or refuting the dominant epistemology and generating new ontologies on climate change.

The second part of my work will showcase the richness of climate change meanings, which intertwine at multiple levels: *universalised* by global reductionist narratives and *hybridised* through contextual processes of re-signification. New or alternative syntheses of climate change knowledge are co-constructed by local actors so as to meet particular needs or values, in a creative process that can hardly be taken into account by the all-encompassing climate change epistemology.

Chapter 5

The making of climate change knowledge in Malawi

5.1 Introduction

This chapter traces the ways in which ‘global climate knowledge’ has contributed to shaping national policy processes in Malawi. In the course of a series of consultations with national policy actors in Lilongwe in 2012 (see Chapter 2 for details), specific perceptions emerged regarding gaps in scientific, technical and institutional capacity. How do these views relate to the climate-resilient development paradigm? What are the repercussions of global discourses on climate change for the design and management of adaptation policies and projects in the country? How do national policy actors in Malawi shape policy decisions in the context of the climate-resilient development paradigm?

As claimed by many informants (section 5.2.2), scientific knowledge on climate change is highly skewed geographically, and the Global South is largely ‘invisible’ as a knowledge producer (Corbera et al. 2015). The gap in climate research and knowledge available for policy use between the Global North and South has been described as a *knowledge divide* (Biermann 2002; Karlsson et al. 2007; Ho-Lem et al. 2011, Kandlikar et al. 2011; Pasgaard and Strange 2013). This definition emphasises the lack of climate data, information or capacities to explain the uneven negotiating power between North and South in international policy processes.

My analysis will depart from the idea of ‘knowledge divide’, which partly echoes a postcolonial systemic perspective (hierarchy of knowledges, geopolitical dualism; see Chapter 4). Through a socio-constructivist analysis of knowledge, I will question the epistemological and ontological assumptions underlying global climate science as well as the capacities deemed necessary to translate climate knowledge into relevant national

policies. I will focus on Malawian decision makers' narratives about the relevance and usefulness of scientific claims for policymaking, highlighting the contrasting and hybrid views (e.g. aspirations for universality *and* locality of scientific knowledge) that simultaneously limit and enable the capacity to actively engage in political change.

5.2 How climate finance shapes knowledge and policy production in Malawi

In Chapter 4, I described Malawi's climate finance architecture and the prominent role played by development partners in providing financial support for the formulation and implementation of national policies and programmes (Kosamu 2013; GoM 2014). In this section, I will argue that overdependence on external funds can deeply affect the dynamics of knowledge generation at country level, shaping not only narratives but also practices, and influencing the way projects are funded and international aid is accessed.

The national government of Malawi has taken centre stage in policy formulation and implementation processes – following the model informing UNFCCC agreements (e.g. Cancun Agreements, 2010), which are closely aligned with the principles of national ownership and aid effectiveness established in the Monterrey Consensus (Tendler 1997; Dollar and Levin 2006). The Government of Malawi (GoM) ratified and approved the United Nations Framework Convention on Climate Change in 1992 and the Kyoto Protocol in 1997, with the aim of creating policy mechanisms that would mitigate the adverse effects of climate change on ecosystems and humankind (UNFCCC 1992). Article 3 of the UNFCCC states that, on the basis of the precautionary principle, lack of scientific information should not be a reason for postponing measures to anticipate, prevent and minimise the causes and effects of climate change. The GoM fulfilled its pledges to the Convention, developing a series of documents and policy papers through which the country's aspirations and priorities were defined (see Table 6 for an overview). First came the National Environmental Action Plan (1994), followed by Vision 2020 (GoM 1998) and the Malawi National Strategy for Sustainable Development (MNSSD 2004), among others, which set

out strategic goals for sustainable environmental management (Table 6). Malawi’s National Adaptation Programme of Actions (NAPA) was developed in 2006 by the Environmental Affairs Department, with the aim of assessing the impacts of adverse climatic conditions in eight relevant economic sectors and addressing the more urgent needs (GoM 2006). The NAPA also provided a basis for understanding the required skills and competencies – and related gaps – to implement national programmes and initiatives (GoM 2011c).

Financial support is provided by multilateral and bilateral agencies (see Chapter 4 for a list of the main donors active in Malawi) and mainly directed at central government departments (Kosamu 2013). Financial support for the NAPA was provided through

Table 6 – Malawi’s main climate change, environment and development strategic documents

Title	Year	Primary Editor
National Environmental Action Plan	1994	Government of Malawi
Vision 2020	1998	Government of Malawi
First National Communication	2002	Government of Malawi
Malawi National Strategy for Sustainable Development	2004	Government of Malawi
National Adaptation Programmes of Action	2006	Government of Malawi
First Malawi Growth and Development Strategy	2007	Government of Malawi
Second National Communication	2011	Government of Malawi
Capacity Needs Assessment	2011	Government of Malawi
Training Needs Assessment for Management Structures in Malawi	2011	Government of Malawi
Second Malawi Growth and Development Strategy	2012	Government of Malawi
National Climate Change Investment Plan	2013	Government of Malawi
Nationally Appropriate Mitigation Actions	2015	Government of Malawi
National Climate Change Management Policy	2016	Government of Malawi
Intended Nationally Determined Contribution	2017	Government of Malawi

funds established under the UNFCCC and managed by the Global Environmental Facility (GEF), such as the Least Developed Countries Fund and the Special Climate Change Fund. In Malawi, the majority of national policy actors I consulted perceive foreign funding as crucial to climate change data collection and assessment and to policy analyses. This creates complex relations, not seldom of dependency. During an informal conversation, a lecturer at the Bunda College of Agriculture in Lilongwe, one of the leading public universities in Malawi, explicitly stated that fulfilment of international policy pledges was essential to accessing financial resources: “When funds are lacking, a policy that reflects global mainstreaming becomes a means to get resources” (Individual interview, 23 February 2012). A junior government officer at the Ministry of Natural Resources remarked: “Every COP breeds new concepts, principally market-based instruments for climate change mitigation...I really don’t understand, they are in conflict with the needs of the country” (Questionnaire, 4 March 2012). This is therefore perceived as a distorting factor in identifying the needs of the country.

It was apparent from my consultations that the request for climate data and information needed to formulate Malawi’s NAPA was not taken as an opportunity to engage national scientists in producing context-specific knowledge: “Our NAPA was based on international knowledge standards and not at all on local knowledge” (Interview with a climate change scholar, 23 February 2012). According to my key informants, the dearth of climate knowledge in Malawi could be attributed to the limited research work of national academic institutions. As stated by a senior government officer from the Ministry of Natural Resources:

Scientific research is not contextualised in Malawi. Very little research work has been undertaken indigenously. The government does not fund research on climate change. Most of the research is carried out by external institutions, such as international organisations, through consultancy services (Individual interview, 9 February 2012).

The paucity of domestic financial resources is perceived as one of the major challenges to sustained science and knowledge production processes. A senior government official from the Ministry of Natural Resources commented during an interview:

I am aware that most of the information and knowledge on climate change is produced by Western countries. That's why there is a need for more locally generated information. Malawian scientists are trying to fill the gap...The problem is that the government does not fund research, and, as decision makers, we don't have a choice when selecting information to use for policymaking (Individual interview, 10 February 2012).

The same view was expressed in a study by CSAG and the World Bank, which stated that the main responsibility for producing locally relevant climate knowledge rests upon the often under-resourced and under-staffed national meteorological offices (NMHS), whose experience is limited to short-term or seasonal forecasts (CSAG and World Bank 2013).

Kosamu (2013) has noted a lack of clarity in the tasks assigned to the Department of Climate Change and Meteorological Services, which oversees the technical and scientific aspects of climate change in the country. In that regard, Kosamu (2013) underscores the presence of fragmented national mandates on climate change in Malawi: while responsibilities have been historically distributed between environment and planning ministries, technical functions are assigned to the NMHS. This further hampers coordination, communication and resource sharing across government departments, leading to inaction or departmental fragmentation (Turnpenny et al. 2008; Berman et al. 2012). Turnpenny et al. (2008) define 'policy integration' as the capacity of government departments to manage policy issues across sectoral and government tiers, integrating multi-stakeholder perspectives, knowledges and conflicting interests. In the climate change policy domain, challenges in ensuring the integration of cross-cutting issues through joint sectoral policymaking are partly ascribed to siloed or hierarchical views of science. In Chapter 3, I discussed how positivism generated the division of

labour between academic disciplines, discriminating between natural and social science applications (Shackley and Wynne 1996). The difficulty of managing the diversity of science ('interdisciplinarity') is seen by Turnpenny et al. (2008) as one of the leading causes of the limited usability of research and scientific knowledge in policy domains (Gieryn 1983; Shackley and Wynne 1996). In Malawi, limited policy integration between sectoral tiers may explain some of the weaknesses of NAPA (discussed in section 5.2.1), such as the emphasis on quantifiable and monetisable project proposals – at the expenses of socio-cultural assessments – or the limited incorporation of multi-stakeholder perspectives (e.g. local knowledges and women; section 5.3).

The scarcity of funds for climate research severely hinders the development of scientific research infrastructure, such as independent institutes of higher education. It has been observed (Ho-Lem et al. 2011) that countries with larger economies can provide greater funding for research on climate change and engage in international scientific efforts such as the IPCC (Kandlikar et al. 2011). In Malawi, a Capacity Needs Assessment Report (GoM 2011a) shows that national legislation does not encourage scientific research on climate change adaptation and mitigation, weakening the relationship between knowledge generation and policymaking. The lack of locally generated knowledge is therefore perceived by national policy actors as the main reason for having to resort to externally generated information. This tendency may have been occasioned by the UNFCCC pledge to base national climate policies on the best available science, thus creating a need for developing countries to depend on specific analytical capacities (e.g. climate numerical modelling) to mobilise resources, build partnerships and protect national interests in the international policy arena.

As argued by Dilling and Lemos (2011), the availability of international financial support for incorporating climate information into policy planning leads the Least Developed Countries to focus their negotiation strategies on issues of technology transfer and capacity building. During an interview in Lilongwe, two senior government officers

with long-term expertise in applied meteorology and climatology and involved in the UNFCCC pointed out:

The science of climate change has started to be appreciated by stakeholders in Malawi. They are interested in short- and long-term climate projections. There has been growing attention to this matter since 1997, thanks to the influence of UNFCCC and COP processes (Group interview, 11 February 2012).

This statement underscores the influential role played by international scientific and policy bodies in shaping national views on the relevance of climate change science to sectoral public policy, as discussed in Chapter 3. This trend has been documented in different developed or developing world contexts: the activities of international scientific institutions such as the IPCC have led to an increased interest in climate change science from policymakers, reinforcing the widespread perception that policy-useful knowledge coincides with scientifically generated (and expert) information, such as climate change models and projections (Haas 2004; Juntti et al. 2009; Dilling and Lemos 2011; Lidskog 2014).

In that regard, many of the decision makers I interviewed remarked that knowledge production in Malawi is mostly driven by external factors: international policy processes tend to influence the way knowledge is produced and assembled. One interviewee lamented: “Local scientists have not been active in the production of scientific knowledge, they were rather recipients, but are slowly getting involved, thanks also to donors’ requests for evidence” (Interview, 9 February 2012). The prevailing view emerging from my consultations was that when climate change science has direct relevance to national and international policy processes, such as national emission inventories or adaptation plans, international public sources of funding can be leveraged through multilateral and bilateral financial assistance. Scientific legitimacy and evidence-based policies are increasingly required by international development

organisations and bilateral donors, both to increase national accountability and as a condition for accessing financial resources. Likewise, they are increasingly regarded as an integral part of ‘good governance’ in EU countries and at a wider international level (Nowotny 2003; Rayner 2003; Kandlikar et al. 2011).

The reflections presented so far are all the more significant in light of the critiques of development policy mainstreaming discussed in Chapter 4 in the context of postcolonial and post-development studies (Hafner-Burton and Pollack 2002; Charlesworth 2005). Mainstreaming is associated with policy practices (e.g. evidence-based policy) that are deemed institutionally acceptable *because* they are more easily fundable. The international focus on evidence-based development projects has led to a greater emphasis on quantitative data in developing countries (Kandlikar et al. 2011). As argued by Nowotny (2003), with the use of standardised and internationalised measurements and techniques, such as climate change baseline data and models, trust in persons and their subjective judgement is replaced by trust in impersonal and hence objective devices. The separation between *facts* and *values* implicit in the donor’s request for evidence recalls the positivist criteria for objective and scientific rationales and justifications. This principle is embedded in and replicated through the systematic diffusion of auditing and assessment procedures, performance indicators and benchmarking exercises in the development process (Nowotny 2003), as further explored below.

5.2.1 The push for ‘evidence-based’ climate policymaking

The issue of accountability has found an entry point into policy mainstreaming discourse through Monitoring and Evaluation (M&E) practices, described as important tools for identifying good practices and less effective approaches in the context of evidence-based decision-making (OECD 2011; OECD 2012). More specifically, the international framework for accountability in developing countries is provided by the “Paris Declaration on Aid Development and Effectiveness” (2005), which commits participating donors and aid-recipient governments to maintain a coherent approach to development goals. The

donor community has recognised that the complex nature of climate change poses a challenge for on-the-ground monitoring and evaluation of OECD development assistance efforts (ODI et al. 2011; OECD 2011; World Bank, IMF and OECD 2011; OECD 2012). This can explain both the recent trend towards increasing aid's 'value for money' in developing countries and the demand for rigorous assessments of the effectiveness of climate change programmes and projects, to which the release of funds is linked.

The need to enhance the 'climate rationale' of public finance investments and funding proposals (intended as the value-chain providing the best available scientific data and products for actions and decisions) has been recently reiterated by the newly established Green Climate Fund (GCF) on the occasion of several UNFCCC international gatherings, such as the National Adaptation Plan Expo 2018 and the Subsidiary Body for Implementation (SBI) in May 2018. Climate science is increasingly perceived as being at the core of policy and project development and an opportunity for accessing international (bilateral and multilateral) funds (WMO-GCF forthcoming). In 2016, several multilateral development banks (MDBs 2016)¹ agreed on the Common Principles for Climate Change Finance Tracking, defining the context of adaptation and mitigation finance in development. At the core of the joint approach was the need to identify definite links between the proposed project interventions, climate risk, and vulnerability. Hence the methodology was grounded in several steps, including climate trends analyses, which allow distinguishing between 'climate' and 'development' projects. Accordingly, funding institutions have launched programmes and initiatives aimed at facilitating project developers' and decision makers' access to scientific information (WMO-GCF forthcoming). The World Bank's Agricultural Sector Risk Assessment (ASRA) methodology offers an indicative categorisation of the climate hazards most relevant to the agricultural sector and a recommendation on relevant scientific inputs to be factored in sectoral investments.

¹ Multilateral Development Banks: Inter-American Development Bank, Inter-American Investment Corporation, African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, European Investment Bank, World Bank.

The GCF climate rationale methodology aims at strengthening the evidence base of projects, policies and investments through standardised methodological approaches (WMO-GCF forthcoming). In that regard, some developing countries see the value-for-money approaches as a trend towards increased ‘aid selectivity’ where donors decide aid disbursements based on specific developmental criteria, such as income or institutional performance of recipient countries (Kandlikar and Sagar 1999; Dollar and Levin 2006; Pasgaard and Strange 2013). The emphasis on climate rationale may also be read as an attempt to further institutionalise the links and relations between global scientific (e.g. IPCC) and international governance organisations (e.g. UNFCCC) created in the last 30 years. Hulme (2008) defines this trend as ‘geopolitical engineering’ aimed at designing solutions that bring together insights from climate scientists and policymakers across policy scales (Chapter 8).

Malawi is facing a donor-driven and exogenous demand for knowledge generation, in which analytical work tends to be focused on specific issues that may reflect external priorities and agendas. Not only does the donor-driven request for evidence influence the national research agenda, but also what is considered relevant in terms of scientific knowledge. Thus, knowledge generation and national policies are not always designed to meet the country’s needs, but rather the international standards that allow access to climate finance: “The knowledge produced in the southern countries is mostly designed to aid in tapping funds that are controlled by the rich North; one way or the other, this compromises the independence of the South’s think-tanks” (Questionnaire, junior-level government officer in the Ministry of Natural Resources, 14 March 2012). This statement reflects the concern that financial dependency may negatively affect policy processes in Malawi, which risk not being relevant to national or local contexts and needs, as well as project design and implementation.

Dependence on international aid is compounded by the skewed balance of climate change knowledge production, which not only makes Malawi dependent on globally generated

knowledge but also affects the potential use and integration of locally generated knowledge into context-relevant policy advice, as explored in the next section.

5.2.2 Defining knowledge, determining capacities

The narrative of accountability in the international climate change policy framework, which has gradually contributed to defining capacity and technology gaps and needs in developing countries, has led to international initiatives aimed at equipping Malawi with evidence-based policies and projects.

Malawi has been especially active in international climate negotiations through the LDC Group, a body of “48 nations that are especially vulnerable to climate change but have done the least to cause the problem” (LDC Group 2014). The Malawi position paper (GoM 2011b), presented in Durban on the occasion of the 17th Conference of Parties to the UNFCCC, reflected the group’s position, focusing on enhanced action on capacity building to draw up National Communications and Greenhouse Gas Inventories, as well as fundable adaptation and mitigation programmes. The group was particularly active in demanding special treatment for the Least Developed Countries, such as support for the development of NAPAs mandated under the Marrakech Accords (2001).

Malawi’s NAPA (2006) underlines a strong political will to promote technology transfer and develop evidence-based systems for advising stakeholders, especially as regards climate and weather monitoring (GoM 2006). Out of five project profiles developed, one in particular, “Improving Community Resilience to Climate Change Through the Development of Sustainable Rural Livelihoods”, managed to secure the funds needed for implementation. The largest share of the funds (35%) would go to address gaps in meteorological information needed for the planning and decision-making processes. The GoM reiterated its position in the “Malawi Growth and Development Strategy II” (GoM 2012a), acknowledging the country’s vulnerability to the effects of climate change and stating the need for improved information management systems to increase resilience to climate risks.

However, several challenges to the implementation of NAPA were later identified by the GoM. Among them were difficulties in transferring technologies, poor infrastructure, and insufficient analytical capacity at the central and departmental government levels to assess threats and potential impacts of climate change on key sectors (GoM 2006). One of the main weaknesses of Malawi's NAPA is that adaptation efforts were designed as specific and discrete actions, neglecting the cross-cutting value for multiple sectors (Stringer et al. 2010). Most of the projects included in the NAPA focused on specific sectors; furthermore, vulnerability and adaptation to climate change were analysed through sector-specific lenses (ECBI 2007). The lack of an integrated approach – and a general disregard for the wealth of local experiences (section 5.3) – was apparent, especially in the projects targeting climate-affected communities (ECBI 2007; Stringer et al. 2010). My empirical chapters will further analyse the narratives of the climate-affected communities and suggest an integrated historical and socio-cultural approach to frame and understand climate change vulnerability and adaptation at the local level.

The challenges faced by Malawi as well as by many other LDCs while designing, financing and implementing their NAPAs (ECBI 2007) can be attributed to the specific assumptions underlying access to financial support, as policy-related or project demonstration activities were favoured over context-relevant research. Many of the projects that have since been designed and implemented in Malawi reflect the sector-specific and short-term risk-management approach endorsed by the NAPA. Some of them draw clear conceptual differences between climate change adaptation (CCA) and disaster risk reduction (DRR) in the country. A sharp policy differentiation between DRR and CCA has serious implications at the local level (Cardona et al. 2012). These boundary perspectives can hinder the integration of Kasache's stakeholder perspectives (and interrelated socio-cultural values) into policymaking and the possibility of transformative outcomes, as further discussed in Chapters 6 and 7.

A political ontology approach (Blaser 2014) may offer helpful insights into the challenges linked to the implementation of NAPAs. The epistemological and ontological tension between the concepts of DRR and CCA in Malawi's NAPA echoes the classic understanding of science in Western thought. In Chapter 3, I pointed to the separation between nature and culture, body and mind, as one of the distinct features of the positivist scientific apparatus (Merchant 2006; Blaser 2014; Glazebrook 2016). This binary, which disembodies the conditions of nature from daily livelihoods (society, culture and, ultimately, power), has been incorporated in the practice of climate risk management through the concept of 'resilience' (Birkenholtz 2011; Crate 2011). The idea of resilience originates in the ecological sciences, which disconnect socio-ecological systems from the political-economic relations in which they are embedded (Birkenholtz 2011). According to this view, the occurrence of natural and human-induced disasters largely depends on biophysical factors that tend to be analysed through the application of quantitative model-based techniques (Hulme 2011).

In the early 2000s, the DRR and CCA research community and practitioners highlighted the necessity to shift the focus of resilience-based research and practice towards an integrated social-ecological approach (Mercer et. al 2010). The latest IPCC Special Report on "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation" (2012) particularly stressed that a greater integration between CCA and DRR (linking CCA long-term and global perspectives with DRR short-term and local approaches) should centre on a shared concept of risk management. This would encompass socio-territorial and temporal considerations, since both adaptation and disaster risk management depend on the understanding of the local dimensions of exposure and vulnerability. The conceptual shift ushered in by the IPCC (2012), however, does not yet problematise in depth the ontological assumptions behind the concept of risk (e.g. how individuals interpret information in the context of experience and beliefs): it keeps prototyping nature and culture as separated, and treats human exposure and response to environmental perturbations as an outcome of 'rational' actors. Current approaches to

risk analysis, for example, acknowledge the role of social capital in shaping vulnerability, yet they fail to consider local structures of resource allocation or issues of social justice, human security and equity (Birkenholtz 2011). Neither the DRR's nor the CCA's approach to resilience questions the culturally biased ontological assumptions; thus, both struggle to identify the contextual underlying causes of vulnerability and context-relevant solutions to extreme weather events and climate change (Birkenholtz 2011; Crate 2011). The case of Kasache in Chapters 6 and 7 paves the way for questioning the overall mainstreaming of climate vulnerability and risk-management approaches (e.g. gender vulnerability) with a focus on local processes of social power that mediate vulnerability and adaptive capacity, thus shaping the effects of climate change policies.

The capacity to perform risk analysis in public policy institutions is also linked to the availability of technical, managerial and planning skills, as risk assessment is mainly based on statistical forecasts of physical events, thus reinforcing specific framings of capacity gaps. As a consequence of risk-management mainstreaming, NAPA-funded projects in Malawi and elsewhere have been mainly focusing on capacity transfer in accordance with the global development agenda (ECBI 2007; Biagini et al. 2014).

While the emergence of climate change as a quantitative and science-based issue led to the perception that the transfer of capacities and technologies is a necessity, the attribution of specific features (technology-driven, data-led) to climate change knowledge influenced the perception of what was missing in terms of institutional capacities and individual skills, contributing to the definition of 'climate change knowledge divide'.

5.2.3 The limits of the climate change knowledge divide

Decision makers in Malawi perceive a widening gap between the Global North's and South's capacity to conduct climate research and analysis and, consequently, to contribute to international policy debates and processes. The majority of the policymakers I consulted emphasised the significance of knowledge gaps in Malawi, mainly related

to the lack of climate downscaling models and scenarios and the scantiness of climate data. There is a shared belief that prescriptive physical and quantitative sciences are at the core of decision-making.

The academic literature on climate change knowledge gaps confirms this. As noted by Kandlikar and Sagar (1999) and Pasgaard and Strange (2013), the situation in the Global South is in stark contrast to the tremendous growth in scientific capability and infrastructure observed in the North through increased funding for climate change research. The wish to compensate for the lack of scientific capacity in the Global South was in fact one of the factors driving non-Annex I countries to shift the focus of international negotiations from an environmental to a more development-centred perspective (Bodansky 2001; Gupta et al. 2007).

Most research on climate change currently comes from the North, often with assumptions that cannot be transposed to the South (Kandlikar and Sagar 1999; Pasgaard and Strange 2013). Pasgaard and Strange (2013) noted that different knowledge domains and research themes characterise different global regions, reflecting divergent concerns about climate change. Research in developed countries particularly tends to focus on mitigation, while issues of adaptation and human and social impacts (droughts, floods, famine and diseases) dominate in the developing countries. In other words, most knowledge products do not reflect the needs of the majority of the global population dealing with climate impacts and extreme weather events (Pasgaard and Strange 2013).

The concept of knowledge divide is implicitly endorsed by IPCC global scientific assessments as well as by development policy practices (Hulme 2017). While the former frame knowledge gaps around the concern to reduce uncertainties through knowledge integration across scales and actors (section 5.3.1 for further discussion), the latter wish to bridge scientific knowledge and policy action through technological and capacity

transfer to countries in need. The idea of a North-South knowledge divide in turn implicitly shapes the way scientific, technical and policy capacities are perceived among decision makers in specific country contexts and tends to facilitate acceptance of the power-laden issues behind climate change knowledge gaps.

This theme has particularly emerged from the set of interviews (see Table 7) with government officers I conducted in Addis Ababa (Ethiopia) during a regional training workshop on National Adaptation Plans (NAPs) in April 2014. On behalf of the United

Table 7 – Perceived capacity gaps in adaptation in selected African developing countries

N°	Country	Position/Expertise	Statement	Key words
1.	Malawi	Senior-level government officer Environment	<i>Malawi indeed has gaps in some areas where we definitely need assistance. For instance, when we are talking about adapting to climate change, we need to develop various scenarios and also assess the vulnerabilities... (15 April 2014).</i>	Scenarios Vulnerabilities Information Data
2.	Rwanda	Senior-level government officer Environment	<i>Let us have scientific assessments...if you don't have enough data on rainfall you can propose solutions that are not adequate. That is why we need capacity in terms of data collection, data processing, data reporting and information sharing... (16 April 2014).</i>	Assessments Data Capacity Information
3.	Ethiopia	Mid-level government officer Environment	<i>As regards the capacity gaps, there are inadequately trained experts; that is a gap in skills, especially for vulnerability risk assessments, for climate change scenario development and sometimes for downscaling climate models, too (16 April 2014).</i>	Experts Vulnerability Assessments Scenarios
4.	Sudan	Senior-level government officer Economic and Planning	<i>What is important is the availability of climate regional models...we need such technology to work on climate change adaptation (17 April 2014).</i>	Qualified staff Models Technology Adaptation
5.	Lesotho	Junior-level government officer Energy and Meteorology	<i>For us to be able to implement the NAP we first need to identify and develop climate change future and current scenarios, as well as knowing how to do a cost-benefit analysis of adaptation (17 April 2014).</i>	Scenarios Cost-benefit analysis Capacity Technical skills

N°	Country	Position/Expertise	Statement	Key words
6.	Zambia	Mid-level government officer Environment	<i>Capacity gaps, for instance, at the individual level mean that we don't have adequate skills for doing scenario planning (17 April 2014).</i>	Capacity Scenario-planning Assessments Planning
7.	Guinea	Senior-level government officer Environment	<i>The main starting point for this programme is to solve this challenge about capacity. By providing capacities as well as relevant networks with other experts, this programme can help us to develop all the elements that we need to undertake scenario evaluation, identification and prioritisation of adaptation options, and all that is required for an integrated development process (23 April 2014).</i>	Capacity Expertise Scenario-evaluation Adaptation options

Nations Institute for Training and Research (UNITAR), I interviewed 19 people from different African countries, including Malawi. I specifically asked what capacity gaps they perceived in their country in relation to adaptation planning and what kind of international support they might need to develop and implement a national adaptation plan. Most of the respondents, namely 13 out of 19 (about 68%), clearly blamed national gaps in adaptation planning and climate change mainstreaming on the lack of capacity to produce climate models and scenarios and on the inability to link climate information with policy development.

The statements summarised in Table 7 underline the centrality of capacity building, which is linked to the technocratic nature of climate change needs (models, assessments, scenarios) and aims to maximise financial assistance and technology transfer from developed to developing countries. They also bring up the idea of a knowledge divide (in both technologies and capacities), which, however, does not facilitate the development of national adaptation plans or policies.

Despite being overly endorsed by many national policy documents, the concept of knowledge divide does not adequately diagnose and address Malawi's climate knowledge gaps, assuming that science and technology are universally valid and can be

seamlessly replicated or transferred from a northern to a southern context (Escobar 1995; Everett 1997). The idea of a knowledge divide implies the possibility that progress and capacities of developing countries might be measured against northern standards, and fails to recognise knowledge as co-produced in multiple cultures and linked to power processes. Postcolonial studies have already highlighted the inherent contradiction of a supposed universal and objective body of knowledge called ‘science’, which is in fact a context-specific experience linked to industrial capitalism in north-west Europe: “science was never uniquely Western, having its origins in a wide variety of cultures, including Islam, India and China” (Turnbull 1997, 552).

The concept of knowledge divide does not question the fundamental validity and applicability of a specific knowledge frame to a range of different contexts. Dilling and Lemos (2007) argue that the availability of high-resolution climate information is not always beneficial, since it often creates winners and losers at the local level in vulnerable contexts. For instance, poor farmers in Zimbabwe or Brazil risk being denied credit from bank managers when seasonal forecasts of reduced rainfall are disseminated and higher credit risk provisioning is expected (this case refers to climate variability, given the short/medium-term of the predictions, see Dilling and Lemos 2007). Climate science applications can produce negative outcomes at finer spatial scales when pre-existing conditions of inequality and vulnerability are not adequately taken into account. In Chapter 7, I will discuss how climate change and variability responses among female farmers are linked to local power structures. Feminist science studies, such as Chandra Mohanty’s (1994) argue against the ideal of ‘Third World Women’, criticising the notion of a homogenous group, constructed against Western women’s educational, social or cultural standards, which does not explain the powerful effects of anthropocentric and androcentric knowledge traditions.

Furthermore, the idea of a predetermined science-led, highly technology-dependent knowledge ties decision makers to the availability of specific skills, locking developing

countries in a perpetual state of *lack* of capacities and donor-driven support. Fundamentally, by not criticising the ontological assumptions, scientific paradigms and ethical frameworks behind climate knowledge gaps, the concept of knowledge divide does not recognise the underlying power relations embedded in colonial and postcolonial history, which make developing countries' efforts seem 'deficient' compared to Western knowledge standards. Several postcolonial scholars (Whitehead 1981; White 1996), for example, criticised British colonial education policies for influencing local knowledge systems through the epistemological process (from framing problems to generating questions). The British Colonial Office paid little attention to pre-existing forms of education in Africa – mostly happening in a community setting – and replicated the English syllabus and curriculum, focusing on literacy skills or preparing students for administrative and secretariat jobs. Many of the local schooling practices, which included story-telling, unconscious socialisation, apprenticeship and initiation practices, were gradually lost in favour of a greater attention to reading and writing, result-based performances, and certificates (White 1996). One of the signposts of British colonial education was the emphasis on rationality as a means of transforming the colonies into Western *civilised* societies through education (White 1996). As argued by White (1996), many former colonies in Africa still struggle to develop culturally sensitive school curricula that do not refer back to colonial education systems. In section 5.3 as well as in Chapter 6 and 7, I will further reflect on national and local actors' possibilities for agency in Malawi within existing relations and structures of power.

Moreover, as extensively discussed in Chapter 4, development agencies promoted specific political and organisational models (centralised and output-based rather than process-based). Such models defined decision makers' expectations about how the public sector should be organised as well as the perceived technical capacity gaps and needs, yet they were often in contrast with local historical and cultural ways of fulfilling public functions. Supply-driven assistance to LDCs, based on extensive expatriate technical support and proliferation of donor schemes, can undercut the domestic capacity to

reform, leading to confusion and duplication (Ferguson 1994; Michalopoulos 1999; Easterly 2002; Brautigam and Knack 2004).

Brautigam and Knack (2004) argued that aid support can be institutionally destructive in many ways: by lowering the tax effort, fragmenting the central capacity for policy formulation, undermining policy learning, reducing pressure to maintain a favourable environment to the private sector and, more generally, creating paths of aid dependency and instigating passivity and lack of disagreement towards donor requests in government officers (Brautigam and Knack 2004). In Malawi, many of the national decision makers I interviewed lamented both a lack of national research institutions supplying policymakers with context-relevant information and a lack of funding priorities on climate change research. According to them, this specific deficiency “exists by design” (Interview, 10 October 2012). This seems to reflect a common, documented situation in LDCs, where policy-planning processes have been mainly designed to ensure the right allocation of scarce resources rather than to encourage process-based learning or context-relevant research (Ferguson 1994; Easterly 2002; Brautigam and Knack 2004).

The concept of knowledge divide neglects the influence of colonial authorities first, and development aid organisations later, on the reorganisation of the public and education sectors, civil service and bureaucracies in developing countries. In the following sections, I will explore Malawi’s policymakers’ narratives, holding in tension the epistemological pluralism (or the multiple ways of understanding climate science) expressed by interviewees and the Western ontological dualism underlying global climate change discourses. These reflections will show alternative (to the positivist) ways for experiences and worldviews from the South to gain visibility in the climate change knowledge debate, as well as the conditions that may unlock situated knowledges.

5.3 Situating science and knowledges

Global climate change discourses do not affect Malawi only at a national policy and

knowledge-making level. This is evident from the interviews with decision makers who deal with the day-to-day tensions between global standardised narratives and contextualised experiences of climate change. Although reflections on the knowledge and policy divide (section 5.2) may suggest that the country is ‘subjugated’ (Foucault 1972; 1982) by the international hierarchies of economic and political power, at the very individual level policymakers expressed original and hybrid views (further discussed in section 5.3.2), carving out a space for agency and subjectivity.

My consultations with decision makers in Malawi usually started with questions about individual perspectives on the interplay between climate change science, knowledge and policy in the country. My aim was to understand to what extent climate change science was perceived as central to day-to-day policy planning and decision-making. The responses from the interviews and questionnaires were in line with what had emerged thus far from the analysis of policy documents. The links between climate science and the policy sector are considered very relevant by the majority of interviewees. One of the senior interviewees from the Environmental Affairs Department remarked on the type of knowledge needed for decision-making: “Policymakers need evidence-based information in order to inform the policymaking process, specifically regarding climate change risks and impacts for the local context” (Individual interview, 10 February 2012). At first glance, climate change is perceived as a scientific issue, and knowledge should be produced by globally recognised organisations like the IPCC in order to be usable and reliable.

International institutions of science and policy assessment, such as the IPCC or the UNFCCC, stand out as the main reference sources for policy planning and decision-making in Malawi. The responses shown in Table 8 suggest that decision makers in Malawi mostly reproduce a positivist narrative where value-free information is considered a necessary element for relevant policymaking on climate change. This has been also observed in other contexts (from the Global North) where institutionalised practices

of decision-making seem to rely heavily on scientifically generated knowledge that is usually regarded as neutral and free from the influence of non-scientific interests (Juntti et al. 2009). In the case of EU policy assessments, for example, a narrow understanding of “what counts as evidence (particularly results from cost-benefit analyses) tends to prevail” (Juntti et al. 2009, 212).

While, on the one hand, decision makers are highly attracted to physical and quantitative sciences, on the other hand, they believe that there is a close connection between science, knowledge and policymaking, which should be somehow strengthened in the climate change debate. As evidenced by the comments reported in Table 8, there seems to be an institutional disconnect between climate change science and policy in Malawi.

Table 8 – Perceptions of the climate change science-policy linkages

N°	Organisation	Position/Expertise	Statement
1.	Government	Senior-level government officer Environment	<i>There are no deliberate efforts to link science with policy, or academia with government institutions (Interview, 10 February 2012).</i>
2.	Government	Senior-level government officer Environment	<i>There are no formal and institutionalised links between academia and institutional structures in Malawi (Interview, 9 February 2012).</i>
3.	Government	Senior-level government officers Climate change	<i>We seldom work with academia in Malawi. For example, consultations and data-sharing occur on individual and ad-hoc bases. There is no structure in place (Interview, 11 February 2012).</i>
4.	Academia	Junior-level lecturer Environment	<i>What’s really missing is the gatekeepers, or bridges, whether institutions or individuals, between policymakers and scientists (Interview, 13 December 2011).</i>

Unlike in developed countries, where government bodies often commission research from academic institutions or can access in-country expertise through well-established institutional channels (Grundmann 2007), global assessment reports are the main source of climate change knowledge in Malawi (Table 9). According to my interviewees,

no significant efforts have been made in Malawi to link academia with government institutions, thus limiting the opportunities for local knowledge generation and increasing dependence on external sources. An interviewee from the Environmental Affairs Department pointed out that: “There is a strong and clear link between climate change science and policy, but that is not reflected in the institutional setting in Malawi” (Individual interview, 10 February 2012). There is a widespread perception that institutional spaces or organisations that may connect local knowledge producers with the final users are missing. A case in point is the lack of bridging institutions (such as the IPCC at the global level or the Euro-Mediterranean Centre on Climate Change in Italy) connecting the scientific and policy realms. Neither knowledge producers (Malawian academics) nor knowledge consumers (Malawian policymakers) have the capacity to produce policy-relevant knowledge. The weakness of its climate research institutions prevents Malawi from fully participating in the process of knowledge production, as well as impeding efforts to assess other knowledge traditions and incorporate them into policymaking.

Science and policy are thus perceived as two distinct entities separated by fixed and stable boundaries – and hence conceptualised as two discrete domains, for which the challenge resides in constructing bridges that will allow them to better communicate (Lidskog 2014). This is the science-policy model idea underlying the IPCC, where information and knowledge are seen as elements to be linearly transmitted to policy. An alternative conceptualisation, which gradually emerged from my consultations, highlights the presence of blurred, fluid and dynamic boundaries between the two entities and a process of mutual influence (Lidskog 2014).

5.3.1 External influences and local knowledge: co-production or integration?

What emerged from interviews with national policy actors in Lilongwe indicates that a significant line of tension runs through Malawi’s policy production process. While

global climate science is perceived as culturally biased, its authority and legitimacy are rarely questioned.

The interview excerpts from Table 9 suggest the pervasive influence of scientific knowledge produced in the Global North on climate change international negotiations and in defining Malawi's bargaining power (the IPCC reports are like "reference points").

Table 9 – Perceptions of the influence of Global North knowledge on policymaking in Malawi

N°	Organisation	Position/Expertise	Statement
1.	Government	Mid-level government officer Environment	<i>That [Global North knowledge] has always been part of the basis for individuals to understand and know more in the field of climate change. In other words, it is a reference point (Questionnaire, 12 March 2012).</i>
2.	Government	Senior-level government officer and climate change negotiator Environment	<i>Global North knowledge influences knowledge-policy production through Malawi's participation in climate change debates and agreements (Questionnaire, 23 July 2012).</i>
3.	Government	Senior-level government officer Environment	<i>Malawi signs climate change conventions and protocols that are influenced by climate change knowledge produced by the Global North (Questionnaire, 12 March 2012).</i>
4.	Government	Mid-level government officer Development and Planning	<i>It [Global North knowledge] informs the decisions made by policy managers in government as well as in other non-state organisations; for example, the government of Malawi has identified climate change and environment management as a key priority area (Questionnaire, 15 March 2012).</i>
5.	Government	Junior-level government officer Environment	<i>So yes, the Global North dictates to Malawi too, to some extent, and not all the dictates are bad, but one can't effectively negotiate with another who is miles ahead in knowledge (Questionnaire, 4 March 2012).</i>
6.	Academia	Mid-level lecturer Environment	<i>We are aware that most of the knowledge we use is produced in the Global North. There is an issue of trust – everybody trusts the IPCC – but there is a lack of data and skills that prevents us from being able to analyse data and question global phenomena from a local perspective (Interview, 23 February 2012).</i>

According to my informants, climate change knowledge is perceived as usable when it relies on positive criteria and is standardised and data-led. Among the defining elements of ‘certified’ science from a positivist perspective are its objectivity and freedom from distorting factors that may alter the way the object of study is detected, measured and reported (Juntti et al. 2009). The views reported in Table 9 reflect the pivotal role of predictive natural and earth sciences in shaping climate change discourses. What this entails is that the positivist epistemological fundamentals of climate science are not questioned; however, because of the North-South knowledge divide, climate science is widely acknowledged as benefitting those countries that are able to produce it and use it to their own political advantage (e.g. industrialised countries).

While global climate science is perceived as being culturally biased and influencing knowledge and policy production in Malawi (Table 9), the questionnaires administered to the same audience of policymakers show that its fundamental authority and legitimacy are not questioned. It seems that, at least in the context of my research, science’s exposure to culture is considered by decision makers as an added value (rather than something it should be purified from, as in positivist tradition). This may point to alternative criteria of rationality and judgement for science usability and may be explained by the fact that scientific knowledge is generally perceived by decision makers as providing both universal validity *and* usability (see the definition of policy-usable knowledge discussed in Chapter 3) to policymaking. These contradictory views have also been documented in Global North contexts (Juntti et al. 2009). According to several authors, this paradox is explained by the fact that expert-led knowledge has been increasingly institutionalised through the IPCC and embedded into decision-making and knowledge production processes without questioning the implicit historical and geographical marks of power, projecting expert-led knowledge as truly objective and value-free (Hall and Taylor 1996; Juntti et al. 2009; Lidskog 2014).

Policymakers' hybrid views open up the potential for a more nuanced and less essentialist approach to climate science and knowledge production. The responses above could be interpreted through an anthropological lens whereby 'science' (and its focus on the mastery of nature) carries different meanings in different contexts (Ingold 2010). Critical anthropological and socio-cultural constructivist perspectives highlighted the tensions and negotiations between positivist scientific contributions, which were attributed to disinterested observation and rational analysis, and non-Western rational accounts that generally seek the integration between subjective experiences and beliefs in the continuity from physical environment to social relations (Watson-Verran and Turnbull 2001; Gottlieb 2004; Snodgrass and Tiedje 2008; Neumann 2000; Eneji et al. 2012; Smith 2012; Turnbull 1997; Ingold 2010; Leach and Davies 2012). As I will argue in Chapter 6, some knowledge claims on climate change that emerged in Kasache could refer to relational ontologies, which interacted with the naturalist ontologies characterising the positivist scientific thought introduced during colonial rule. I will particularly discuss how local environmental beliefs were instrumentally appropriated by Scottish missionaries under colonial rule to foster acceptance of Christian precepts through spiritual practices.

In that perspective, the value and meaning of knowledge do not arise solely from a common cultural baseline (e.g. the superiority of mind over nature), but from the applicability and effectiveness of knowledge (in the form of skills or practices) in specific socio-cultural contexts, defined as situated rationalities or knowledges (Haraway 1991; Turnbull 1997; Nightingale 2016). The concept of situated knowledges (Haraway 1991) provides a useful frame for observing the epistemological and ontological tensions between different ways of understanding climate change. According to this perspective, different ways of knowing and experiencing climate change are always embodied in limited and partial (because originating in finite time and space) socio-historical and spatial locations. As Haraway (1991) points out, scientific accounts of reality do not depend on a positivist logic of discovery (which assumes that there is only one reality to be discovered), but on power-laden social relations. Individual stories, habits, disciplinary biases, etc. affect the

ways biophysical and socio-political change is conceptualised, learned and experienced by individuals (Nightingale 2016). Likewise, when reflecting on the authority of climate science, policy actors in Malawi offered situated and hybrid responses, mixing aspirations and commitment to universal standards of objectivity with the desire for context-relevant advice. The hybridity of climate change discourse emerged especially when discussing the validity and utility of climate science for national and local contexts. The ways in which local knowledge is understood are manifold. This diversity seems to match a variety of presumed policy needs. More profoundly, it accounts for the ways biophysical change interacts with socio-cultural understandings and practices of climate change.

Government officers from Malawi's meteorological department (DCCMS, Department of Climate Change and Meteorological Service) stressed the need to integrate local climate data into global and regional models. DCCMS interviewees expressed the wish to have the international knowledge produced by the IPCC translated into local-level scenarios. According to them, one of the greatest weaknesses is the lack of climate change assessment tools or models to be used at the finer spatial and temporal scales. Local knowledge, they believe, often coincides with downscaled climate models: "Policymakers in Malawi are especially interested in the use of seasonal forecasts, for example rainfall variability and distribution, to evaluate the impacts of weather variability on food security and disaster risk management" (Group interview, 11 February 2012). A similar interest for specific time- and place-sensitive climate change information was shared by the representatives of several ministries and departments that regularly demand seasonal forecasts for different purposes, mainly linked to agriculture, water and DRR planning.

Thus, just like numerical weather forecasts or global climate models, local knowledge is seemingly considered valuable when it shows a kind of predictive or projecting ability: "At the community level, indigenous knowledge of climate and weather allows the locals to *know* when to plant crops" (Questionnaire, junior-level government officer in the Ministry of Natural Resources, 14 March 2012). According to my informants, this

type of knowledge can enhance local-level coping mechanisms against increased climate variability, as it is embedded in the local context. In this sense, local knowledge is perceived to offset the limitations of global climate science in performing downscaled projections, providing evidence for site-specific issues and processes. Downscaling models are perceived in turn as valid *substitutes* for local knowledge. There is a risk, though, that these conceptualisations may standardise and transform local knowledge systems to fit the epistemological and ontological premises of Western science (Turnbull 1997; Nadasdy 1999). Local knowledge usability is in fact assessed against scientific benchmarks and positively valued when showing scientific attributes. This narrative recalls the essentialising Western characterisations of indigenous knowledge or Third World Women (Chapter 4).

Policymakers who were more active in UNFCCC processes viewed local knowledge as a practice that facilitates socio-political relations. More specifically, local knowledge – in the form of weather indicators or maps – is perceived to be useful in international negotiation processes. The capacity to produce climate data is key to acquiring political leverage in international negotiations, since climate data allows localising climate change impacts, increasing the chances of mobilising financial and technical support. This view is probably linked to the international donors' request for evidence and accountability (section 5.2):

Locally relevant knowledge about the impacts of climate change has a significant impact on climate change and policy issues discussed at international level in fora such as the COPs, where discussions focus on issues that include adaptation and funding of countries that are particularly vulnerable to the impacts of climate change (Questionnaire, junior-level government officer in the Ministry of Natural Resources, 13 March 2012).

The role and responsibilities of the junior government officer, regularly engaged in climate change negotiation processes, were seemingly central to his response.

Another view that emerged from the questionnaires emphasised the experiential character of local knowledge from sedimented socio-cultural practices: “At the community level, knowledge of the effects and adaptation to climate change has evolved over time as a result of local experiences” (Questionnaire, senior analyst in a national NGO, 13 March 2012). A similar remark was made by a junior environmental expert working for the government: “People have been noticing that the climate started to change, they have been adapting and they have local knowledge of how to survive, it just hasn’t been documented” (Questionnaire, junior-level government officer in the Ministry of Natural Resources, 4 March 2012). This type of situated knowledge is gained through natural resource management, food production or household tasks, rather than by collecting documents, calculating indexes or developing maps. Knowledge produced through daily local practices and experiences is perceived as disconnected from the *technical* knowledge used by national decision makers to negotiate in the international arena. Local knowledges, seemingly excluded from the assessment process because devoid of certain positivist characteristics (e.g. abstraction, objectivity, etc.), are thus assigned a potential role in decision-making. The definition of useful knowledge is expanded to include practices that, although not abstracted nor made discursive, are relevant and *effective* because they match particular sets of values or needs (Turnbull 1997) in the context of Malawi.

These interviews offer insights into the multiple interpretations of local knowledge, which can be official, data-led and internationally standardised; informal, sparse and disaggregated when produced by local communities (and seldom used during conferences); practical and politically negotiated to pursue national strategic objectives. The terms local and indigenous were used interchangeably, showing a lack of awareness of the conceptualisations, struggles and debates behind these concepts (see Ingold 2010 for a reflection on the definition of ‘indigenous knowledge’). However, an understanding of the epistemological and ontological assumptions behind different kinds of knowledge is key to defining and negotiating their usability for policymaking. Most decision makers, for instance, perceive local *or* indigenous knowledge to be of *complementary* value to the

knowledge produced by global institutions. This understanding assumes the possibility for local knowledges to be purified or ‘extracted’ from the context of their production and integrated into the official scientific mainstream. The assumption is that the integration of local or indigenous knowledge with scientific expert advice will increase overall understanding of climate change impacts and response strategies, improving climate risk management and adaptation processes.

This view is intimately connected with an epistemological pluralism – the assumption that different viewpoints can be integrated and combined to better understand one reality – that, however, does not question the Western unilateral ontological approach to science (one reality, different viewpoints). Its emphasis is on the role of institutions (e.g. knowledge-sharing platforms) or practices (e.g. nominal inclusion) upon which knowledge interactions are based. Furthermore, the recognition that socio-cultural values are embedded in all types of knowledge has encouraged the use of stakeholder participatory approaches to development (Cornwall 2013; Arcand and Wagner 2016; Buggy and McNamara 2016). In Chapter 7, I will explore the concept of community-based adaptation (CBA), which relies on the assumption that the quality of climate change projects will benefit from a greater involvement of local communities through the integration of inputs from contextual and practical knowledges, experiences and values.

However, several STS scholars argue that, by breaking the links with local systems and relations of power, the integration process forecloses the formulation of locally appropriate and effective policy solutions, thus binding local knowledges to the ontological premises of Western thought (Popke 2015; Burnham et al. 2016; Goldman et al. 2016; Klenk et al. 2017). Some of the adaptation projects I analysed in Malawi, despite being inclusive and participatory in nature, relied on institutionalised expert knowledge, producing unintended impacts such as the exacerbation of gendered relations (Chapter 7). The hybrid views expressed by Malawi’s policymakers are further exemplified below, where I point to several policy implications of the North-centred knowledge approach in the global climate

change discourse. The recognition of different and situated understandings of ‘knowledge’ could challenge the standard and hegemonic definition, requalifying those practices that are effective for certain people in specific contexts (Ingold 2010; Leach and Davies 2012).

5.3.2 Unsettling knowledge hierarchies?

While my informants were aware of the influence of northern science on national policy processes and local knowledge systems, they seemed to have difficulty in discerning the level and forms of influence of positivist ontological assumptions (e.g. the nature-culture dualism).

In this regard, the point made by a UN technical adviser from a former colonised African country is highly relevant:

We don’t feel that international science is imposed from the Global North to the South. We feel it as ours. Lots of professionals and scientists in developing countries don’t look back indeed, they don’t appreciate where they come from, and this is mainly because of the educational structure that embeds characteristics of Western sciences and knowledge systems. We really need to think about how to revise our education system (Interview, 13 February 2012).

His words reflect how Western conceptualisations of science and objectivity (and the worldview they are based upon) have been instilled in many professionals, scientists and decision makers from the South through the colonial education system (Whitehead 1981; White 1996).

Despite the debates on educational reforms that started in south-eastern Africa after colonial independence and continued when neoliberal development policies were implemented, teaching and research curricula do not seem to have been substantially altered (Goodman

et al. 2009; Heleta 2016). As noted by Heleta (2016), South Africa's higher education curriculum has not been significantly changed since the end of apartheid in 1994. It has remained largely Eurocentric, promoting Western standards of rationality through stereotyped representations of the African continent, skills, and figures, particularly in the humanities and social sciences. In Chapter 6, I will discuss some stereotyped views of natural resource management dating back to colonial British rule that keep emerging in farmers' narratives in Kasache.

The pervasiveness of both the colonial British education system and the bureaucratic development machine help to understand why it is so hard to pinpoint the influence of global scientific institutions on the process of knowledge generation and acquisition in the South. As argued by PCSTS and FSTS scholarship (Harding 2008), positivist science has deep roots and foundations in many cultures and places around the globe, making traditional Western science more pervasive, even outside Europe and North America. Goodman et al. (2009) and Heleta (2016) suggest that a critical rethinking of the education curriculum will stem from reframing the history of Africa as the outcome of entrenched histories of patriarchy, slavery, imperialism, colonialism and capitalism. Simply placing 'Africa' (or African countries) at the centre of teaching, learning and research may, however, reproduce positivist binary thinking, and hence Goodman et al. (2009) propose an approach that looks at how race, ethnicity, gender, class and nationality interacted to determine marginalisation and erasure of local knowledge systems. This could unveil the colonial legacies and deep biases that keep permeating methods, formulations and substantive positions in African academy (Lugones 2010; Heleta 2016). In Chapter 7, I will further reflect on the possibility of 'decolonising' (Lugones 2010) gender mainstreaming and participatory approaches in development, by analysing women's experiences in Kasache within co-constituting systems of power relations (colonialism, neoliberalism, patriarchy).

Similarly, the key open question in the climate change domain is how to ensure recognition of non-Western systems in the knowledge production and validation

processes. Among the suggestions made by the decision makers I interviewed was the creation of national and transnational interdisciplinary research communities or national and sub-regional IPCC working groups. Their assumption was that the main challenge facing research communities in the Global South is to develop local knowledge products and make them accessible to policymakers through national or regional networks. This perspective emphasises the technical and mechanistic nature of the knowledge integration process, portraying knowledges as a set of discrete intellectual products that can be separated from the place that originated them. Access, collection and translation of local knowledge into a suitable form for decision-making are then perceived as the key challenges to knowledge integration.

This approach is problematic, since it fundamentally ignores the political dimensions and underlying assumptions of the knowledge integration process. Critical feminist scholars (see Chapter 4) claim that scientific knowledge, especially when used in the public policy domain, should be deconstructed and negotiated among a wider group of social actors with different epistemological and ontological commitments (Wynne 1992; Shackley and Wynne 1996; Charlesworth and Okereke 2010). Several crucial questions may facilitate this political analysis (Nadasdy 1999), such as: who is going to benefit from specific knowledge? What narratives and agendas are facilitated or limited by specific knowledges? How are thought and actions constrained or directed by those meanings? The answers to these questions may unveil the hidden power relations and cultural biases (the ontological aspects) masked behind well-established knowledge claims and open them to contestation.

The solutions proposed by the interviewees focus on promoting South-South Cooperation (SSC) through the establishment of regional (South-East Asia, sub-Saharan Africa) or sub-regional (e.g. the Greater Horn of Africa) working groups in the IPCC. This approach emerged in 1955 from the Bandung Conference, held under the auspices of the United Nations Conference on Trade and Development (UNCTAD) to create a

network of mutual assistance between the most disadvantaged countries of the North-dominated world system (Gosovic 2016; Gray and Gills 2016). Since its establishment, the SSC concept and practice have been the subject of several revisions (Gosovic 2016; Gray and Gills 2016). One of the major critiques concerns the actual ability of SSC to challenge the vertical relations and dependency path between the Global North and South (the former colonised countries) through mutual solidarity (in the form of trade, financial support, training, capacity building).

In light of the heterogeneity of the 'Global South', some authors have argued that a classification of countries according to this definition may reproduce hegemonic and neocolonial politics in the South itself: China, for instance, may use international aid to secure the rights to resource extraction (Gray and Gills 2016; Muhr 2016). Muhr (2016) has criticised the dichotomies underlying the SSC approach, especially the concept of national interest vs. international solidarity, which hinder the full emancipatory power of SSC. Such power has instead been increasingly emerging in the experiences of non-state actors, such as transnational or grass-root movements (e.g. the Landless People's Movement) that overcome the spatial, cultural or societal hierarchies underpinned by SSC ontological categories ('nation' or 'South').

Helpful insights may be drawn from both the critiques and the experiences of SSC, so as to accurately identify and challenge the South's knowledge and power dependency. Malawian decision makers, for instance, should not limit themselves to proposing the creation of IPCC sub-regional working groups (e.g. collaborating on technical and procedural issues such as data dissemination and sharing between neighbouring countries or including experts on the basis of geographical representation). Cooperation could be expanded beyond homogeneous and unified classifications (by region or by discipline) to include joint efforts on specific vulnerability issues (e.g. malaria outbreaks in distinct societal groups) or multi-dimensional societal impacts (e.g. climate change gendered impacts).

In this section, I highlighted some of the difficulties faced by national decision makers in Malawi who are looking to challenge mainstreaming approaches to climate change, as well as pointing out alternative modes by which policy actors can exercise their agency and re-signify and question North-driven climate change knowledge. Decision makers in Malawi expressed alternative views about usability of climate science (grounding it in local cultural values) or deployed mainstreaming narratives (evidence-based policy) to mobilise international financial support for NAPA implementation. As further explored in the following chapters, the possibility of acknowledging and challenging the established orthodoxy may arise from the recognition of the multiplicity of views that produce climate change knowledges and experiences.

5.4 Conclusions and way forward

There is a widespread perception among Malawi's decision makers, as evidenced by their responses about climate change knowledge, that the capacity to produce climate information and knowledge is limited by the lack of financial resources, human capital and infrastructure.

Because of the disparity in knowledge production, international bodies such as the IPCC stand out as the main reference sources for decision makers in Malawi. However, the scientific knowledge produced by the IPCC is grounded in positivist ideals, namely the primacy of natural and physical sciences, which portray climate science as isolated from the socio-economic, political and cultural processes as well as from the geographical and historical settings that contribute to producing it (Hulme 2011). At the same time, the international donor community, by endorsing the climate science positivist framing, plays a key role in influencing the perception of what is usable and effective climate change knowledge. This epistemological premise has far-reaching ontological consequences.

The international pledge for accountability through quantitative climate data shapes the formulation of national adaptation programmes as well as the definition of new categories of capacity gaps and transfer. In Malawi, the skewed climate epistemology

produces specific conceptualisations of the required scientific and institutional capacities (compliant with ‘scientific’ standards) – and related gaps – for policy-relevant knowledge.

My analysis shows that climate science produced by global scientific institutions is highly regarded by decision makers in Malawi. In their view, it acts as a neutral mediating force legitimising their expertise as they enter the international arena of climate change negotiations, and partly reconciles conflicting political, historical and economic interests, contributing to scientifically sound decisions for policymaking. Policymakers also showed a strong desire for greater integration between policy and science, in line with the concept of usable knowledge (see Chapter 3), which, in order to be applicable, needs to be linked to contextual factors such as local values and experiences (Juntti et al. 2009). Local knowledge is perceived as highly valuable because it originates in sedimented experiences, and there is widespread belief that it should be integrated with global science.

At first glance, national decision makers seem to have internalised dominant science-led and climate reductionist discourses. The conceptual categories they used when interviewed about climate change knowledge partly reflect Western assumptions of a homogenous and predetermined natural environment that do not take into account the historical, cultural and socio-economic specificities, such as issues of power and inequality, underlying the current lack of capacity. These assumptions have determined current patterns of global science and knowledge production. An apparent lack of agency in the knowledge generation and fruition process is however offset by the expression of mixed feelings towards climate science legitimacy and usability at the local level.

Mixed perceptions speak to the multiple political, social and moral assumptions hiding – and struggling – behind the positivist concepts of science and evidence. As emphasised by STS, the generation and selection of evidence and science for decision-making is always mediated by social and cultural mechanisms (Juntti et al. 2009; Lidskog 2014).

Through the expression of *hybrid* and more situated feelings towards Western/northern science and knowledge, the interviewees unconsciously account for climate change as a physical phenomenon deeply embedded into local cultural, historical and socio-economic systems, enriching and challenging the predominant positivist knowledge.

On the basis of these reflections, this chapter outlines the necessity of re-conceptualising climate change knowledge from a wider social, historical and cultural perspective. Abstract and universal representations of scientific knowledge (what makes knowledge relevant and neutral) are in tension with the characteristics of usable knowledge as described by policymakers in Malawi, that is not disconnected from contextual factors and experiences. Most importantly, promoting an understanding of science as detached from policy, as is the case in the framework of climate reductionism, would prevent the formulation of context-relevant policy responses and exclude all the ‘non-scientifically compliant’ socio-cultural views and practices that could suggest meaningful solutions to climate change.

In the following chapters, I will show that the influence of global climate change epistemology is not limited to the different narratives and meanings of climate change. Through the interaction with pre-existing socio-cultural narratives and practices, it contributes to the creation of peculiar ontologies.

Chapter 6

Kusintha kwa nyengo: local meanings of climate change

6.1 Climate change through socio-historical lenses

The first part of this work looked at how mutually legitimising science-policy actors and institutions managed to create a global knowledge and policy consensus on future climatic changes (Hulme 2011; Sarewitz 2011; Hulme 2015). Climate orthodoxy has gained legitimation through the positivist principles that recently informed the climate-resilient development paradigm. But how is the construction of current climate change meanings by international organisations, national decision makers and climate-exposed communities linked to past socio-political processes? How have these theories and practices contributed to socio-economic and biophysical vulnerabilities in present-day Malawi?

This chapter will focus on the tensions and negotiations between colonial and postcolonial representations of climate change. Weather and climate representations originating in colonial ideologies (e.g. soil conservation) still permeate climate change narratives and practices in Malawi. How did these concepts travel diachronically to the point of influencing contemporary debates and practices? I will demonstrate continuity and resilience of discursive practices¹ (Foucault 1972; 1982) across the colonial and postcolonial periods as well as across geographical contexts.

I will explore *stories* from Kasache that may shed light on the way colonial discourses on climate change were recast following shifts in international power relations and re-emerged in the guise of climate-resilient development, with material consequences in terms of resistance and compliance for the local communities. I will further develop this argument to build my critique of the reductionist approaches to climate change that fail

¹ According to Foucault, (1972;1982) discourses represent systematic structures through which knowledge-power dynamics unfold (Chapter 3).

to convey the notion that standardised knowledge claims are the result of often forgotten historically and spatially rooted events.

6.2 Climate change as one and many

Conducting interviews with community members in Kasache helped me understand people's perceptions of climate change, as well as physically grounding my multi-sited fieldwork. Narration through qualitative interviews was not only useful for grounding perspectives and individual experiences of climate change in a specific context. It also provided different actors (man and women farmers, elders, local chiefs) with a space to express conflicting and resisting views against hegemonic narratives.

My first concern during fieldwork was to understand how the community and individuals of Kasache perceived and described climate change. Therefore, my interviews would always start off with straightforward questions: "How do you see or define the issue of climate change? What do you think are the causes of current climatic changes?" Constructivist methodological perspectives would recommend caution with this kind of questions, which risk imposing a certain rhetoric (the assumption that climate change is happening). However, interviewees' perceptions and attempts to give meaning to the world around them reveal a plurality of ways of framing and describing climate change. In the following sections, I will focus on some of them, particularly on those that most point to the tensions and continuities between colonial and postcolonial representations of the natural environment and their influence on societal change. The stories I collected will problematise some of the colonial and developmentalist narratives and practices on climate and soil conservation.

Most importantly, I will map local narratives both to account for the *localness* of meanings and to identify the locus of contestation, the space where local communities express themselves as *agents* of change in constructing, maintaining and modifying discourses and practices of climate change.

6.2.1 Story 1 – *Kusinthwa kwa nyengo* or relational climate change

Most interviewees in Kasache showed awareness of *a* climate change issue. However, they expressed awareness of *a* change happening in the community, rather than of an abstract notion of climatic change based on quantitative features. When asked about climate change, they would recall personal experiences and how this shifting pattern was affecting their daily lives, especially in terms of loss of farming assets (crops, livestock, food, etc.). Community narratives largely defined climate change in terms of the effects of changing weather patterns on their livelihoods, especially as related to the timing and intensity of rains.

Kasache is located in the Lingadzi River Valley, an area that is particularly prone to periodic droughts and flooding (see Annex IV for fieldwork pictures). The natural vegetation of the valley consists of grass and shrubs, interspersed with patches of more fertile sandy clay commonly found along the river banks. Agriculture is a risky business, yet it is a key source of livelihood for the local communities, who try to make the most of the river banks to grow their maize crops, the major staple in the area.

Their understanding of climate change is shaped by time-tested observation and practices, as attested by the following quote: “We don’t measure; we only observe and see from our experience. We can know that rain is late because it does not come in the month we expect it, and it stops earlier than before. We know it no longer comes in October” (FGD, 29 July 2012). This statement highlights how individuals experience climatic changes in Kasache, especially the tendency to compare the occurrence of events in different time spans (preceding years) through diachronic observations. Hulme (2008) indeed noted that climatic fluctuations are often adopted as anchors for personal memory and human experience in both industrialised and rural societies.

Similar perspectives were shared by the elders I interviewed in Kasache, who claimed to have never heard of climate change despite being able to experience it, especially through sight or hearing. An older woman, Busisiwe Muva,² remarked: “I am not able to see exactly what is changing, because I am blind, but *I can feel it* (my emphasis). Right now, for example, everybody is going hungry in the village, this didn’t happen before” (Individual interview, 6 August 2012). Busisiwe’s words describe not only the effects of ageing and the impact of climate change on her experience of the environment, but also how the latter comes to be perceived in a local community – through the senses. Individuals talk not only about *seeing* climate change, but also about being able to feel it. The body is not a simple container for the mind, passively receiving external inputs mainly through the sense of sight; rather, it blends with the external world. Seeing is not different from hearing or feeling and the senses emerge as inseparable. This implies that feeling, remembering and speaking are all aspects of the individual’s engagement with the environment, forming his or her knowledge of the world (Feld 1996; Ingold 2010). Perceptual activity, in particular, does not unfold as the mind’s passive receptivity to sensorial inputs, but rather as an intentional and continuous relation of the whole being (body *and* mind) with its environment. This worldview also assumes that speech and sound are not only a mode of transmitting information or mental content – a human peculiarity – but rather a way of being alive for non-human elements, too.

During a group discussion with farmers, the role of non-living beings in the experience of climate change was mentioned. The following quote is emblematic: “There are certain plants that tell us if rain will come earlier or not. The wind tells us when rain is coming” (FGD, 29 July 2012; emphasis added). Wind is believed to signal the right time to plant; the senses are given the role of guiding towards the discovery and knowledge of the world: for societies such as that of Kasache, knowledge comes through the sense of hearing and the unmediated experience of

² In this as in previous chapters, I use fictitious names to protect the identity and opinions of the individuals who contributed to the field study.

sound, generating a comprehensive and entangled account of the world.

From a critical feminist perspective, these claims seem to attribute to an earthly non-living entity – the wind – a mind/human-like quality: the ability to speak, advise and, possibly, care (Plumwood 1991; Bannon 2009). In this sense, no lines of demarcation are drawn between the sounds of nature and human speech. Consequently, wind cannot be disqualified for lacking a property that is considered valuable by human societies. This expands the rationalist and positivist thinking that denied physical, animal and feminine realms the possession of reason, according them an inferior and instrumental position in the natural and moral order (Plumwood 1991). The anthropocentric view, which sets nature as a mere instrument to human self-interest, underpins many neoliberal theories (e.g. market theory), informing climate-resilient development interventions (e.g. cost-benefit analyses, technology focus), as further discussed in section 6.2.4. It also points to the different weight assigned to visual and aural perceptions in the positivist tradition, where vision occupies a more trustworthy position in the hierarchy of senses and pathways to an ‘objective’ truth (Paterson 2009; Serres 2009; Ingold 2010).

The statements above show that knowledge is not perceived as a bridge between mind and nature, but as an intrinsic part of being alive in a world deeply grounded in daily experience. This is also defined as ‘haptic knowledge’, by which individuals relate to the physical world through multiple interactions between internal bodily sensations (e.g. movement and perception of sounds, etc.) and outwardly oriented senses (e.g. hearing) (Feld 1996; Crang 2003; Paterson 2009). In this sense, visual, acoustic and, more generally, sensory activities are more than a way of experiencing and knowing things. They are the means through which a local community seems to have assessed and responded to weather and climatic changes across time (“we only observe and see from our experience”).

Embodied sensory experiences have been often portrayed as context-dependent and value-laden ways of learning, holding an inferior hierarchical position with respect to rationalist and positivist ways of knowing that have reduced the importance of experiential learning (Feld 1996; Paterson 2009; Serres 2009; Ingold 2010). For the supporters of Western positivism (Chapter 3), there is a clear dichotomy between authoritative and credible science based on abstract, universalising and impersonal criteria (the *facts*) and the socio-culturally rooted *values*, worldviews and experiences that produce those facts. For cultural geography and anthropology (Feld 1996; Paterson 2009; Ingold 2010), however, perceptual experiences are not simply individual sensations, but can explain social and cosmological relations – how natural environment and climate change come into existence in relationship with human beings.

Locally rooted epistemologies also emerged from a conversation with a member of the Group Village Heads (GVHs):

It is not easy to define climate change in Chichewa, since this concept does not have a correspondent meaning and word in our local language. The closest meaning – *kusintha kwa nyengo* – relates to the word for short, temporary, transitional and reversible climatic change (FGD, 29 July 2012).

The chief's statement underscores that naming the world implies a more profound understanding of it. This is not a neutral and a-historical process. Particularly, naming or labelling is the first step for giving things and facts the status of an object – the objectification process – making it manifest, nameable and describable (Foucault 1972).

This process is not the same for different societies, periods and discourses. It is intrinsically historical, depending on contextual visions of the world (Foucault

1972). The situated knowledge of climate change, *kusintha kwa nyengo*³ as interviewees in Kasache called it, refers to a lived experience. The embodied understandings of climate change in the community seem to point to circumstantial practices connected to a relational ontology (Plumwood 1991; Ingold 2010) shared by many sub-Saharan African cultures (Ajayi 2011; Eneji et al. 2012). In these worldviews, the understanding of nature proceeds through personal, physical and spiritual experiences, since all objects in nature can be the domicile of Spirits (see section 6.2.2). Relational ontologies, in particular, tend to frame the universe through the continuous relationships between humans (the ancestors, the living, and the unborn), nature (an organic entity, as opposed to a mechanical thing that has no life or soul), and the gods (Ingold 2010; Ajayi 2011). They all depend on one another to survive and thrive, and human beings are conceived as a constituent part of the environment. Therefore, spiritual beliefs are connected to the way people perceive nature. These ontologies suggest that individual identities are shaped by systems of ecological *and* social interactions. While in a naturalistic ontology (underpinning the separation between culture and nature) the human self is in discontinuity (and in a higher epistemological and ontological position) with the natural, the animal and the bodily (Plumwood 1991; Bannon 2009), in relational ontologies there is substantial continuity between humanity and the natural world. In positivist ontology, the self is constructed in isolation and against the background of nature; in a relational ontology the self emerges in a shared and mutually constitutive context with cultural knowledge and the physical environment, inhabited by sentient and non-sentient elements. Through the story of *nyau* rituals in Malawi, in section 6.2.2 I will show how individuals engage with human and non-human elements (animals, masks) to define their relationship with the natural environment and social order.

³ The individual Chichewa words that make up the expression *kusintha kwa nyengo* have numerous meanings (see Steven Paas, *Oxford Chichewa Dictionary*, 2018). For example, the word *kusintha* means change, adjustment, alterations or modifications, but it also refers to the inability to change or adapt; therefore it is often associated with a disability. The term *kwa* indicates possession and stands for the English words of, for or to. Most interestingly, *nyengo* is the term deployed to indicate seasons and weather patterns in expressions such as *nyengo ya dzinja* (rainy season), *nyengo yokolola* (harvest season) or *nyengo yofunda* (summer season). *Nyengo* is used to suggest occasional or short-term events or phenomena, such as in the expression *nyengo ya chikondwerero* (an occasion for celebration). At the same time, the word *nyengo* can refer to a time without end, or eternity (*nyengo yosatha*). These different connotations can affect the meanings assigned to climate change in Kasache. For example, *kusintha kwa nyengo* may be associated with both short- and a long-term timescales, or reversible and irreversible change in climatic patterns.

In other words, ways of imagining human and non-human subjects influence the way climate change is conceptualised and introduced into specific context. *Kusintha kwa nyengo* is a natural phenomenon that comes into existence and becomes self-evident if expressed in the local language and in accordance with context-relevant categories (e.g. local ontologies). That is why it is hard for the chief in Kasache (“it is not easy to define *climate change*”) to grasp it through a different language and thinking frame (Smith 2012).

The statements above are quite striking if compared to my earlier conversations with national decision makers. Most government officers I interviewed essentially framed climate change as an expert-led and technical issue. No mention of local meanings, naming or situated experiences was made; they put their faith in a regime of ‘climate truth’ governed by IPCC and UNFCCC processes. Furthermore, they emphasised that national planning processes on climate change generally respond to international scientific standards without considering or including local knowledges (Chapter 5). In their views, local knowledges exist as multiple perspectives on a single reality (climate change) – not as a historical, contingent and intersecting activity coproduced with society. The usability of local knowledge for policy planning purposes is in fact assessed against scientific benchmarks and positively valued when showing positivist scientific attributes. Such tendency in national policy actors is in tension with the relational ontologies expressed by several individuals in Kasache. While the former emphasise universality and objectivity as necessary characteristics of climate change knowledge, the latter point to the heterogeneity of elements producing situated knowledges (experience, rituals, relations, as further discussed below). The conceptualisation of knowledge by decision makers tends towards a universal homogenous representation of climate change and risks overlooking embodied knowledges and experiences, such as those that emerged in Kasache.

Of course, it would be a mistake to conceive the community of Kasache as completely isolated from the external world or occupying a polarised position with respect

to national decision makers and international narratives. In fact, externally driven definitions of climate change managed to infiltrate and influence the community itself. Several entities have acted as ‘authorities of delimitation’, subjects that can delimit, designate, name and establish climate change as an object (Foucault 1972). Many interviewees reported that a concept of climate change had been introduced by external sources of information such as TV and radio programmes, extension workers, or local and international NGOs. One of the elders told me: “The fact that people come to our village talking and asking about climate change means that the change is real and is happening” (Individual interview, 6 August 2016). The same opinion emerged during a group discussion with men farmers, hence the relevance of situated knowledges:

We know that change is happening, we can see it ourselves, but we didn’t know that it would be permanent; we thought it would be temporary. But then the radio and the agricultural advisers tell us this change is for good (FGD, 29 July 2012).

External information is seen as a source of legitimation. Everybody in the village knows from experience that a change is taking place, but the fact that national or international experts are talking about it grants climate change a *reality* status. For example, many in the community claimed that adaptation was not a new practice in Kasache. Their parents and grandparents would adapt to changes in weather conditions by adopting winter cropping, irrigation farming, manure making or crop rotation techniques that only recently have been labelled as ‘climate change adaptation initiatives’ by development actors, thus reaching the status of an ‘objective’ reality. It seems that the community constructs the natural world by tapping into different cultures and knowledge systems, of which Western rationality is just one of many. This step is crucial to understanding how groups agree on standard meanings and create ‘objective’ realities (Cline-Cole 1998; Broch-Due and Schroeder 2000).

In this section, I briefly outlined how the idea of climate change in Kasache assembles diverse ways of knowing. The next step in my analysis is to take a closer look at how and why daily lived experiences contribute to creating climate knowledge. To this end, I will provide specific examples illustrating the role of international and national discourses on climate change and development in transforming identities and relations in Kasache.

6.2.2 Story 2 – *It's God's plan*: how colonial climates have travelled to the present

I was introduced to Lackson Chalira in Kasache. He is a 46-year-old farmer and business man. We met outside his house for an interview and started discussing the meaning of the expression *kusintha kwa nyengo*. He told me that he was aware of climate change since he had heard about it on the radio, although what this meant in practice was difficult for him to say:

I've heard of climate change, but I don't know what it means. I see that we don't have enough firewood, and rain patterns are changing. I think this is what climate change is about, but I don't know. I never experienced these things before, so I'm just guessing. But I don't know for sure, nobody told me...maybe it's God's plan (Individual interview, 6 August 2012).

Lackson was one of the first to allude to God's responsibility when talking about climate change. I initially thought it was just a turn of phrase, but later discovered that it was a recurrent discursive pattern in the community. Four elders (two men and two women), aged between 70 and 80, reported in a group discussion:

We obviously see a change. Rainfall used to be reliable, especially the first rain. Now it's no longer predictable. It starts very late in January, so yes, there is a change. And the Lingadzi River often floods. We think that God is the main cause, he has decided it (FGD, 8 August 2012).

Both Lackson and the elders see climate change as caused by factors outside human control. Their view could be explained as an expression of the relational worldview common to many societies in south-east Africa, according to which humanity, nature and the gods belong to the same interrelated, complementary and interdependent ontological categories (Eneji et al. 2012). As all modes of existence are conceived in a necessary interrelationship, climate change may be a phenomenon all beings (human and non-human) contribute to. Thus, because climate change is believed to be determined by God, who has free “will” and “plans”, it no longer depends entirely on human action, but rather acquires a degree of ‘autonomy’. Hulme (2008) reports on a long history of cultural interpretations of extreme weather as signifiers of divine blessings or judgements in European societies. The relationship between God and climate, especially droughts, is portrayed in the early Jewish scriptures and has remained dominant in Western Europe through the Middle Ages and until the early modern era. As argued by Hulme, fears of extreme events were caused by the belief that God and Nature were intrinsically related. Weather was, therefore, beyond human understanding and control. Originating in the lack of naturalistic or climatological explanations, this imaginary lasted well beyond the cusp of Enlightenment, when weather measurements and observations started being made in European countries (Hulme 2008). Moral discourses on regional climate introduced by European missionaries in Africa were likely influenced by this vision (Endfield and Nash 2002a; 2002b; section 6.2.2.1).

The identification of God as the main agent for climate change may have influenced Lackson’s reflection about individual engagement in adaptation activities: “In terms of climate change, there are no adaptation activities that we *can* (my emphasis) do together... everybody does it his own way, but water pumps may help reduce food insecurity” (Individual interview, 6 August 2012). The teleological conception of nature, according to which nature possesses ‘intentionality’ (Bannon 2009), may lead to a degree of individual passivity; however, it could also challenge positivist mechanistic and instrumental views of nature (and interconnected dualisms), leading to alternative

environmental ethics (Chapter 8). In section 6.2.4, I will reflect on the implications of specific rationalities and worldviews for the individual capacity to imagine social change and propensity to act in Kasache.

My reflections on the relational ontology emerging from the interviews were supported by the encounter with a masking ritual called *nyau*. While driving off the main roads between Lilongwe, Salima and Kasache, I came across people running and dancing on the roadside. They were wearing masks of crocodiles, elephants or lions. I could not interact directly with them, but my research assistant and interpreter, Ganizani, explained that *nyau* masks are part of a ritual tradition originating from the central districts of Malawi. The masks usually portray *zirombo*, wild animals that come to the village from the bush to facilitate the passage from youth to maturity and from life to death and the realm of the ancestors. Ganizani further explained that *nyau* performances generally take place during mortuary and initiation ceremonies and at specific times of the year. They follow the maize seasonal calendar and make their appearance only after the harvest, when enough food is available to feed the participants.

I was particularly intrigued by the link between wild animals, village boundaries (the fact that the dancers travel between villages) and the calendrical rotation. The *nyau* ritual intimately links the perception of nature to moral values and social order (Probst 2002; Kachapila 2006). The village, in particular, is conceived as a moral and social universe, and by crossing its spatial boundaries, dancers destroy and recreate that unity. The three main spatial categories – inside, outside and *in-between* – correspond to the three categories of participants: women, wild animals and men, and reproduce their role within the framework of social organisation.

A plurality of meanings can be ascribed to the practice of *nyau*: an affirmation of the identity and distinctiveness of society in relation to members within and outside villages; the connections between the cycle of life-(initiation)-and death and the

seasonal cycle in agriculture; a metaphor for fertility (Probst 2002). Further, *nyau* was fundamental to structuring and re-structuring socio-cultural and economic relations in the community during colonial administration (Chapter 7). As a form of association, *nyau* was deployed by men to improve their socio-economic status in matrilineal societies, as a space in which married men could experience a sense of belonging to the community through songs and rituals that largely excluded women.

Not only did the *nyau* practice serve to reorganise political, religious and economic relationships, but it also informed people's practices and perceptions about the natural environment. The penetration of *nyau* into the domain of the rain shrines (see section 6.2.2.1) is exemplary (Probst 2002). The seasonal cycle in agriculture corresponds to the calendrical cycle of *nyau* ceremonies: bush burning, in particular, signals the beginning of both the hot season and the season of *nyau* rituals. Black smoke rising from the fields is believed to transform itself into rain, leading to the first precipitation in the month of November. Human modification of climate through grass burning is assumed to yield tangible and positive, albeit unpredictable, benefits for the community. There is a clear contrast with the catastrophic tones of the international anthropogenic climate change discourse originating in European cultural explanations of weather extremes in the late Middle Ages (Hulme 2008). In the next section, I will discuss how vegetation removal through bush fires and tree cutting was blamed to be a destructive farming practice by missionaries and colonial administrators. The negative connotation attributed by European settlers to this ritual practice most likely also influenced current understandings of anthropogenic climate change in Kasache (section 6.2.3).

Interestingly, even the Local Civil Protection Committee (LCPC), acting as the main interlocutor with international organisations, described climate change in spiritual terms: "We think that climate change is a Malawian and local problem. It is determined by God's will. But it is also caused by human beings who cut down trees" (FGD, 29 July 2012). The conceptualisation of *environment* as "an eco-social sphere of a community

of beings, where human and non-human co-exist and interact daily” is even stronger in this claim (Snodgrass and Tiedje 2008, 9). Indeed, climate change seems to be caused by both God’s will and human action. At first glance, the reference to anthropogenic intervention on the environment (tree cutting) may seem casual (one of the many causes of climate change) and a-historical. Yet, in the next section, I will show how this too is rooted in colonial and postcolonial history.

A tension between relational and rationalistic explanations for climate change seems to emerge from community narratives and practices. Did specific cultural and historical processes generate these hybrid meanings?

6.2.2.1 Religion and science in climate change narratives

The *nyau* practice is not the only Malawian ritual speaking to a relational ontology. The myth of Makewana, “the mother of all people”, played an important role in the diffusion of rain shrines across central Malawi. Makewana, one of the most powerful rainmakers in Central Africa, was believed to have direct access to God: “Without her it was believed that there would be no rain; nothing around Makewana could be *white* (my emphasis), or the rain would not come” (Smith 2005, 1028). This description echoes the accounts of the rainmaking power ascribed to *nyau*: “Week after week *black* (my emphasis) smoke rises from the fields, darkening the sky. As though it were transforming smoke into rain...the first rain clouds arrive” (Probst 2002, 185).

The origin of rain shrines in Malawi can be traced back to the later centuries of the first millennium. According to Smith (2005), the first Makewana was probably a priestess who arrived in Nyasaland in the fourteenth or fifteenth century, with the first wave of migration of Bantu-speaking people from the current Democratic Republic of Congo (DRC).

The rainmaking ceremony was known as *mgwetsa*, or rain-dance (Rangeley 1953; Smith 2005). Like the *nyau* practice, rainmaking rituals were also timed with the

seasonal cycle of agricultural production and the passage from the rainy season (December–May) to the dry season (June–November). As smoke from the bush fires darkened the sky, it turned into clouds, ensuring that the first rain would arrive and marking the end of the ritual season, the beginning of the planting season, and a new cycle. With its cyclical repetition, this practice also granted the reproduction of the cosmological order in which feedback mechanisms were established between the beneficiaries of the earth’s productivity and its source (Probst 2002). From this perspective, rainmaking dances appeared to be a ritual reflection of the Chewa cyclical myth of creation (Probst 2002).

Nowadays, the Makewana, or deity ritual, is still performed in times of drought, providing a spiritual and practical framework for living and coping with unpredictable and highly variable climate (Endfield and Nash 2002b; Smith 2005). During a severe drought in the Blantyre District (1948), Southern Province of Malawi, a solid consensus emerged that the lack of rain was the work of God and could not be attributed to human action, nor to the anger of ancestors (Vaughan 1987). Shrine complexes deteriorated in the nineteenth century, when Malawi was first colonised⁴ by Scottish Presbyterian Missionaries, followed by Anglicans, Catholics and Baptists among others. Rainmaking eventually declined when the old tribute system that used to maintain the shrines collapsed⁵.

According to PCSTS scholars, Christian evangelism in southern Africa reflected the increasing entrenchment between religion, science and politics that, starting from the sixteenth century, characterised the Western world (Restivo 2001; Endfield and Nash 2002a, 2002b). Evangelism was considered one of the first steps towards ‘civilisation’, and missionaries spread Christian beliefs bearing in mind the class, cultural, commercial and political interests of their country of origin.

⁴ Nyasaland was officially established as a British Protectorate in 1891.

⁵ Sacred sites for rainmaking still exist in Malawi as recognised by UNESCO (<https://whc.unesco.org/en/tentativelists/5602/>) and documented by Rangeley (1953), Englund (1996), Ranger (1996), Englund (2007) and van Binsbergen (2011).

The diffusion of a new form of political power harking back to Judaeo-Christian institutions attested to the links between religion, science and politics. Pastoralism⁶ was the expression of the modern Western state that colonialism contributed to spreading globally (Foucault 1982). According to Foucault (1982), pastoral power was related to the scientific *production of truth*, or totalising conceptualisations of the individual and the universe. As discussed in Chapter 4, the parallel enforcement of capitalism through colonial expansionism and evangelism laid the foundations for the legitimisation of modern Western science (Restivo 2001). Missionaries in Malawi did not limit themselves to imposing a Western political system and exogenous forms of power relations but deployed ‘climate discourses’ (Hulme 2008) within a framework of moral economy that equated ‘heathenism’ with environmental and moral decay (Endfield and Nash 2002a, 2002b). Human development and progress started to be associated with environmental narratives – an element that would later feature in developmentalist discourse and practices (Chapter 7).

In Chapter 3, I introduced the concept of ‘climate determinism’ in the positivist paradigm of science, contrasting it with contemporary ‘climate reductionism’ (Hulme 2011). While the former assigned physical climate the ability to explain the performance of environments, people and societies, the latter retains only the ‘explicative power’ of climate science, assigning to projecting and predictive techniques the primacy for ensuring objectivity and disinterestedness in policy making (Hulme 2011). Besides, cultural discourses on climate that emerged under colonialism – although they showed some elements of continuity as discussed below – should not be confused with the contemporary climate change narratives I analyse in my work. As outlined by Hulme (2008), discourses on climate have a long genealogy (dating back to fifth-century BC Greece), which is geographically and historically situated, but continue to condition present narratives on climate change.

⁶ Foucault (1982) defines ‘pastoralism’ as a very special form of power that integrates the power which originated in Christian institutions (geared towards salvation and implying knowledge of the conscience and the ability to direct it) in the modern Western state. Pastoral power is exerted by the state apparatus or by a public institution such as the police, educational systems, and welfare societies, but also through medicine, psychiatry, and employers.

Colonial discourses on climate were mainly constructed around the settler's experience (Hulme 2008). The disease-ridden 'tropical climates' of Africa were deemed to be particularly unfavourable to human health and progress, except for a few suitable areas in central and southern Africa (Endfield and Nash 2002b; Hulme 2008). Vernacular stories played a crucial role in forging climatic tropes in colonial empires. Colonial settlers' and sailors' anecdotes, along with the missionaries' correspondence and journals, were the only source of *evidence* and contributed to promoting a certain rhetoric on African climates (Carey 2011; Vogel 2011). Colonial climate tropes reproduced unifying visions of the natural environment; later promoted by post-World War II scientific internationalism (Mahony 2016), they went on to feed the international climate change orthodoxy. In that sense, colonial chronicles acted as a powerful means of communication, linking popular perceptions with expansionist interests and elitist scientific discourse, justifying the belief that once British environmental management was reproduced in the colonies, civilisation, industry and health would follow (Vogel 2011). The rise of the discourse on climate was linked to the growth of capitalism, the expansion of British colonialism and the early codification of empirical science. As argued by Hulme (2008), contemporary apocalyptic discourses on climate change stem from the European fearful imaginaries of tropical climates.

In Malawi, missionaries gradually eroded local environmental knowledge systems (Grove 1989; Endfield and Nash 2002a). Linking weather and climatic extremes to rainmaking traditions was seen by the colonisers as 'folly', an 'erroneous' and 'ridiculous' superstition (Endfield and Nash 2002b). Local knowledges were benchmarked against positivist criteria of rationality. In fact, by the late eighteenth century climate had started to be measured in Europe through formalised and standardised meteorological practices (Hulme 2008). The causal link between God and climate extremes was dissolved through the separation between divine and natural laws and the attribution of extreme events to natural explanations (Hulme 2008). In Malawi, missionaries were especially concerned because rainmakers associated the failure of rains with the arrival of the Christian

mission, undermining their enterprise and persuading local communities of the negative impacts of European contact (Grove 1989; Endfield and Nash 2002b).

Despite the Christian missionaries playing a role in delegitimising local environmental knowledge, spiritual notions seem to have remained pervasive in current local discourses on climate change. Colonial narratives seem to have endured and emerged in different forms in current discourses. In that regard, Lackson Chalira's claims could be read either as a sign of the local relational ontology that resisted colonial destruction *or* as a hybrid cultural understanding generated by the interplay between the colonial enterprise and local environmental beliefs. The reference to deities in current narratives on climate change seems to be the outcome of a cultural hybridisation process (Bhabha 1994) whereby narratives, identities and objects generated under colonial rule show ambivalent and undistinguishable cultural traits, which belong neither to the colonisers nor to colonised societies. For example, aspects of the rainmaking craft were appropriated by Christian missions in Malawi as a sign of their own exclusive religious power and authority (Endfield and Nash 2002b). In particular, they capitalised on people's association of the missionary presence with the arrival of plentiful rains, exploiting the pre-existing significance of rainmaking and its implications for the well-being of local communities and the environment. In other words, colonial power appropriated the relational understandings of climatic variability, combining them with formal Western scientific ideas. This served to replicate power through local knowledge and worldviews in an interactive and highly contextualised way, which made – and still makes – it hard to uncritically separate the two. The ambivalence of knowledge-power processes made Western discursive and political domination pervasive and difficult to resist.

Science, policy and religion became intertwined, as climate narratives were deployed to justify colonial ideology and practices. Western colonies relied on pastoralism's cultural features, based on universalist and totalising theories, to promote and reinforce their own political stability and discredit local cultures and knowledges. Colonisation was regarded

as a necessary moral obligation to civilise and educate ‘savage’ populations (see Chapter 4). Paradoxically, European colonialism flourished on a form of political power that linked moral salvation to the progress of material and spiritual life and, however illusorily, was driven by a-moral and rationalist scientific assumptions (Cozzens and Woodhouse 2001). A parallel may be drawn with the current relevance of a ‘climate rationale’ in the international development community, where project approval and funding is increasingly linked to the use of best available scientific data. From an anthropological perspective (Hulme 2008), the emphasis on climate rationales contrasts with local beliefs about the spiritual – and ‘irrational’, from a positivist viewpoint – causes of adverse climatic experiences. Behind the claims to objectivity and neutrality, the contemporary ‘climate rationale’ seems to paradoxically re-propose theological orientations (at least linguistically) suggesting moral ideals of climate and weather upon which to recast power hierarchies (Hulme 2008). ‘Climate’ seems to be the means through which notions of socio-cultural superiority or dominant relations of power are asserted both in colonial climate narratives and in current narratives on climate change (Chapter 5). Malawi’s decision makers’ remarks about the *knowledge divide* being the determinant of national capacities in international negotiating processes are a case in point.

Local stories on relational ontologies show that the encounter with European colonialism was not the only cultural and political determinant in the history of Malawi. The process of production of ‘truth’ on colonial climates was neither monolithic nor unidirectional, as relational ontologies interacted with Western rationalities during and after the colonial era. Alternative stories, moulded by contextual worldviews and practices, shaped the past and continue to influence the present, as emerged in individual narratives. Lackson’s and the elders’ accounts of how climate change is experienced through senses and its causes (“God’s will”) point to alternative views of human-nature relations erased or omitted in Western dualism. As the superiority of Western rationality has been historically justified through the polarisation of differences (in terms of privation or plenitude) in epistemological binaries (Plumwood 1991), formerly excluded worldviews can question the universality of

the Western scientific apparatus and enrich it with alternative ways of knowing and being. For example, depriving the natural world of ‘intentionality’ can produce entities that are void of ‘valuable’ qualities and can be mastered by rational human beings, generating instrumental approaches to natural resource management (Bannon 2009). At the same time, these stories embody specific relational ontologies that challenge or struggle to be compatible with reductionist representations of history or contemporary global climate change epistemologies and ontologies. This approach helps to scrutinise the lineage between colonial and developmentalist rationalities and the role of Western dualistic narratives in shaping weather and climate representations in Malawi, as well as unveiling opportunities for individual and collective agency emerging from epistemological and ontological conflicts and contradictions (section 6.2.4.2 and Chapter 8).

6.2.3 Story 3 – The masters of nature

“God’s will” is not the only identified cause of climate change in the narratives from Kasache. While some in the village seemingly see climate change as the intentional creation of a free being, others pointed to soil and natural resources degradation as one of the main determinants.

Robson Kawonga, a 26-year-old farmer, explicitly pointed to deforestation practices: “I think the causes of climate change are related to tree cutting” (Individual interview, 6 August 2012). International and national development projects and activities share this belief. One of the priorities of local and international NGOs in Kasache is to find ways and means of encouraging conservative natural resource management practices while avoiding soil erosion, as mentioned by Robson and others: “People in the community plant flood-protecting trees. *We were told* this by COOPI, that for example elephant grass helps protect the riverbank” (Individual interview, 6 August 2012; emphasis added). The recurring association between land practices and climate change may be explained by the fact that agriculture accounts for 35% of Malawi’s GDP and is central to the livelihood of 85% of the population.

The formulation and implementation of national and subnational climate change programmes and initiatives in Malawi have been mainly shaped by international agendas and conceptualisations that linearly link LDCs livelihoods to rain-fed agriculture and food security or identify unsustainable land practices as the main cause of climate change in developing countries (FAO 2008; WFP 2011; FAO 2016).

In Chapter 4, I argued that multilateral and bilateral development actors play a key role in supporting the development and implementation of climate policies, especially NAPAs, within national and subnational contexts (Agrawala 2004; Janetos et al. 2012). The major donors in Malawi (e.g. USAID, DFID, NORAD, EU, JICA; see Chapter 4 for acronym explanation) emphasise the importance of aligning the country's national development goals with national adaptation planning priorities (Yim et al. 2017). In Malawi, 86% of government projects on environment and climate change are financed by donors, with the Government of Malawi (GoM), and especially the Ministry of Environment, directly managing their implementation at district and community level (UNDP 2012; GoM 2014). In the district of Salima, where Kasache is located, the most active donors are the Japanese International Cooperation Agency (JICA) and the UK Department for International Development (DFID), followed by the Norwegian Agency for Development Cooperation (NORAD) and the European Union (EU). Unlike in the rest of the country, there is a high presence of NGOs implementing climate change projects in Salima (UNDP 2012).

Malawi's NAPA emphasises that: "The extensive land use, including the wanton *cutting down of trees* on the Middle and Upper Shire Valleys, has resulted in severe *land degradation* and soil erosion" (2006, 2; emphasis added). The idea of anthropogenic climate change has also been introduced in Kasache by external actors (e.g. NGOs) through a number of development initiatives aimed at enhancing community resilience under the framework of NAPA (GoM 2006). A study from UNDP lists projects implemented in Salima between 2006 and 2016: seven out of

twelve focus on reforestation, afforestation or broader natural resource conservation measures aimed at “securing the capacity of rural communities to adapt to climate change” (2012, 53). In the “Management for Adaptation of Rural Communities to Climate Change” project, funded by NORAD for a total amount of USD 6 billion, tree planting at the household level and sustainable management of natural woodlands and trees are identified as the main objectives (UNDP 2012).

In Kasache, interviewees identified several international actors who play a prominent role in promoting afforestation and tree plantation, in particular COOPI and the Red Cross Society. Research informants reported that these organisations are “helping with implementing adaptation solutions, such as for example promoting riverbank protection or distributing trees for plantation” (Individual interview, 6 August 2012). The Local Civil Protection Committee, with the support of national and international development actors, spearheads the practice of tree planting as an adaptation response to climate change: “There are many NGOs that advise. The LCPC talks about planting trees. We plant trees and these trees help protect us from winds, I have many trees here to protect my house” (Individual interview, 6 August 2012). Based on NAPA’s (2006) emphasis on tree plantation as a key measure to enhance food and water security and improve sustainable livelihoods in vulnerable rural communities, afforestation has been introduced in Kasache by international development projects as a possible solution to climate change: “We try to conserve nature...At every water source, we have a tree nursery so that we can plant a lot of trees” (Individual interview, 9 August 2012). According to my informants, NGOs particularly stress the active and participatory role of communities in preserving natural resources.

This practice, although aimed at promoting individual action, can actually increase essentialisation of farmers’ inefficiency and, especially when followed without awareness of and attention to the diversity of native plants and wild relatives,

can negatively affect local cultures and ecosystems (Ishizawa 2006). In Kasache, several interviewees claimed that new farming technologies and practices are often introduced without training or support from the international community (see section 6.2.4 and Chapter 7). Arguably, this practice can clash with contextual ontologies. Land clearing and tree removal have been historically linked to colonial narratives on soil conservation and described as the main cause of drought and soil infertility in the colonial past (Grove 1989; Carey 2011; Vogel 2011). In Malawi's NAPA (GoM 2006), suggestions for improving land and forest protection include the management of bush fires at the community level. However, as I previously highlighted (section 6.2.2), bush fires are intimately linked to rainmaking practices. Therefore, a policy option promoted by the NAPA and financially supported by donors may conflict with contextual ontologies, undermining the effectiveness of policy measures (e.g. farmers' religious beliefs may lead them to disobey advice), and disregard alternative solutions offered by contextual knowledges. Although not directly related to afforestation practices, in section 6.2.4 (*ganyu* labour) and Chapter 7 (women self-help groups), I will discuss adaptation practices that build on embodied worldviews and societal relations.

The idea of associating anthropogenic removal of vegetation with rainfall decline and climatic changes is deeply connected to the history of Western science and colonialism. A brief historical vista could help to unveil the chain of events behind what later became a common and pre-conceived agenda around *the* African environment in international development theory and practice.

6.2.3.1 The spread of conservatism in Nyasaland

Lackson's spiritual narrative made me question whether the idea of anthropogenic climate change in the context of Kasache was reflecting dated and stereotyped conceptions of nature, and how the link between soil conservation and climatic change became so pervasive in community narratives.

The *conservationist theory* emerged as the European scientific response to a series of drought episodes in Southern Central Africa in the 1920s (Grove 1989). Colonial geography assumed that people could modify local climatic conditions by acting on land through cultivation. Additionally, colonial conventional wisdom was that African farmers, the practical users of the natural environment which they regarded as largely a livelihood issue (Tsing 2005), were the major cause of environmental problems. Local and indigenous agriculture techniques were perceived as ‘inefficient’ and ‘destructive’. In this context, conservation ideas emerged as an attempt to protect or recreate idyllic environments and justify settlers’ land acquisition (Vaughan 1987; Grove 1989; Neumann 2000). In Malawi, European settlers took advantage of local chiefs’ rivalries⁷ to secure large segments of land and gain access to labour for their plantations (Neumann 2000; Bryceson 2006). The goal of the colonial government was not to improve farming and cultivation methods, but to ensure quality of cash crops and create efficient markets that could protect its financial interests (Vaughan 1987; Grove 1989; Green 2009). Large-scale European agricultural enterprises significantly expanded the production of coffee, tea, cotton and tobacco at various stages.

Conservationism based its theories and practices on claims to universality and truth, specifically on the general idea that cultivation and agriculture would usher in ‘civilisation’, improving land, climate and economic growth. Again, such as in the case of religion and weather, the colonial project linked its political and economic priorities to prescriptive scientific discourses. Colonial scientific claims were taken as a benchmark against which to classify *other* knowledges, whose systems were labelled as unproductive and inadequate to the task of managing natural resources.⁸

⁷ In Malawi, local political structures were rearranged under Native or Traditional Authorities, positioned between the individual and the government (Eggen 2011). The highest chiefs were subjugated, defeated or dethroned, while the local chiefs were kept in their positions to perform duties for the colonial administration, such as tax collection, judicial and rule-making powers (Eggen 2011).

⁸ It is worth noting, however, that colonial officials had different views on conservation. Grove (1989) reports that by the early twentieth century two main views were dominant in Rhodesia and Nyasaland, the Darwinian and the Evangelical, which differently influenced conservation measures. Ecological Darwinism envisioned the repopulation of the environment with ‘exotic’ vegetation and its protection from grazing animals and shifting cultivation. The evangelical and humanistic worldview envisaged local farmers and communities settling into protected areas and living in atavistic and ‘traditional’ ways, thus recreating the idyllic landscapes typical of the Eden.

People and the environment were objectified and re-constructed in accordance with specific representations. As argued by Foucault (1972; 1982), objectification is one of the key processes by which pre-constructed ideas become persistent. *Labelling*, in particular, is a step in the objectification process by which people and nature are conceived as objects of policy and reproduced in convenient images. This usually goes in tandem with specific modes of enquiry, through which certain ideas about individuals and nature attain the status of scientific truth (Foucault 1982). In colonial Malawi, there was widespread belief that farming practices were destructive, especially shifting cultivation, burning stubble, lack of manuring and superficial hoeing; so was the increasing population density (Vaughan 1987). In the 1930s, one of the managers of British Central Africa Company, a large landholder in Malawi, commented on the link between land degradation and population increase:

If the natives of this country are left to their own devices, they will starve themselves in a very few years – soil erosion, deforestation, poor husbandry and complete disregard of soil fertility will completely impoverish the land of this country (Vaughan 1987, 64).

Not only does *labelling* construct specific representations, but it also ensures that pre-determined solutions become prescriptive, legitimising institutional settings and political interventions. In colonial Malawi, agriculture extension services were established to implement massive state interventions on soil conservation (Vaughan 1987; Neumann 2000). Yet, these were based on superficial perceptions of local farming practices rather than on detailed knowledge of the local context (Green 2009). Local experiences and history of environmental modification were disregarded (Vaughan 1987; Grove 1989). Consequently, many of the local farming techniques were considered harmful to the environment. The *nyau* ritual (section 6.2.2) is exemplary of a spiritually complex institution that was misunderstood and reduced to a destructive practice by colonial officials.

Soil conservation became a political tool to secure conceptual and instrumental control as well as subordinating groups of individuals. Colonial stereotypes of African farming served as justification for land alienation and redistribution among European colonisers⁹ (Pachai 1973; Kydd and Christiansen 1982; Vaughan 1987; Bryceson 2006). In Malawi, conservationist discourses did not just involve reconstructing people's and the environment's identities but also implied a material transformation (section 6.2.4.) The transfer of land to European settlers and the growth of commercial agriculture forced local farmers to seek wage employment in colonial estates, where they were exposed to fluctuations in world crop prices, fuelling men's migration and women's dependency on agricultural activities (Kydd and Christiansen 1982).

Against a historical background where local knowledges and practices have been sanctioned, neglected or erased in favour of policy protocols promoting naturalist (non-indigenous) ontologies, tree planting in Kasache may risk supporting and replicating biased beliefs about the causes of climate change, such as notions of 'destructive farmers' and human-induced soil degradation (Leach and Mearns 1996). Not only do these adaptation practices imply a destructive role of local populations – a common colonial trope – but they also assume climate change as an exclusively behavioural outcome of a rational agent whose action is an outward expression of some inner resolution (Ingold 2010). From an FSTS and political ontology perspective, tree planting may be read as a techno-managerial solution to climate change that values the inner rationality of humankind as well as the capacity to master and control nature. Yet, as I argued earlier, several narratives in Kasache explicitly link climate change with relational rather than naturalist ontologies, where climate change can be read as a spiritual and cultural all-encompassing experience between nature, deities and community. Tree planting has been supported by international NGOs in Kasache as a practice promoting climate change mitigation. However, the underpinning ontological mismatch between Western

⁹ The magnitude of the land alienation issue in Malawi can be measured by the fact that by 1945, 31 percent of the population of the country was living on a private estate representing 11 percent of the whole area of the British Protectorate (Pachai 1973).

and contextual knowledges may generate unintended outcomes, such as the oversight of alternative context-relevant solutions to climate change that may have a broader impact on local livelihoods (section 6.2.4) or the implementation of interventions that exacerbate unequal power relations in the community (Chapter 7).

The next section discusses how climate-resilient development in Kasache, despite being associated with ‘progressive’ ideas of capacity building and technology transfer, can hardly be regarded as emancipatory (Blaser 2014), fostering instead forms of dependency and passivity.

6.2.4 Story 4 - Discipline and resistance in coping with climate change

6.2.4.1 Hegemony of maize, dependency on aid

The adoption of hybrid seeds is one of the most mentioned adaptation practices in Kasache. Technologies are perceived by my research informants as fundamental to improving local plantations’ resilience to climate change, as evidenced by the words of Loveness Kapininga, a young female farmer:

I heard about climate change from organisations and radio programmes (COOPI and people from Salima). I think that climate change is real and is happening, unexpectedly...I’m trying to adapt to climate change in my farming activities. We are planting ‘senga’, which is an early maturing variety of maize... We just try to adapt on our own. Those that come to the community say that there is climate change and they ask how they can help. Farmers tell them about the problem and the challenges, but there is no solution. The organisations don’t provide much support. I have expectations from them: I’d be happy if they provided me with information on how climate change and business are related. I’d like to

receive some capital and tools to be more resilient in the face of hunger (Individual interview, 6 August 2012).

In her interview, Loveness stressed the link between climate change and food insecurity. Dependence on maize, a particularly labour-intensive crop, makes her family more vulnerable to droughts (see Chapter 7 for women's experiences of climate change in Kasache). She noted that shortages of maize are commonplace in Kasache, mostly due to the ubiquitous reliance on rain-fed agriculture (Dorward and Kydd 2004; Katengeza et al. 2012). Most rural households run out of maize supplies at least three months before the following harvest. For Loveness's family, who are subsistence farmers, price fluctuations are a major obstacle to food security.

Loveness was not the only one in Kasache to highlight the importance of maize for household sustenance. Despite the increased vulnerability introduced by this crop, maize is grown by 97% of farming households, followed by rice, sorghum and cassava, and provides on average 65% of the daily calories consumed by Malawians (Katengeza et al. 2012).

Loveness's reference to technology as a solution to environmental challenges points to the influence of colonial imaginaries on postcolonial and development structures and discourses. The practice of introducing alien species of plants and animals to modernise the natural landscape was launched during British colonial rule, when the Royal Botanic Gardens were established as imperial centres of plant collection and redistribution (Grove 1994; Smith 2012). In section 6.2.3.1, I argued that the paradigm of soil conservation was partially framed around the evolutionist idea of introducing 'exotic' species into the colonies and protecting them from the destructive action of local farmers (Grove 1994). Technology and science were believed to be the markers of economic progress and human civilisation (Escobar 1995), while indigenous farming technologies were considered useless if not damaging, such as in the case of bush fires or crop rotation (see section 6.2.2.1).

The colonial administration placed a strong emphasis on the introduction of specific crops in Malawi with a view to producing surpluses for sale in European markets (Vaughan 1987). Economic development was soon characterised by a conflict between plantation estates and smallholder subsistence agriculture, based on self-consumption and low labour intensity (Grove 1994). The production of cash crops,¹⁰ including maize, was successfully imposed through land grabbing and redistribution to European settlers, justified by the attempt to protect or recreate idyllic environments (Pachai 1973; Vaughan 1987; Neumann 2000; Bryceson 2006; Simtowe 2010; Kakota et al. 2011). Heavy reliance on specific crops increased people's vulnerability to climatic and economic shocks. Maize eventually became Malawi's main crop in the early twentieth century, when it started to replace sorghum (the indigenous crop) as a staple food (Vaughan 1987; Katengeza et al. 2012).

Loveness's narrative reveals not only the pervasiveness of colonial discourses, but also how specific rationalities, such as those underpinning the conservation paradigm or the idea of human development as a naturalising and evolutionary process, have remained unchanged since the 1950s, when the developmentalist paradigm was introduced.

As discussed in Chapter 4, the construction of the postcolonial 'Third World' relied on depicting developing countries whose economy was mainly based on traditional agricultural production as *peasant* countries (Escobar 1995). Soil conservation was believed to be a precondition for economic growth (Green 2009). The discourse of underdevelopment also justified the establishment of the whole apparatus of development (from international organisations to local-level development agencies) and the projects designed and implemented under this label (Escobar 1995). The global reorganisation of power (which included the breakdown of colonial systems

¹⁰ Colonial commercial agriculture in Malawi flourished on the substitution of food crops with cash crops such as coffee, tea and tobacco. The large-scale agricultural enterprises significantly extended the production of coffee, tea, cotton and tobacco at various stages between the 1920s and the 1930s into the Central and Southern Provinces of Malawi. By the mid-1940s, tobacco had become the most profitable cash crop.

and the beginning of the Cold War) from which the development apparatus emerged had reflections at country level.

Malawi's independence came at the height of the tensions between the United States and the USSR, whose geopolitics shaped Malawi's foreign and domestic policy (Sagawa 2011). The preference of Malawi's first president, Hastings Kamuzu Banda, for pro-Western capitalistic systems paved the way for the introduction of the IMF's and World Bank's structural adjustment programmes, and for a broader liberalisation process linking foreign aid to specific precepts or 'aid conditionalities' (Bryceson 2006; Ihonvbere 2010; Kalinga 2011). Western nations, in particular, began to demand institutional change as a prerequisite for development aid, for instance by drastically reducing public sector wages (Kalinga 2011; Nkamleu and Kamgnia 2014). Nkamleu and Kamgnia (2014) argue that the sharp decline in civil servants' wages provided incentives and opportunities for corruption and misuse of public resources, leading to a decline in efficiency and productivity in the public sector. For example, in the 1990s the UK and the World Bank froze budget aid to Malawi, linking assistance to human rights and political liberalisation (Ihonvbere 1997). For an aid-dependent economy like Malawi's, aid cuts meant a drastic reduction in government spending in rural areas. In 2009, when the late President Bingu wa Mutharika (2009–2012) spent USD 5 million of donor money on a presidential jet, the United Kingdom cut aid to Malawi by nearly USD 2 million (Riley and Chilanga 2018). In the wake of the 2013 'Cashgate', a USD 32 million fraud scandal, donors withdrew their support, equal to 40% of the country's budget, which also resulted in serious shortages of imported goods such as fuel and medicines (Kayuni 2016; Riley and Chilanga 2018). Recently, Kayuni (2016) reported on the 2016 'Maizagate' scandal in which the minister of Agriculture was implicated, revealing that the scheme was made possible by the Integrated Financial Management Information System (IFMIS) introduced in 2005 at the international donor community's insistence to tighten controls on public expenditures and improve strategic planning and transparency. While donor aid contributes to poverty reduction and increases civil

servants' motivation and productivity (e.g. through allowances), it can generate perverse effects too, creating opportunities for corruption and misuse of public resources (Vian et al. 2013; Kayuni 2016).

The development apparatus relied on a network of power sites and regulatory controls that bound Malawi's people to certain behaviours and production processes (Escobar 1985). As outlined in Chapter 4, donors' propensity to support professional development and meeting attendance through per-diems, combined with low salaries and the need for savings, has been encouraging rent-seeking behaviour among civil servants, especially since structural adjustment programs demanded cuts to government salaries (Vian et al. 2013; Nkamleu and Kamgnia 2014). In Chapter 5, I highlighted how Malawi's public policy processes have been largely framed around the developmentalist institutionalised knowledge disseminated through aid-related programmes that promoted specific project rationalities (e.g. technology-oriented). The focus on economic growth and central planning influenced Malawi's post-independence land policies and practices.¹¹ President Banda worked on institutional arrangements and coordination mechanisms for rural development. Investing in the centralised system of parastatals and channelling foreign aid, he ensured government control over land with a view to facilitating the transition from subsistence to a cash economy (Pachai 1973; Kalinga 1998; Dorward and Kydd 2004; Ihonvbere 2010; Sagawa 2011). The focus of his land policies was on large-scale maize production to maximise agricultural productivity. During the 40 years following independence, Malawi's government tried to increase maize production through higher-yielding hybrid maize varieties, granting subsidies for fertilisers and agricultural extension services (Katengeza et al. 2012; Nordhagen and Pascual 2013).

¹¹ Dr. Hastings Kamuzu Banda established the Republic of Malawi's first political system. Marked by single-party politics, human rights abuses, and repression of political opposition, such as restrictions to press and academic freedom, absence of trade unions, and unfair parliamentary elections (Wiseman 1998; Ihonvbere 2010; Kalinga 2011) it ran from 1964 to 1994. Corruption and inefficiency were rampant. Banda's private interest, personal ambition and authoritarian leadership were determinant factors in Malawi's policy choices between 1964 and 1994, including relations with international development partners (Wiseman 1998; Ihonvbere 2010; Kalinga 2011).

Yet, the parastatal system created inefficient and ineffective monopolies and state organs of patronage, which heavily relied on centralised state- and party-power to deliver top-down actions that benefitted commercial and mono-cropping farmers rather than smallholders (Neumann 2000; Dorward and Kydd, 2004). Investments for infrastructure in rural areas were minimal, while most rural dwellers failed to achieve food security (Vaughan 1987; Bryceson 2006). By ignoring other crops, colonial and post-independence land policies increased reliance on maize and failed to develop technologies, markets and information systems for other locally important and often drought-resistant crops such as finger-millet and sorghum (Vaughan 1987; Dorward and Kydd 2004). As emphasised by Loveness and other farmers in Kasache, the introduction of maize in the traditional crop system led to vulnerability:

Our harvest is low because we lack some pesticides to protect our crops, so even when we irrigate as an adaptive measure, the crop is affected because of pests. So, we need inputs but also advice on this (FGD, 7 August 2012).

In fact, the introduction of maize seems to have triggered the adoption of less resilient, highly technological and aid-dependent varieties.

Yet, this is not only the story of an ill-adapted crop. Dependency on specific crops made technical assistance and technology transfers vital to the resolution of long-term productivity problems, and key components of rural development projects (Escobar 1995). A prominent role in the institutionalisation of the development apparatus was played by the proliferation of rationalist and anthropocentric knowledges and practices. Relying on processes of ‘technification’, these turned development into a technical issue. In Chapter 7, I will discuss in greater detail women’s perceptions of the project “Reducing the Risk of Disaster in Community Based Agriculture in Malawi”, funded by the EU and implemented by COOPI in the Kasache area. The project was designed to provide technical support to climate-affected communities, namely flood-resistant seed varieties and pumps.

The introduction of mechanical and biological technologies through structural adjustment and adaptation projects has recently created the need for specific kinds of support. There is a strong focus on capacity building: “Capacity building would be important. We would also need farm inputs, especially seeds and irrigation equipment such as pumps, wheelbarrows, shovels” (FGD, 29 July 2012). However, several people in Kasache seemingly felt as though they did not have any intrinsic capacity to find solutions for a changing climate:

We are not trying to adapt to climate change, because nobody ever came to tell us what to do about the changes and what adaptation means. We need more information about climate change and what we can do, since we don’t understand the problem (FGD, 29 July 2012).

These words emphasise how some in Kasache portray themselves as unable to conceive of any technological change.

Development-driven interventions seem to have modified subjective identities, producing a narrative of passivity and inability to act individually and collectively, as emphasised during a conversation with the LCPC in Kasache:

We want to tell you that, as the committee in charge of climate change in Kasache, we need capacity building. We want to be trained, we want to learn how we can take care of our natural resources and environment. If possible, we want you to assist us on this issue of capacity building (FGD, 29 July 2012).

The need for capacity building was expressed as a *precondition*. At the same time, national authorities are often blamed for not providing enough assistance. The lack or inadequacy of government intervention in rural areas is one of the most lamented issues:

We get a lot of assistance when we are hit by floods and natural disasters. We get seeds and other inputs. But we don't get much assistance if there are no disasters. Like when we ask for advice on agricultural practices. Usually we don't get it (FGD, 7 August 2012).

The reference is to some of the challenges faced by the GoM in implementing NAPA projects (Chapter 5). The disconnect between the DRR and CCA endorsed by the NAPA seems practically irrelevant at the local level, as farmers lament receiving siloed and fragmented support following natural disasters only (regardless of what caused them).

Considering the unintended identities I was associated with in Kasache (some interviewees interacted with me as if I were working for the NGO that introduced me to the community), these statements may have indeed been an attempt to receive further training or funding. Yet, they may have been an expression of the perception that an action that is not externally driven is somehow a non-action or cannot produce value in terms of adaptation to climate change. There is a widespread belief in Kasache that not much can be done to respond to climate change without the support of external actors. During a collective discussion about climate-resilient development initiatives, someone stated: "*We do nothing on our own to adapt* (my emphasis), but sometimes we plant trees with the assistance of the NGOs" (FGD, 29 July 2012). It seems as though the only adaptation measure perceived as *real* is both technological and managerial, nationally or internationally led.

This is an example of how identities and categories are negatively defined against sets of criteria that are introduced by external actors and replicated by national policy processes through essentialising discursive practices. Community members do not seem to be able to perceive themselves as agents of change. Colonial and developmentalist projects did not stop at shaping worldviews and knowledge patterns in Kasache. The introduction of mechanical and biological technologies in rural Malawi – such as hybrid seeds or farming techniques – contributed to influencing current narratives

and strategies of resilience. As argued in Chapter 5 (section 5.3.1.2), the role of local knowledges in Malawi as a potential reference point for policy decision support has so far been disregarded. While a study on local knowledges and practices has been commissioned by the GoM (2012b), its goal is to assess community knowledge gaps (where the extent of the gap is measured against global climate science), as well as identifying ways of integrating scientific and local knowledge. In fact, as I discussed in Chapter 5, the knowledge integration process does not facilitate the formulation of locally appropriate and effective policy solutions since it does not unpack and build on the ontological premises of local knowledges.

In summary, while Lackson's claims about God (story 1) seem to point to the survival and reproduction of relational ontologies against colonial erasure, Robson's and Loveness's references to external assistance in crop diversification (stories 3 and 4) highlight the persistence of colonial and postcolonial stereotypes that labelled local practices and technologies as 'destructive', inadequate and inefficient. Both Robson and Loveness don't shy away from identifying themselves as those *in need* of advice and external support, unconsciously fuelling notions of passivity. In effect, the forms of power deployed by colonialism and developmentalism exerted political and economic control through the transformation of subjective identities, as shown by the missionaries' appropriation of rainmaking practices.

What is most interesting to highlight is the disconnect between Lackson's and Robson's/ Loveness's ontological underpinnings. While Lackson's relational view of climate change implies recognition of human dependency on nature (or God), Robson's and Loveness's claims on technology and capacity building account for a mechanistic and instrumental approach to the solutions, which basically puts nature aside. Tree planting, for example, can imply a dualistic and hierarchical human-nature relation in which individuals are intentional and self-contained actors responsible for ecological modification and resource depletion. Possibly, Lackson's reflections about the *causes*

of climate change allowed him to more easily express contextual worldviews (as less mediated by external actors and initiatives), while Robson's and Loveness's references to *solutions* to climate change, as introduced by international development actors, confined them to pre-constructed narratives.

These conflicting views point to the interplay and discrepancies between worldviews, where relational ontologies seem to have never been isolated, generating hybrid experiences (e.g. rainmaking). They could also point to the difficulty for climate-resilient development narratives and practices (i.e. capacity and technology transfer) to reach relevant and inclusive outcomes by operating in accordance with the nature-culture divide. As further discussed in the next section and in Chapter 7, the solutions proposed by the climate change international policy regime may turn out to be inadequate to understand and address the contextual and embodied processes constituting climate change vulnerability and adaptation at the local level. Most importantly, the conflicting and hybrid narratives may constitute the 'hi-stories' (Blaser 2014) created by the people in Kasache within *and* against the cultural and political hegemony of climate-resilient development, as shown next by the case of *ganyu*.

6.2.4.2 *Ganyu* labour: a local-based coping strategy

The contrast between different knowledges and experiences in Kasache points to the inadequacy of the unifying concepts upon which contemporary development interventions are based. Situated experiences challenge homogenous conceptions of climate change and nature, arguing against the dismissal of certain beliefs and practices in which individuals find a space to express their agency.

During an FGD, two women and two men aged between 70 and 80 stressed the role of *ganyu* – informal, short-term rural labour – as a livelihood and climate change coping strategy: “In terms of climate change adaptation, *we are not doing anything in particular to cope. We just have informal employment relations to earn extra income*

and survive crisis and hunger” (7 August 2012). In particular, *ganyu* was mentioned as sale of casual labour, a means for surviving in the face of degrading lands, declining yields and famine.

As outlined in postcolonial and anthropological literature (Bryceson 2006; Kakota et al. 2011; Nordhagen and Pascual 2013), *ganyu* labour arose in the colonial period when shrinking land and dependence on cash crops forced Malawian farmers to switch to a more labour-intensive system (section 6.2.3). Local chiefs recruited labour for bush clearance in rural households in exchange for food, cash or in-kind payments (Bryceson 2006). During the postcolonial period, *ganyu* was associated with poorer households seeking cash from better-off households through the sale of their labour in times of climate shocks¹² (Vaughan 1987; Bryceson 2006). During interviews with the elders, women and men recalled how they managed to survive hunger in 1949, stressing the importance of informal employment relations in rescuing communities from starvation: “Well, people had to travel to Chia to do manual labour in cassava farms and receive tubers as payment” (FGD, 7 August 2012), or “We used to go and do manual labour for those who had some food to exchange” (FGD, 8 August 2012). Further, a woman farmer emphasised the role of local chiefs in managing job distribution in times of climate-induced hunger: “As women, we usually go to our chiefs just to borrow money or to ask for *ganyu*” (FGD, 8 August 2012). *Ganyu* labour is thus regarded not only as a coping strategy, but also as a social and political mechanism that formalises expectations about the role of traditional leaders in ensuring community subsistence and resilience during a famine or a crisis.

Despite emerging from the literature as a longstanding socio-economic institution and a major coping mechanism to food insecurity in Malawi (Vaughan 1987; Bryceson 2006; Kakota et al. 2011; Nordhagen and Pascual 2013), *ganyu* is not immediately perceived as

¹² During the 1948–49 famine, *ganyu* labour emerged as a way for small farmers to cope with drought and hunger (Vaughan 1987). During the 1990s famine, three-quarters of villages in Salima District, where Kasache is located, had at least one better-off farmer who hired between 2 to 20 labourers for several months (Bryceson 2006). During the 2001–02 famine, *ganyu* food payments were the main means of procuring food, surpassing international food aid (Bryceson 2006).

a climate change adaptation strategy in Kasache. Because of its historical embeddedness in economic, cultural and social structures, *ganyu* becomes invisible and hard to detect as a coping mechanism. Elders in Kasache emphasised the ‘invisibility’ of this practice: “We are not doing *anything* to adapt...” (FGD, 29 July 2012). *Ganyu* seems to be the ‘nothing’ that especially vulnerable groups in Kasache are implementing to cope with climatic and economic changes. The lack of perceived visibility may be due to the fact that *ganyu* has been rarely approached or explored by policymakers, development organisations or researchers as a possible adaptation mechanism, as argued by Jørstad and Webersik (2016) in the case of the Lake Chilwa Basin Climate Change Adaptation Programme (LCBCCAP) discussed in Chapter 7.

It may also be related to the hybrid, open-ended and flexible nature of *ganyu*, which, as in the case of *nyau*, emerged as a product of the historical interplay between land alienation, crops dependency and men’s migration on one hand, and local systems of relations (leader-villager relationships, women’s dependency on farming) on the other. Thus, while *ganyu* was overlooked as a possible adaptation strategy for communities, endogenous solutions were promoted that often resulted in negative outcomes, such as extreme reliance and dependency on non-suitable crops and capacity development programmes (e.g. Loveness’s story).

The case of *ganyu* is representative of the modes of operation of subjection.¹³ *Ganyu* is the borderline situation in which individuals perform a context-relevant yet unconscious action to cope with climate change. The question now is: by resorting to labour strategies to adapt to climate change, are the farmers in Kasache acting as agents of change (since they adopt a solution that is not directly related to agriculture inputs such as seeds varieties) or are they passively adapting to a shift in the labour market introduced by colonial power?

¹³ As discussed in Chapter 3, in his knowledge-power theory (1972; 1982) Foucault distinguishes between several types of resistance or struggle against specific forms of power, one of them being against forms of ‘subjection’ where individuals are tied to their position/identity in the social system and not conscious of their subjectivity and submission.

Farmers' viewpoints might at first glance appear to be 'subjugated' by techno-managerial narratives, since most interviewees, like Loveness, equated adaptation with technological solutions, appropriating the epistemological and ontological categories of dominant colonial and postcolonial discourses in the form of distinctive identities (O'Hanlon 1988), such as 'those in need of technological support' or 'those that are not doing anything to adapt'.

However, *ganyu* labour can be regarded as a strategy by which vulnerable groups take agency over their livelihoods, trying to influence and determine available resources and their well-being. Loveness's and Robson's narratives clearly reveal how externally driven solutions create forms of subjection, hindering the capacity to react and take action. *Ganyu*, being much more rooted in local socio-economic systems, offers wider space for vulnerable groups to interact and negotiate their capacity to cope as well as their identity as active subjects. References to *ganyu* were not immediate during interviews, nor were they directly related to climate change narratives. It was only when talking in depth about the way knowledge and power are distributed in the community that *ganyu* was mentioned, as an alternative discursive strategy.

Spivak (1994) suggests that in order to give visibility to subaltern views or knowledges (Chapter 4), one needs to look at their modes of ideation, practice, creativity, and therefore self-determination. In this sense, the case of *ganyu* reveals how communities, by deploying locally rooted socio-economic structures and relations as resources – such as local chiefs' authority – mobilised themselves to build resilience during unfavourable times. Yet, *ganyu* emerged from wealth inequality, land alienation and the creation of new class divisions, which characterised colonial and postcolonial Malawi (Vaughan 1987). According to critical feminist scholars (Renegar and Sowards 2009), agency can also arise from the fundamental historical constraints and inequalities that free or tie individuals to the condition of an object. In the case of *ganyu*, affirmative action, or the possibility for a farmer to enter an informal labour exchange shaping their individual

response to climate shocks, is inscribed into the same unequal relation of power from which the action is generated (*ganyu* is a product of colonialism, *but* it does provide a means of subsistence).

The analysis of the knowledge-power nexus in the individual statements I collected in Kasache has provided me with the opportunity to challenge the holistic and one-way view of climate reductionism. My experience in Kasache shows that knowledge framings are not mutually exclusive: climate change emerges as shaped at once by global, national and local forces of representation (neither modern nor traditional, global or local, Western or indigenous). Climate change in Kasache is perceived through locally rooted means (e.g. senses and experience), yet it becomes real when legitimised by external and high-tech sources of knowledge and expertise. Additionally, external capacity support is not perceived as repressive and negative, but rather as productive and positive, since it allows individuals to improve their well-being. Adaptation to climate change in Kasache has historically taken different forms, ranging from spiritual practices to labour divisions and societal reorganisation. Climate change increasingly emerges as a hybrid cultural object that adapts to heterogeneous needs and constraints through the interplay between different knowledge systems and heterogeneous practices – multiple meanings and experiences that are hardly captured by dominant discourses.

6.3 Conclusions

This chapter has addressed the questions raised in the opening section through a discussion of anthropological, historical and narrative accounts, with a focus on the tensions and negotiations between colonial and postcolonial representations and practices of climate (change). What has emerged is a portrait of how climate change discourse travels across localities, carrying particular views of the world and generating specific definitions of nature, social relationships and policy interventions (Cline-Cole 1998; Broch-Due and Schroeder 2000; Smith 2012).

The tensions between global and local epistemologies and ontologies are temporally and geographically dynamic. Following the traces of colonial attention to soil conservation, I showed how processes of co-production of knowledge-power unfolded across scales and timeframes. The historical continuity between colonial and neoliberal political and cultural projects has shaped narratives of climate change in Kasache. More recently, international interventions have reproduced European techno-scientific rationalities through climate-resilient development projects.

Most importantly, climate change discourses not only shape symbols and meanings, but also determine material transformations of society and environment. *Ganyu* labour, one of the most common climate change coping strategies in Malawi, emerged from rural distress and impoverishment dating back to colonial land alienation and biased representations of local farming systems (Vaughan 1987; Simtowe 2010; Kakota et al. 2011).

Climate change epistemologies and ontologies result from biophysical conditions as well as from historically stratified networks and relations of power. Historical and anthropological analyses (Plumwood 1991) are in that regard fundamental to contrasting the reductionist nature of the climate-resilient paradigm: it would be hard to grasp the meaning of the stories I discussed in this chapter without referencing Malawi's world-making practices. The porous interactions between colonial interventions and relational ontologies highlight how local cultures in Malawi variably attribute meaning and value to weather- and climate-related events. This in turn shapes people's capacity to maintain a specific cultural orientation and symbolic framework in which to ground context-relevant adaptation responses.

In the case of Kasache, local identities were affected by the introduction of climate change global narratives. Standardised practices introduced by international development organisations seem to replicate biased rationalities or systems of knowledge. The emphasis on technology-based adaptation, for example, underpins the concept of

human-induced climate change, echoing the colonial link between deforestation and climate change or the nature-culture dualism of Western ontology.

By not accounting for local ontologies and relational structures, these measures can hamper adaptation to climate change or variability. For example, technological solutions are reportedly implemented by community members in Kasache only when backed up by external support. Adaptation options are often tied to specific skills or technologies that may not be present or relevant in the local context, while the value of context-relevant measures such as *ganyu* is currently not acknowledged (Chapter 7).

The case of Kasache illustrates several questionable outcomes of naturalist epistemologies, such as tying individuals to specific capacities, silencing local worldviews, devaluing contextual practices and affecting the community's ability to conceive of and introduce social change. The developmentalist objectification process, for example, has essentialised identities through specific categories that eventually make it hard for the Kasache community to identify forms of hegemony and react. Most actions taken outside official and certified adaptation channels are not recognised as relevant by individuals themselves (“we are not doing anything to adapt”). Nonetheless, the community actively adjusts to environmental, social and political changing conditions. Some of the narratives emphasised individual active roles in defining causes and responses to climate change (“God’s will” and *ganyu* labour).

This chapter ultimately argues that dominant climate change narratives can hinder the individual capacity to respond to climatic challenges through context-relevant initiatives. In the next chapter, I will further challenge gender mainstreaming and climate change discourses that portray women as victims of climate change without considering why, how and when women became vulnerable to climate change in specific contexts.

Chapter 7

Adaptation: a local gendered experience

7.1 Gender-proofing climate change

In Chapter 4, I discussed how climate change, emerging as a scientific and quantitative issue, became gradually interwoven with the developmentalist mantras, such as gender mainstreaming or participatory development (Charlesworth 2005; Cornwall 2013). Arora-Jonsson (2011) noted that the theme of women's vulnerability to climate change seems overly dominating in the policy debates on climate change where, echoing stereotypical ideas about their societal roles, they are often portrayed as an equally vulnerable, homogeneous group (LEG 2012). This echoes several salient traits of the 'Third World Women' trope (Chapter 4), which feminist scholarship stigmatises for conceptualising women as a uniformly subjugated group, in contrast with Western standards of progress (Mohanty 1994 and 2003; Leach 2007; Demetriades and Esplen 2008; Seppälä 2016).

A representation of women based on interrelated Western dualisms (nature-culture, rational-irrational) tends to frame social roles and expectations, such as the gendered division of labour, around a dichotomy of male domination versus female subordination. This risks hindering the identification of historically determined vulnerabilities, as well as restraining women's individual and collective action (Escobar 1995; McNay 2000; Fox Keller 2001; Charlesworth 2005; Leach 2007). Thus, an old controversial issue in development studies keeps emerging in a discourse on climate change that has seemingly failed to engage with critiques and advances in the gender and development debate (section 7.2), overlooking the historical and socio-cultural specificity of women's response.

Drawing on critical feminist concepts such as 'intersectionality' to unpack the dynamics of women's participation and exclusion in Kasache (Cho et al. 2013; Mohanty 2013; Patil 2013; Kaijser and Kronsell 2014; Liska 2015) and linking this case to the broader climate

change policy landscape, I will explore *why* and *how* climate-resilient development interventions may produce unintended impacts and even exacerbate gendered relations. By focusing on the way women in Kasache speak about their vulnerability and respond to climate change, I will show that gender cannot be conceptualised as a separate category from a range of multiple and interconnected factors (e.g. age, race, kin networks) that contribute to shaping gendered climatic impacts.

More specifically, I will identify key discourses (e.g. the feminisation of poverty) and socio-economic and historical relations that turned women's vulnerability to climate change into a unifying and essentialising narrative, reproducing unequal power relations in the context of Kasache. Building on the critiques of the 'Third World Women' trope, I will challenge the notion of women's inherent vulnerability to climate change, deploying the concept of situated knowledges to identify individual and collective forms of agency that dismantle the clear-cut separation between masculine and feminine spheres. My critical feminist reading of international development accounts about Malawi and field-based interviews in the community of Kasache will break down the dualistic and negative conceptualisation of subject-object formation¹ underpinning the praxis of gender mainstreaming (see section 7.2).

7.2 Story 1 - The gendered impacts of climate-resilient development

In the previous chapter, I introduced the story of Loveness Kapininga,² a young woman farmer who talked about the challenges of adapting to *kusintha kwa nyengo* in Kasache: "I'm trying to adapt to climate change in my farming activities. For example, we are planting 'senga', an early maturing variety of maize... We just try to adapt on our own".

¹ According to this theory, an object's identities are mainly constructed in opposition to and denial of the subject's identity and in isolation from the material conditions of appearance (see McNay 2000).

² In this as in previous chapters, I will deploy fictitious names to protect the identity and opinions of individuals who contributed to the field study.

Loveness, among others, reported shorter and highly unpredictable rainfall seasons, stronger winds, more intense sunshine and heat, and increased drought and flood events. Recurring extreme weather events are generally perceived as related to a change in climate, regardless of their specific attribution to climate change or climate variability, as discussed in Chapter 6.

In Kasache, women more often than men talked about the links between unpredictable rainfall³ and crop failure on one hand, and decreased food security and health and livelihood standards on the other. Many think that climate change, through a series of extreme weather events, is affecting food production and storage, adding to already fragile livelihoods (FGD, 7 July 2012). Women in Kasache identified climate change as one of the key factors exacerbating poverty at the household level. During a group discussion, three elder women shared their views on the link between climate change and poverty:

Nowadays there's hunger all around us, in the homes, everywhere. We often get sick and we don't have anything to help us cope with climate change, such as livestock. We used to have enough maize and water. Floods were not so frequent. Now, without fertilisers and because of the drought, we can't produce enough food nor have good yields (FGD, 7 July 2012).

Their statements highlight the joint role of gender and other factors, such as age, health, access to fertilisers, sufficient food and alternative livelihood opportunities, in determining vulnerability. Access to healthcare, opportunities for relocation in the event of disaster, or survival without livestock influence the way individuals perceive and respond to climate change. This resonates with intersectional perspectives pointing to how disability, immigration status, age, and religion, among others, intersect in multiple

³ The end of the rainy season is normally expected in December. Whether or not this is associated with climate change, it is perceived as affecting agricultural productivity and food security. The perception of inadequate or unpredictable rains is a proxy of household vulnerability to climate change, since it differently affects households. Resource-poor households are especially affected even by small changes in water supply, since they have less access to cash.

ways with race, gender and class to determine responsiveness and vulnerability to climate change (Garry 2011; Cho et al. 2013; Kaijser and Kronsell 2014). These factors define individual positions in context-specific power structures and may represent the major axes along which exclusion and marginalisation interact and materialise (see sections 7.3 and 7.4).

The gendered impacts of climate, as described by Loveness and other women in Kasache, are not limited to the immediate physical effects of changes in weather at the individual level (e.g. impacts on health and access to food). Women's vulnerability and response to climate change is also influenced by biases in accessing agricultural services, technologies and capacities. The majority of female research participants emphasised a lack of access to technological improvements (e.g. seeds and fertilisers). Loveness, for instance, claimed: "I'd be happy if they provided me with information on how climate change and business are related. I'd like to receive some capital and tools to be more resilient in the face of hunger" (Individual interview, 6 August 2012). In Kasache, women's challenges in subsistence farming have led to the creation of a self-help group (SHG), a collective form of action through mutual support. In section 7.5, I will explore the impact of SHG membership on women's ability to respond to climate variability and change, highlighting the potentially transformative role of SHGs in essentialised gender identities and relations (e.g. women as caregivers).

Loveness's concerns reflect the broader situation of Malawi, where women suffer from uneven access to, and control over, production factors such as land, agricultural inputs, and technology (NORAD 2010). A 2005 study by the African Development Bank, the "Multi-sector Country Gender Profile", shows that, despite women's outstanding contribution to agriculture in Malawi (women provide 70% of labour for cash crops and 97% for subsistence agriculture), their access to and control of production and support services is very poor.

In the past decades, the Government of Malawi has formally engaged in the promotion of gender equality through its accession to international and regional treaties and conventions (e.g. the 1979 “Convention on the Elimination of All Forms of Discrimination Against Women” and the 2004 “African Union Solemn Declaration on Gender Equality”). In 2000, the National Gender Policy (GoM 2000) was adopted with the overall goal of “mainstream[ing] gender in the national development process to enhance the participation of women, men, boys and girls for sustainable and equitable development and poverty eradication” (Art. 3.1, NGP 2000). The National Gender Programme followed in 2004, and a second National Gender Policy in 2008. The emphasis in these policies is on equal participation of women and men at all governance levels as the main tool for achieving women’s equality. Furthermore, Malawi’s NAPA acknowledges women as a vulnerable group to climate change: “Women bear most of the burden in activities that are most impacted by adverse climate, including collection of water, firewood and ensuring daily access to food” (2006, xi). Several interventions in the NAPA target women, including microfinance, access to water and energy through boreholes and trees in woodlots, and to electricity through rural electrification programmes.

In Chapters 5 and 6, I described how the international finance and policy architecture shapes the projects and activities implemented in Malawi and in the area of Salima, where Kasache is located. Multilateral and bilateral development actors (through the Global Environmental Facility) financially support the implementation of climate policies at the subnational and local levels (Agrawala 2004; Janetos et al. 2012). The major donors in Salima are USAID, DFID, NORAD, JICA and the EU (see Chapter 4), which fund government projects on environment and climate change and implement them at the district and community levels through the Ministry of Environment or through NGOs (UNDP 2012; GoM 2014).

In Kasache, many research participants specifically referred to activities implemented by the Malawi Red Cross and Cooperazione Internazionale (COOPI) – the NGO that assisted

me with the logistics of fieldwork. At the time of my research, COOPI was working on the implementation of the “Reducing the Risk of Disaster in Community Based Agriculture in Malawi” project, funded by the European Commission’s Humanitarian Aid Department (ECHO). The project was designed to support communities affected by disasters through maize and grain seeds distribution (ECHO 2011). In line with the NAPA’s priorities, COOPI acted as a mediator between ECHO and the community, providing the Local Civil Protection Committees with technical support, such as flood-resistance maize seeds and treadle pumps to assist with the creation of irrigated gardens (2006, section 3.2, 6, “Adaptation Needs”).

Regarding the type and extent of support provided by international and national development organisations, Loveness noted that despite their talk of climate change, “organisations don’t provide much support” (Individual interview, 6 August 2012; section 6.2.4.1). During FGDs, women complained about the unaffordable price of pesticides or post-harvest technologies necessary for food storage (e.g. grain banks) that would help them increase their resilience in times of crisis: “Our harvest is low because we lack some pesticides to protect our crops, so even when we irrigate as an adaptive measure, the crop is damaged by pests. So, we need inputs but also advice on this” (FGD, 7 August 2012). These are common issues in the implementation of development interventions (Escobar 1995; Easterly 2002; Sharp et al. 2010; Buggy and McNamara 2016). Easterly (2002) notes that donors consistently refuse to finance project maintenance, with the idea that this is the responsibility of recipient governments. In the context of Kasache, there seems to be a tendency towards overlooking the importance of supplies (e.g. post-harvest technologies such as grain bins) that would allow maintenance of the irrigated gardens implemented by COOPI. Easterly (2002) specifically links this issue to the emphasis placed by the Monterrey Consensus (2002) on observable outputs, which require less costly site-by-site monitoring (Tendler 1997; Dollar and Levin 2006).

Several female interviewees in Kasache emphasised that climate development projects have so far neglected to focus on women's needs and perspectives and on the way climate change intersects with other issues: "NGOs came to the village for some initiatives on climate change, but *as women* we never received any advice on climate change" (FGD, 8 August 2012; my emphasis). There is an apparent contrast between the projects' limited benefit to women and the numerous national gender and climate change policy devices designed to address Malawian women's vulnerability to climate change (NAPA 2006; National Gender Policy 2008).

When reviewing ECHO policy documents on the project "Reducing the Risk of Disaster in Community Based Agriculture in Malawi" (ECHO 2004; ECHO 2010; ECHO 2011), one cannot help noticing a lack of attention to issues of gender, which are rarely mentioned – if not entirely absent from the reports. ECHO's efforts to promote participation in the project seem to rely on the notion of community-based organisations (CBOs), as further discussed in next section. The supposed aim of the project is: "To demonstrate that *community groups* [my emphasis], when provided with appropriate tools and training, can effectively support their own communities before, during, and after a disaster strikes" (ECHO 2011, 1). It seems as though the community is ECHO's preferred scale for implementing climate and development projects, reflecting an emerging trend in the design and implementation of adaptation projects that may obscure the importance of gender in shaping experiences of climate change (Arcand and Wagner 2016; Buggy and McNamara 2016).

7.2.1 Women in community-based adaptation

The situation outlined by Loveness and other research participants in Kasache points to the problematic assumptions behind the concept and praxis of participatory development as applied in the context of gender and climate change. In the past few decades, community-based and participatory approaches have become recurring themes in development discourses and practices (Cornwall 2013; Arcand and Wagner 2016; Buggy

and McNamara 2016). This is a key result of post-development critiques of Western-led development aid programmes and their modest achievement in many communities across the globe (Ferguson 1994; Escobar 1995; Easterly 2002; Sharp et al. 2010). Reid and Huq define community-based adaptation (CBA) to climate change as: “a community-led process, based on communities’ priorities, needs, knowledge, and capacities, which should empower people to plan for and cope with the impacts of climate change” (2014, 1). Early CBA initiatives were implemented by non-governmental organisations, such as in the case of Kasache, primarily at the local level. This approach acknowledges the importance of integrating local environmental knowledge and using participatory processes throughout a project’s life cycle to facilitate the inclusion of communities (see section 7.2.2). Capacity development and technical support are also highlighted as key enabling factors for effective community-based adaptation initiatives (Cannon and Müller-Mahn 2010; Reid and Huq 2014; Buggy and McNamara 2016).

The existing critical development and human geography literature (Cannon and Müller-Mahn 2010; Arcand and Wagner 2016; Buggy and McNamara 2016) cautions against adopting the concept of community as the panacea for ensuring inclusion and participation in project delivery. The notion of ‘community’ as a purportedly harmonious and geographically unified space echoes the colonial trope of indigenous societies, stereotypically represented as ‘traditional’ and ‘authentic’ models of livelihood (Neumann 2000). The emphasis on a geographically circumscribed space as a means of complying with the principles of ownership and cost-effectiveness, established in the 2002 Monterrey Consensus (Tendler 1997; Dollar and Levin, 2006), risks reducing the understanding of the underlying socio-political context (Cannon and Müller-Mahn 2010; Arcand and Wagner 2016; Buggy and McNamara 2016). This conceptualisation ignores dynamics of power and marginalisation *within* the ‘community’, resulting in development interventions that often exacerbate them. Critical feminist perspectives argue that participatory approaches to development have often assumed ‘women’s’ participation through the idea of ‘community’ (Cornwall 2013; Cornwall and Rivas 2015).

Joint Forest Management (JFM) is an example of participatory development that, by acknowledging women's role in tree planting and soil conservation, created community-based institutions to involve women as key 'stakeholders' without checking first whether they had the required capacity. JFM committees seemingly undermined women's ability to influence decision-making processes, exacerbating exclusion and living conditions (e.g. by increasing workloads through fuelwood collection) (Leach 2007).

ECHO and COOPI initiatives in Kasache, with their emphasis on communities as a central project delivery unit, risk treating communities as ungendered and depoliticised sites, delinked from specific historical and spatial contexts and power patterns. This approach tends to essentialise identities and relations, overlooking the importance of gender, among other factors, in shaping women's vulnerability to climate change—because of the impacts on women's availability, capabilities and roles, and broader power relations (Cornwall 2013). For example, Loveness's capacity to benefit from the distribution of technological inputs and training might have been constrained ("the organisations don't provide much support", Individual interview, 6 August 2012) by her lack of time for accessing agricultural extension services.⁴ In section 7.4, I will show how current workloads and responsibilities originate in the reorganisation of the economic system of production and family power relations initiated by the colonial administration. Essentialising categorisations of community dynamics can also contribute to reinforcing gender exclusion and marginalisation without any substantial redefinition of the relations and labour distribution between men and women, as further discussed in sections 7.3 and 7.4.

The African Development Bank "Multi-sector Country Gender Profile" for Malawi (2005) reports that women farmers' participation in agricultural development activities, such as extension services, has been constrained by the level of literacy and availability requested to attend trainings and field demonstration activities, which were designed

⁴ As defined by FAO, agricultural extension and advisory services (AEAS) refers to "any organisation in the public or private sectors (e.g. NGOs, farmer organisations, private firms, etc.) that facilitates farmers' access to knowledge, information and technologies to assist them with developing their own technical, organisational and management skills and practices and improving their livelihoods and well-being" (2017, 3).

around a male-type audience (e.g. higher literacy levels and greater time availability). Similar observations emerged from a national stakeholders' dialogue on "Women, Youth and Climate Change" organised in 2015 by the Civil Society Network on Climate Change (CISONECC) in Malawi. The press briefing note emphasises that women in Malawi are facing discriminatory practices: men are favoured in terms of access to resources for climate change adaptation, including farm technologies, agricultural inputs, loans and agricultural services (CISONECC 2015). The multiple societal roles played by women have been identified as one of the key restraining factors, leading to poor participation (ADB 2005). In section 7.4, I will discuss women's household roles in Kasache, and how they affect the distinct ways in which women and men experience climate change.

7.2.2 Translating gender mainstreaming into practice

The sense from female research participants in Kasache was that projects implemented by NGOs have failed to grant gender inclusion in development initiatives. The climate change finance structure in Malawi – with a predominance of international development actors, bilateral or multilateral, requesting compliance with principles of ownership and inclusion – seems to have encouraged the use of essentialising conceptualisations of gender and community in project design and delivery. Some underlying ideas in Malawi's NAPA (e.g. women's vulnerability to climate change) make this policy document seem slightly outdated when compared to well-established and 'mainstreamed' critiques of gender and development (Mohanty 1994; Neumann 2000; Hafner-Burton and Pollack 2002; Charlesworth 2005).

Malawi's NAPA describes women as particularly vulnerable with respect to climate change and focuses on nominal gender balance – the idea of *mainstreaming* gender in training and capacity development activities – as a means of reducing women's vulnerability through participation (ECBI 2007; Stringer et al. 2010; CGIAR 2013).

The idea that female-headed households tend to be more vulnerable to climate change thrives on the concept of the ‘feminisation of poverty’ (Demetriades and Esplen 2008; Arora-Jonsson 2011), according to which women increasingly represent a disproportionate percentage of the world’s poor due to a rising incidence of female household headship (Chant 2006). This thesis emerged during the 4th United Nations Conference on Women in Beijing (1995), which attempted to raise women’s visibility in international development fora on poverty reduction. Yet, no association has been demonstrated between female household headship, poverty and vulnerability (Chant 2006; Sen 2008; McNay 2000; Arora-Jonsson 2011; Asfaw and Maggio 2017). Chant (2006), in particular, argues that the assumption that women represent the majority of the world’s poor is anecdotal rather than empirically relevant. In the feminisation of poverty approach, women are either presented as a homogeneous mass or differentiated exclusively on the basis of household headship. Furthermore, the definition of poverty seems largely based on the monetary criterion, neglecting to consider women’s capabilities, livelihoods and social exclusion. With regard to climate change, Asfaw and Maggio (2017) note a historical lack of empirics showing the correlation between the impact of weather shocks and the gendered nature of households. Due to a lack of gender-disaggregated data for extreme weather events, the validity of the ‘feminisation of vulnerability’ thesis in Malawi cannot be confirmed. According to Gita Sen, this trope is not only empirically inaccurate, but also encourages a reductionist and homogenising approach to poverty, pre-determining women as a socially and economically marginal group: “Focusing on female-headed households is much simpler, since this avoids having to address the messy complexities posed by gender relations within households, or the ways in which development policies and programmes affect them” (2008, 6). Additionally, it overlooks the importance of situating unequal gendered household relations within broader historical frameworks (Demetriades and Esplen 2008; Arora-Jonsson 2011). In section 7.4, I will highlight the multi-dimensional aspects of gender disadvantage in Malawi, such as uneven decisional power at household level, and their impact on climate change responses.

Furthermore, the NAPA's emphasis on gender inclusiveness implies a practical equivalence between 'gender' and 'women', assuming that the participation of a woman farmer in training activities can be taken as representative of *all* women. The constructed idea of women's identical interests, needs and vulnerabilities with respect to climate change echoes the universal and homogenous notion of 'woman' and obscures the importance of identifying male-female and female-female relationships of power (Plumwood 1991; Chandra Mohanty 1994).

The term 'mainstreaming' was first used in the 1970s to describe an educational method that includes different kinds of learners without discriminating on the basis of learning abilities. In the 1980s it became standard jargon in gender, HIV/AIDS, human rights and environment contexts. During the Fourth World Conference on Women (Beijing, 1995), the concept of *mainstreaming* was adopted by the Gender and Development (GAD) movement and defined as a strategy for promoting a gender perspective in all policies and programmes. According to GAD, before policy decisions are made, an analysis (e.g. through gender-disaggregated data) of the implications for women and men of any planned action in all areas and at all levels should be undertaken (Hafner-Burton and Pollack 2002; Charlesworth 2005). According to critical feminist scholars (Burton and Pollack 2002; Charlesworth 2005), the concept of gender through mainstreaming practices became institutionally acceptable as a project variable, as well as easily identifiable by statisticians and more easily fundable.

As a development worker in Malawi, and especially as a project manager with UNDP, I personally experienced the application of 'gender mainstreaming' to climate change interventions. Several practices were aimed at systematically and equally involving women in the design, implementation, monitoring and evaluation of development initiatives. Among them were the incorporation of references to their special burdens into climate change programmes, the production of quantitative and qualitative assessments of their condition within communities, the collection of gender-disaggregated data and

the enlisting of an equal number of female and male participants in development activities (e.g. workshops and national consultation events). Nominal inclusion was a way of securing legitimacy and ensuring compliance in the eyes of development partners. These practices were informed by a set of operational and management guidelines developed by UNDP to ensure monitoring and evaluation (M&E) of development projects. The “Handbook on Planning, Monitoring and Evaluating for Development Results” (UNDP 2009), for example, provides guidelines for monitoring and assessing gender-related disparities that may result from development initiatives. While the handbook emphasises the importance of ensuring women’s inclusion in development projects, it suggests disaggregating “monitoring data by sex, age, location and so forth” so as “to *ensure* [my emphasis] that programming initiatives meet the wellbeing of marginalised people, especially women, youth and the elderly” (UNDP 2009, 110). There is an assumption in UNDP guidelines that gender mainstreaming should be sufficient to identify the biases in international and domestic legal and socio-cultural systems that engender women’s oppression or marginalisation. The second story in this chapter (section 7.3) points out that the Local Civil Protection Committee in Kasache, by merely securing gender inclusion in the knowledge-sharing platform, actually conceals the distinctiveness of women’s experiences, overlooking questions about who decides on and benefits from participatory development interventions.

Women’s uneven access to agricultural services in Kasache may also be linked to the fact that Malawi’s NAPA tends to associate women with projects that focus on improving access and delivery of services (e.g. water and energy) needed for caring activities (Anderson 2006). In Kasache, women reported being provided with water pumps rather than fertilisers. In fact, the NAPA’s focus on gender does not extend to technology-intensive projects that include mapping, warning systems, or building and installing activities (e.g. the project “Improving Malawi’s Preparedness to Cope with Droughts and Floods”, NAPA 2006). This approach risks reproducing the positivist opposition between caring activities associated with the feminine sphere and the – supposedly morally

higher – care for society assigned to the masculine realm, reinforcing women’s ties to household and community caring tasks. On the assumption that feminine stereotyped characteristics (emotional, carnal, irrational) are inferior and should be controlled by masculine rationality, women tend to be excluded from the public sphere and confined to private spaces or to those activities that are seen as linked to the domain of nature, such as reproduction or caring (Haraway 1991; Plumwood 1991; Harding 2008). In the case of Kasache, women, whose farming activities mainly revolve around non-tradable subsistence maize crops (Katengeza et al. 2012), risk not being able to access the fertilisers needed for intensive growth. Thus, they are increasingly exposed to drought impacts, such as higher malnutrition rates. Further, uneven access to technologies may increase women’s dependency on their husbands’ capacity to buy fertilisers and inputs on their behalf (cash incentives are often designed to support tradable or export crops, generally produced by male farmers; see Gladwin 1992; Katengeza et al. 2012), loosening women’s control over household livelihood strategies (see section 7.4).

Post-development critiques (Escobar 1995; Leach 2007) pointed out that post-World War II Western programmes for agricultural development in Africa, Asia and Central-South America tended to reproduce a biased perception of gender roles. Women, they argued, were excluded from agricultural extension services and targeted mainly as beneficiaries of health, family planning or child-care programmes. On the other hand, men’s role as productive workers was overly emphasised (Escobar 1995; Leach 2007). The implementation of the Structural Adjustment Programmes (SAPs) particularly affected women in Malawi due to the withdrawal of fertiliser subsidies to the small farm sector (Gladwin 1992). Due to limited access to cash and credit, women farmers could no longer benefit from chemical fertilisers. Men farmers instead (especially land owners), who are the main cash-crop producers in Malawi, could still afford them and increase productivity. Gladwin illustrates the gender biases behind the macro-economic thinking of SAPs, which through monetary aggregates hide a specific set of assumptions related to the allocation of production (of mainly tradable goods) and household

responsibilities (male-centred). Nowadays, several agricultural policies promote the use of improved seeds varieties such as maize (e.g. the Farm Input Subsidy Programme,⁵ the subject of considerable debate since it would decrease crop diversification, making farm households more vulnerable to uncertain climate conditions; see Chibwana and Fisher 2010). Farmers, however, generally fail to use them, either because they are not aware of the benefits of hybrid seeds or because they cannot afford them (Chibwana and Fisher 2010; Katengeza et al. 2012; Nordhagen and Pascual 2013; Chinsinga 2014). Kakota et al. (2011) have shown that in Malawi, for example, community grain banks are a real challenge because of the lack of appropriate post-harvest handling technologies. Women in Kasache, in particular, lamented the unaffordable price of pesticides, which are necessary for grain banks (FGD, 7 August 2012).

The NAPA's essentialising arguments may have affected the design and implementation of projects in Kasache and their gendered impacts. Principles of aid effectiveness and legitimacy negotiated and agreed at international level (e.g. the Monterrey Consensus) seem to have been mostly translated to the local level by engaging with community-based organisations (ECHO 2004; ECHO 2010; ECHO 2011). In Kasache, COOPI ensured community participation through compliance with ECHO's recommendations about the inclusion of Local Civil Protection Committees (ECHO 2004; ECHO 2010; ECHO 2011). Yet, COOPI's project in Kasache neglected the importance of broader and historically embedded socio-economic asymmetries that give shape and substance to gender unbalances in the community, women's vulnerability, and their adaptive capacity to climate variability and change (e.g. women's responsibilities/roles, divisions of assets, access to resources, etc; section 7.4).

⁵ The Farm Input Subsidy Programme (FISP) enables smallholder farmers to purchase hybrid seeds and farming supplies such as pesticides and fertilizers at a reduced price through vouchers and coupons (Chibwana and Fisher 2010). A study from Chibwana and Fisher (2010), however, highlights how FISP criteria used in 2008–2009 tended to exclude female-headed or poorer households from the coupon distribution system simply because their land is too small to be eligible or they failed to negotiate with village chiefs, who are to select the beneficiaries. Furthermore, Chinsinga (2014) outlined how the FISP represents 75 percent of the Ministry of Agriculture and Food Security (MoAFS)'s expenditure, marginalising other critical public goods and key components of the agricultural investment such as research, extension services, and rural infrastructure (e.g. roads) which may hold huge promise for potential sustainable agrarian transformation and long-term sustained food security.

Echoing the short-cycle focus of neoliberal development efforts (Pepper 1999), the short-term, project-oriented focus on adaptation in Malawi's NAPA impairs the identification of the historical causes of climate vulnerability grounded in context-specific power structures. The adaptation measures endorsed by COOPI through the provision of farming technologies seem to enable individuals to *cope*⁶ with the ongoing changing climate trends, supporting a form of spontaneous or 'reactive' adaptation (Cannon and Müller-Mahn 2010). According to Cannon and Müller-Mahn (2010), a more proactive form of adaptation would seek to integrate long-term (i.e. bearing in mind future predictions and projections) climate policies with immediate interventions aimed at improving individuals' lives through poverty reduction, diversified livelihoods, improved health and education. However, in the next section, I will show how even beneficial and progressive climate and development interventions – based on women's inclusion and participation and livelihood diversification – can have questionable outcomes if not complemented by an analysis of the interplay between climate change and historically grounded social structures of power. Section 7.4 presents a historical overview inspired by the concept of intersectionality, where the multilayered factors that shaped women's position in the household (e.g. land inheritance, access to technologies, support from matrilineal networks, etc.) are identified, including perceptions and social norms established under British rule that reinforced unequal power relationships and women's vulnerability to climatic shocks.

7.2.3 The risk of universalising gender

Jørstad and Webersik (2016) recently highlighted the limits of the gender mainstreaming approach to climate change in Malawi through the case of the Lake Chilwa Basin Climate Change Adaptation Programme (LCBCCAP), funded by NORAD between 2010 and 2014. The project was aimed at increasing the capacity of communities to

⁶ Cannon and Müller-Mahn (2010) associate coping strategies with spontaneous adaptation, a routine reaction in people (especially farmers and pastoralists) who may be unaware of climate change but respond to changes in the weather on the basis of previous experience, e.g. with changes in the planting calendar, crop varieties, grazing patterns, etc. It is defined as a post-reaction, which in the context of unprecedented and unpredictable climate change may be inadequate to alleviate impacts at the individual level.

adopt sustainable livelihood and natural resource management practices in the face of changing climate patterns in the basin area (Jørstad and Webersik, 2016). NORAD was especially keen to include gender considerations in the project design, ensuring women's participation and consultation in accordance with gender mainstreaming principles. The LCBCCAP was in fact successful in integrating gender-based knowledge into the formulation of gender-responsive solutions: women contributed to the design of solar fish driers based on local practices, which improved the quality of dried fish during periods of lake dryness (Jørstad and Webersik 2016).

One of the project's goals was to improve *traditional* methods of processing fish that would increase women's income and savings in a changing climate. Jørstad and Webersik (2016) note that women's traditional knowledge was assumed to automatically lead to improved natural resource management. According to them, the project focused on women's local knowledge and skills in isolation from wider power relations, disregarding gendered backup strategies for dry seasons, such as *ganyu* labour (see Chapter 6), mentioned during the project preparatory consultations. Jørstad and Webersik argue that the project ended up further anchoring the community to the fish sector, failing to increase the overall adaptive capacity through the adoption of alternative livelihood options. The authors do not explore why *ganyu* was not envisaged in the project design or implementation, despite being a common adaptation strategy.

The example of Lake Chilwa is particularly relevant to my analysis. *Ganyu* labour was often mentioned during my consultations with women in Kasache as a major coping mechanism to climatic shocks (Chapter 6). However, in my experience as well as in the case examined by Jørstad and Webersik (2016), the importance of *ganyu* as an adaptation mechanism has been neglected or dismissed by policymakers, development organisations and researchers. Dismissing *ganyu*, despite its origins in unequal transnational-to-local power relations, means neglecting the intangible resources and social networks that help women cope with climatic shocks. The

Lake Chilwa project strived to create opportunities for women to participate in the development of adaptation solutions. Its emphasis, however, was on women's special role in managing local land and wildlife – assuming their inherent proximity to the natural and irrational world (Plumwood 1991) or favouring the supposedly intuitive and qualitative 'traditional' knowledge (Ingold 2010). The focus on traditional knowledge echoes some of the colonial stereotypes on indigenous and local practices, regarded as 'authentic' and effective models of livelihood and environmental management (Nadasdy 1999; Broch-Due and Schroeder 2000; Neumann 2000).

These assumptions might overlook the socio-political structures and mechanisms underpinning local practices of adaptation. During my interviews in Kasache, references to *ganyu* labour emerged as directly linked not to climate change but to the ways knowledge and power are distributed in the community. *Ganyu* seems to be not only a major coping strategy, but also a social and political mechanism that formalises expectations about the role of traditional leaders in ensuring community's subsistence and resilience during a famine or a climate shock (Vaughan 1987; Bryceson 2006; Kakota et al. 2011; Nordhagen and Pascual 2013). In this sense, gender mainstreaming approaches would allow international development organisations (but also national and non-government actors, see White 1996) to more or less purposely disengage from tensions and negotiations within communities. White (1996) provides the example of the women's groups created in Zambia by the government to increase participation in agricultural development projects, noting that rather than addressing access to credit or the much sought-after fertilisers, they ended up increasing women's production of handicrafts. Nominal participation and the timing of the meetings (coinciding with the agricultural season) prevented many women from attending and raising issues related to the local gendered division of labour (e.g. lack of access to resources). White (1996) further argues that while these groups allowed the government to purport inclusion and legitimisation, they did not help to advocate for agricultural service delivery to women farmers.

My work in Kasache further illustrates how gender mainstreaming in adaptation interventions can reinforce the authority of specific groups and fuel structural inequalities, especially when women's interests are assumed to coincide with those of the community at large.

7.3 Story 2 - Ensuring participation, excluding women

This story, too, emerges from the conversations I had with Loveness Kapininga in Kasache (section 7.2). When I asked about women's opportunities for sharing knowledge on adaptation practices, she could not hide her discomfort: there were no structured ways of collecting experiences from women's perspective: "There are no platforms on climate change or adaptive farming practices, nothing like the village meetings with the chiefs to discuss community development. When it comes to climate change, we just try and adapt on our own" (Individual interview, 6 August 2012).

During my consultations in Kasache, the majority of female interviewees emphasised that, despite the gender-differentiated impacts (section 7.2.1 and 7.4), they are rarely consulted on climate change issues, either by local or by external organisations. It seemed as though women in Kasache were appealing to the very principle of gender mainstreaming and inclusion I am criticising in this chapter. In an FGD with female elders about participatory mechanisms, a woman noted:

Nobody in the village has ever come asking for advice or information on climate change. Sometimes local chiefs ask for advice on how to run and manage the village, but they never enquired about climate change adaptation. We have never been involved in Civil Protection Committee meetings about disaster-related issues either (FGD, 7 July 2012).

When looking closer at interviewees' claims, it is evident that the issue is not the lack of formal inclusion in local decision-making platforms (which partly happens, as discussed below), but rather the opportunity for women to increase visibility of their concerns and practices in men-centred platforms.

Yet, Malawi's National Disaster Risk Management (DRM) policy (GoM 2011f) assigns LCPCs a central role in connecting central planning entities and community representatives to ensure local-level representation (Eggen 2011). The Local Civil Protection Committee (LCPC) should act as a key vehicle to grant community and gender inclusion in Kasache. A project manager from COOPI stressed the gender balance in the structure:

The LCPCs were established in 2004 through funding from UNDP and the Department of Disaster Management Affairs to address weather-related risk in Malawi's vulnerable districts. Usually, an LCPC is composed of 10 or 12 people, half of whom are women (Individual interview, 28 July 2012).

This aspect was also emphasised by the chairperson of the LCPC in Kasache, Themba Ngalande:

Women are in the majority in all our meetings, so they are very important for our activities. But it's difficult with older women, they don't always come to the meetings, so we rely on the younger ones to inform them...There are several ways we share knowledge. Women are usually active in communicating messages through drama and dance only. That's not because of an inferiority complex. It's not that easy to tell a woman to share knowledge in bigger platforms or at meetings... (Individual interview, 9 August 2012).

Women's equal representation by virtue of their gender at these events seems to provide Themba with a justification for their feelings of exclusion.

By allowing and favouring women's participation mainly through drama and dance, the LCPC reproduces, rather than challenges, men's perceptions of the constraints on women's speaking in public, according to which the public arena would make it difficult for women to attend and express their concerns (Cornwall 2013). Having women attend the meetings without providing them with the opportunity to influence decision-making processes was considered sufficient to grant gender inclusion, on the assumption that women's experiences are always and necessarily 'authentic' and representative of all women's voices and needs (McNay 2000). However, operating on the basis of nominal inclusion and the assumption that 'traditional' practices (e.g. drama) are culturally and socially unbiased, the LCPC risks exacerbating marginalisation, as discussed in the next section.

7.3.1 Women's voices in participatory development

My experience resonates with critical feminist reflections (Cornwall 2013) on gender participatory development approaches, which, emphasising single-type variables to climate change as in the 'feminisation of poverty' trope, fail to grant gender inclusion and equality. Cornwall (2013) provides the example of a gender-progressive NGO that, in the attempt to address women's inclusion in resilience-building programmes, ended up supporting elite women with the power to influence decision-making in the community. The NGO struggled to address women's needs, since these were perceived as supporting 'traditional' gender roles holding back women in their subaltern positions (Cornwall 2013).

In Kasache, certain groups of women seemed to support interventions that would reinforce their subordinate and marginal roles. For example, when I interviewed Pauline Mwale, one of the women sitting in the LCPC, her climate-related concerns

were substantially different from those expressed by Loveness. While the latter lamented a lack of female participation, emphasising the need for household support (e.g. seeds and technologies), Pauline's main concern was the LCPC's need for donor-driven financial support. She actually had a positive view of women's inclusion: "All ideas and experiences are welcome, whether they come from men or women. The LCPC would just love to receive training to better guide the rest of the community" (Individual interview, 9 August 2012). Interestingly, both perspectives could be reinforcing the exclusionary effects of the existing structures and processes. On one hand, Loveness's concerns may seem to reinforce gender oppression, such as women's reproductive role at the household level. On the other hand, Pauline's claims could fuel development interventions that reinforce female subordination in male-run committees. However, some women in Kasache do not see participation in the LCPC as undermining their cultural autonomy, since these initiatives are perceived as valuable means for connecting with sources of power. In fact, both Loveness and Pauline expressed a desire to take part in participatory interventions.

As the LCPC case illustrates, while the focus on formal institutions and practices can increase women's formal participation, it offers little prospects of eliminating inequalities and improving women's condition. This is emblematic of some of the limits of contemporary gender and climate change interventions, which 'simply' seek to provide women with improved access to material means (e.g. microfinance, training, farming technologies, etc.) that increase their negotiating position *within* existing and unequal power relations, without transforming them (McNay 2000; Cornwall 2013; Motta 2013).

This example points to one of the challenges of assuming women as a homogenous category: the idea that women have common interests by virtue of their gender. Critical feminists elaborated on this assumption by reflecting on the concept of 'women's interests' and the fact that *women's interests* do not always and fully

coincide with *gender* interests (Molyneaux 1985; McNay 2000; Cornwall 2013; Motta 2013). Molyneaux (1985) notes the impossibility of abstracting women's common interests, since their oppression is multi-causal and mediated through a variety of different structures and mechanisms that may vary considerably across space and time. A woman's interests, for instance, may depend on her interpersonal relations of power or be mediated by institutional structures or the law. Accordingly, as a female leader Pauline may not necessarily identify with other women in Kasache and their interests. She might comply with participatory mechanisms to achieve personal goals (e.g. accessing resources, maintaining relationships with influential men, etc.) and maintain her leadership position. At the same time, Pauline's claims seem in line with the interests of the LCPC chairperson, Themba, who also asked for additional donor support (Individual interview, 9 August 2012).

What emerges is that different groups of women (e.g. women leaders or farmers) might be differently affected by gender participatory approaches and act differently to account for the particularity of their social positioning. The intersection between overlapping factors (property ownership, access to employment, support from kin, etc.) that determine women's roles and responsibilities at the household and community levels influence the reasons why societal groups ally even when different or contrasting interests are at stake (Garry 2011). By uniformly classifying all women as poor and vulnerable, gender mainstreaming assumes the existence of an all-encompassing gender category (Blaser 2014), overlooking the historical, cultural and socio-economic specificities that determined women's condition of vulnerability (Motta 2013). In this sense, projects underpinned by homogenising gender categories may risk reproducing existing relations of inequality – between women and men and among women – rather than laying the foundation for more equitable gender relations (Molyneaux 1985; Cornwall 2013).

My reflection is in line with critical feminist perspectives on the necessity of a

historical, intersectional and situated approach to women's conditions and struggles (Plumwood 1993; Lugones 2010; Mohanty 2013). Lugones (2010), for example, calls for the overcoming of the dualistic approach of white/Western or women of colour feminisms that place women's situations in a hierarchical relation (European bourgeois women vs. Third World Women), reproducing colonial and racial differences. A truly 'decolonising' feminist approach would analyse women's experiences against the world's systems of power (colonialism, neoliberalism, patriarchy⁷) through multilayered historical, economic, cultural and political processes and structures (Mohanty 2013). More broadly, this would conceptualise 'coloniality' (Mignolo 2005) as an epistemological and ontological condition (recalling the Foucauldian subject-object relation) where individuals, not necessarily belonging to colonial or postcolonial contexts but still affected by unbalanced power dynamics, can articulate active roles by raising critiques, expressing divergent views and learning from each other's experiences (see section 7.5 on self-help groups and Chapter 8).

In the next section, I will provide an analysis of the power dimensions and historical frameworks that produced gender inequalities and vulnerability to climate variability and change. This kind of analysis may help to better design adaptation interventions and avoid cases of maladaptation linked to single-variable approaches (gender, culture, income, etc.).

7.4 Story 3 – Women's vulnerabilities to climate change: a socio-historical location

The Norwegian Agency for Development Cooperation (2010) identified the 'patriarchal social structure' as one of the key factors of women's exclusion in Malawi. As highlighted by NORAD (2010) and FAO (2011), the implementation of gender policies and programmes in Malawi has been hampered by the existence of "cultural

⁷ The concept of patriarchy has been described as a Western-based construct fuelling the notion of homogenising and totalising gender oppression (Patil 2013). However, critical feminist scholars (Mohanty 2013; Patil 2013; Liska 2015) have revised the concept under the term 'intersectionality' to reflect on the historical and cross-border gender dynamics of hegemonic cultural and geopolitical projects.

practices, beliefs, traditions and social norms” (FAO 2011, 7) that characterise the country as “a strongly patriarchal society where women’s rights are weak” (NORAD 2010, 23). By emphasising the presence of gendered cultural structures to justify the shortcomings of policy implementation, these approaches tend to explain gender inequality – and vulnerability – through single variables (e.g. culture, time/history) and in isolation from wider power relations (Nadasdy 1999).

Bilateral and multilateral development organisations’ definition of Malawi as a patriarchal society, represented as almost immobile and locked out of history, contrasts with the country’s basic societal units – *mbumba* – characterised by matrilineal lineages. In *mbumba*, the provision of household needs is historically the responsibility of men, while women can exert a greater influence on decisions related to income and labour (Kerr 2005; Kakota 2011; Kuzara 2014).

The village of Kasache is located in the central region of Malawi, a historically and ethnographically matrilineal area in which the Chewa group constitute the majority of the population – a societal feature that, as shown by the quotes below, appears to be in tension with women’s concerns about their limited influence on household spending in times of food crisis. When discussing the ability to cope with climate change at household level, women frequently mentioned men’s drinking habits: “Let’s say you don’t have food, it’s the children who suffer the most, and women. The men usually go for drinks. Sometimes we [men and women] farm together, but sometimes they don’t even show up” (FGD, 8 August 2012). This statement points to the gendered character of community daily care activities. When describing this occurrence (“men just leave for drinks”, FGD, 27 July 2012), women seemed incapable of exerting any influence on a situation that compromises their ability to decide over household coping strategies (“a woman cannot leave the house and go eat, and let the kids go hungry”, FGD, 27 July 2012). These statements highlight how difficult it is for women to disagree with their husbands’ decisions about how

to spend family income in times of crisis. Besides access to resources, household decision-making is thus another key element shaping gendered climate change vulnerabilities.

The contradictions between women's experiences of household decision-making and the matrilineal features of society in Kasache are probably due to the gradual transformation of *mbumba* that placed men-headed houses at the core of welfare policies (Kerr 2005). Yet, it is hard to establish what gender roles and relationships in the country might have looked like before the colonial period⁸ (Phiri 1983; Kachapila 2006; Kuzara 2014); as soon as British colonial rule was established, it began to influence household and gender roles. The restructured intra-household relationships triggered women's access to cash, waged labour and fertile land.

Historically, *mbumba* societies (Phiri 1983) accorded greater social respect to women than men as the reproducers of the lineage. A married man was referred to as a *mkamwini* ('someone who belongs somewhere else'), and he could not aspire to any improvement in social status (Kachapila 2006). The transfer and inheritance of land was matrilineal (from mother or grandmother to daughter). The family was economically dependent on a larger social unit to which it was affiliated, embracing most of the women's relatives. For example, men used to be occupied in collective and family-based horticultural practices – *banja* – which guaranteed food production and self-subsistence (Phiri 1983; Kuzara 2014). *Mbumba* provided a system of female solidarity, meaning that, if for some reason (illness, labour shortage, old age) a woman was not able to provide her household unit with food, other female relatives would step in. *Mbumba* represented a coping strategy in case of weather shocks and food shortages, especially thanks to the *banja* practice (Vaughan 1987; Kuzara 2014).

⁸ Studies of social structures in central Malawi, including kinship, family and marriage, suffer from a lack of written and oral sources. Before the advent of contemporary documented literature this methodological challenge (noted by scholars such as Phiri 1983; Kachapila 2006; Kuzara 2014), was overcome through the study of the evolution of societal structures in relation to a variety of documented transformations of the Chewa society, such as migrations, warfare, slave trade and colonisation .

Men had, however, other ways of affirming and performing their social status. *Nyau*⁹ was one of them. In Chapter 6, I introduced *nyau* as an expression of a relational ontology that was deployed to withstand the spread of Christianity in Malawi. *Nyau* provided spaces in which married men could exercise power within *mbumba* societies and experience a sense of belonging to the community through songs and rituals from which women were largely excluded (see Chapter 6 for details on *nyau* rituals related to agricultural production, crop rotation and fertility).

Under colonial rule, the definition of a household unit was revised to include man, wife and children; so were the right and duties of husbands (e.g. taxation and inheritance of wealth) (Stoler 1995). Malawi's ethnicity-based matrilineal structures were blamed for unstable marriages and moral degeneration (Kuzara 2014). This process profoundly reshaped the organisation of intra-household responsibilities and gender control over resources. Kuzara (2014) describes how missionaries awarded land to men and women who decided to be married in a Christian ritual. Yet Christian precepts implied that the husband was the head of the household, and marriage became a fundamental factor in influencing the very structure of society through land inheritance transmission and ownership. Kachapila (2006) reports that matrilocal married husbands welcomed the Christian precepts on marriage that accorded them more control over families. On the other hand, since Christian missionaries openly condemned *nyau* practices and societies, these underwent gradual transformations and became a central venue for resistance to the destabilisation of some aspects of the matrilineal systems, reinforcing men's power and authority within *mbumba* societies (Phiri 1983).

This analysis suggests that women's selective vulnerability to climate shocks in Malawi does not exclusively stem from inherent patriarchal societal features, as argued by NORAD (2010) or FAO (2011) studies, but also from the intersection of several social changes, such as the gradual erasure of local networks of solidarity based on *mbumba*.

⁹ In Chapter 6, I described how the *nyau* ritual intimately links the perception of nature to moral values and social order. *Nyau* is underpinned by a worldview based on ontological unity and can be interpreted as a means of affirming the identity and distinctiveness of a society in relation to members within and outside villages (Probst 2002).

As described above, the *mkamwini* and *banja* practices offered alternative strategies of subsistence during climate-related food shortages. The colonial process, by regulating access to land, cash and labour on the basis of racialised and gendered lines, redesigned household responsibilities and women's and men's decision-making power, as well as their capacity to adapt (Kachapila 2006; Kuzara 2014). As climate variability and change started having an impact on nutrition (e.g. through droughts and food shortages), discrimination in the allocation of and access to household resources, including food or income, made women (especially those who were landless or dependent on male remittances) particularly exposed to the impacts of climate shocks (Vaughan 1987).

These modifications to men's and women's status were further reinforced and accelerated by transformation in the economic and productive structures. The shift from subsistence to large-scale farming had a destabilising effect, as estate owners allocated land to male-headed households. The colonial hut tax (Phiri 1983; Vaughan 1987; Kerr 2005; Kachapila 2006) systematically deprived *mbumba* societies of their *mkamwini*, decentralising production from family- to cash crop-based farms and pushing men to seek wage labour in European estates. Women were forced to carry out the bulk of activities related to subsistence and family-based food production, while becoming more dependent on male wages for the purchase of inorganic fertilisers and food surplus, especially in times of environmental shocks.

This aligns with women farmers' narratives, and their perception of their own vulnerability (see also section 7.2). When I enquired about climate change impacts on their lives, women talked about the different effects of seasonal climate variability on women and men. As shown by the quotes below, women feel they are more affected than men and are able to identify some of the sources of their vulnerability, such as child-care duties. Women in Kasache are responsible for the daily care of children, food preparation, and firewood and water collection. The majority are also engaged in smallholder agriculture:

During the winter season, when the rain stops, we try to adapt to kusintha kwa nyengo [original wording] climate change by practising winter cropping. We irrigate yields using residual moisture. At this time of the year, we feel that women work harder than men in the fields, spending the longest hours outdoor (FGD, 8 August 2012).

I asked them to specify in which activities women are disproportionately engaged: “Water collection is one of them, but this is not really a problem for women. But gathering firewood, that really is a challenge” (FGD, 8 August 2012). In effect, with the introduction of colonial capitalist economy, men gradually abandoned the *banja* practice and the related obligation to cultivate family gardens, increasing women’s dependence on smallholder agriculture and their economic insecurity during droughts or flood events (Phiri 1983).

Nowadays, women in Kasache do not only feel they are disproportionately affected by climate change. They also think they have weaker coping strategies, which, in their words, stem from household responsibilities: “If the harvest is not enough, it’s women and children who suffer. Men usually leave the house and eat somewhere else. A woman cannot leave the house and go eat, letting the kids go hungry” (FGD, 29 July 2012). Several interviewees stressed that men are free to go out and find food elsewhere, they are free to be responsible only for themselves. Furthermore, women are entirely responsible for the cultivation, storage and processing of food crops, seen as an extension of gender-defined domestic duties.

Further, my female informants in Kasache specifically referred to the division of in-house labour and access to resources (land, cash, labour and time) as key factors shaping men’s and women’s capacity to adapt to climate risks. As testified by interviewees, while women react to climatic shocks by increasing the time spent on subsistence work or reducing consumption levels, men take on more paid work

or migrate. The differential vulnerability between men and women is shaped by intra-household relations, such as responsibilities at the family level and differential access to resources. From this perspective, women show selective vulnerability. Being the ones responsible for most household activities, including food provisions, they are more likely to be affected by climate change and variability. In the case of Kasache, uneven workload distribution within households limits women's choice of income-earning opportunities (beyond low-paid *ganyu*) or the ability to benefit from government programmes, such as agricultural extension services. Inequality does not only manifest itself in the disproportionate amount of labour required from women, but also in the lack of control over the resources – such as paid off-farm work – resulting from their societal position.

This historical snapshot shows a clear tension with the gender mainstreaming approaches explored in previous sections, where gender inequalities are mainly projected along biological or structural lines, overlooking generational, class or racial sources of marginalisation (McNay 1992). This is exemplified by the NORAD (2010) and ADB (2005) reports where gender vulnerability in Malawi is linked to structural features of societal (patriarchal) and household (female-headed) organisations. Contrary to the generalisation that female-headed households are inherently more vulnerable to climate change, the matrilineal land-tenure system appeared to be more resilient to climate variability thanks to the social networks it was built upon. As happened during colonial rule, climate vulnerability is shaped by the intersection of different types of inequalities determined in turn by specific societal and historical contexts, such as the opportunity to benefit from the means of production.

This analysis can help to explain the unbalanced household dynamics described by many women in Kasache (e.g. limited decision-making power at the household level) during interviews. The colonial experience altered the gender balance of *mbumba*, introducing Eurocentric gender ideologies while at the same time establishing a

dialogue between patriarchies, such as through links between the Western-based nuclear family and the patrilineal features of *mbumba* (leveraging on the role of *mkamwini*).

Furthermore, this section outlines how a binary interpretation of gender relations (section 7.2) overlooks women's and men's active experiences and interactions within socio-cultural hegemonic projects: encouraging the dichotomy between male dominance and female subordination, it risks locking women in dominant and gendered norms and practices. Women in Malawi, however, were not simply victims of colonial familial structures stemming from British colonialism. By appropriating and combining indigenous (e.g. *nyau*) and European/Western-based elements (e.g. man-headed families), matrilineal societies devised internal strategies to resist the political and cultural transformation introduced by British rule (Probst 2002; Robins 2003; Kachapila 2006). Women managed to negotiate and redefine gender relations within pre-existing lineage systems, also as a way to endure, resist and adapt to colonial dominance. Thus, matrilineal systems were not completely swiped away, as shown by the experience of self-help groups discussed in section 7.5.

7.4.1 The plurality of silence

Women and elders sometimes expressed feelings of exclusion from family and community decision-making patterns through uneasiness when speaking, or silence. When I asked questions about participation and knowledge-sharing (e.g. "Have you ever been consulted on issues related to climate change in your community?", Annex II), a sense of discomfort and embarrassment emerged. Interviewees appeared unwilling to express their concern: "We don't know if we feel excluded from decision-making..." (FGD, 7 July 2012). A sense of uneasiness also emerged during interviews with the elders. Busisiwe Muva, a woman in her 70s, told me she never discussed climate change with anyone. She felt incapable of providing useful insights on how to respond to floods and food insecurity: "As an old person, I don't feel I'm able to give any advice on how

to adapt to climate change” (Individual interview, 6 August 2012). During another FGD with the elders, the group commented: “We have never been involved in knowledge-sharing inside the community. Nobody has ever come asking for information or advice. Yet we have been sometimes interviewed by outsiders like you” (FGD, 8 July 2012).

The analytical tools offered by Subaltern Studies in the context of postcolonial criticism helped me to explore the potential meanings of silence against the history of power relations (Loomba 1993; Spivak 1994; Prakash 1994b; Williams 2006; Louai 2012; Wagner 2012; Motta 2013; Liska 2015). As shown in the previous section, women’s social status and household decision-making power in Malawi were influenced by the changes introduced during colonial rule, which increasingly confined them to private and non-public roles. Women were often responding with silence to my specific questions on knowledge and inclusion at the village level.

A possible reading of women’s silence in Kasache may be linked to their long-standing marginalisation from the ‘Western-authorized’ socio-economic structures introduced by British colonialism (Prakash 1994b; Spivak 1994) and carried over in postcolonial development processes. Considering women’s historically produced subalternity in Malawi, silence may have been related to the discursive mechanisms that, from a subaltern’s viewpoint, make a statement appear senseless, useless and unworthy of mentioning. The sense of inability expressed through silence by Busisiwe Muva could be interpreted as a matter of failure or passivity. In Chapter 6, I reflected on the ‘invisibility’ of local coping mechanisms. The perceived lack of initiative emerging from the elders’ claims (“In terms of climate change adaptation, *we are not doing anything in particular to cope*”, 7 August 2012) may be linked to the missing recognition of *ganyu* as a coping mechanism by national and international policy actors. The climate change initiatives implemented in Kasache (e.g. the project led by COOPI), in which measures grounded in market and liberal theory are often the only ones regarded as effective, influence self-perceptions, impairing the ability to express views that could better

describe specific situations (see the reference to God's influence on climate change in Chapter 6) or point to practices that are more effective in certain contexts (*ganyu*).

Additionally, since community knowledge platforms *are* legitimised by development actors as truly inclusive and encompassing, individuals may not feel justified in asking for additional participatory space. In the case of Kasache, participatory development formally positions the subaltern individual in the driving seat of community-based platforms by ensuring nominal representation. By persuading elders and women that they are fairly represented in decision-making, this 'disciplined' condition makes them uncomfortable or unable to challenge power structures and raises concerns about their substantial lack of participation (Phelan 1990; Prakash 1994b; Wagner 2012).

The politics of climate change ontology (Blaser 2014) can also provide helpful insights. Busisiwe's sense of inability may be related to the hegemony and epistemological asymmetry of the categories used in climate-resilient development projects (e.g. evidence-based knowledge) that ontologically materialise in elders' feelings of inadequateness. An example is provided by the type of knowledge underlying the activity of Local Civil Protection Committees. Given their emphasis on science-based and techno-managerial knowledge, the elders may feel that their experience-driven and relational knowledge (see Chapter 6) would be disregarded and not considered useful. In the previous chapter, I proposed an anthropological lens that may help explain how individuals in Kasache understand climate change mainly through their direct and personal experiences. The knowledge platforms promoted by some international development projects may risk privileging a positivist knowledge in which Western rationalities are embedded. This could end up reinforcing the marginalisation and silencing of non-Western knowledges and experiences, including those represented by women or elders.

Yet, it would be erroneous to read women's statements and silences exclusively on the basis of a subjugated or subdued subjectivity. In my field experience, understanding

whether women's and elders' silence is the expression of a conscious agency (where there is a will to be silent and resist hegemonic socio-cultural projects) or an 'unarticulated' subjectivity (the individual is not aware of his/her socio-political exclusion and not able to identify the causes of marginalisation) was not straightforward (Prakash 1994b; Smith 2012; Wagner 2012). The fact that women might not be fully aware of the reasons for their exclusion from the LCPC, a purportedly gender-neutral structure, could engender feelings of discomfort when talking – or not talking – about marginalisation. Whether resulting from a passive or active subjectivity, I sensed a strong feeling of uneasiness when talking about certain issues, and it was extremely hard for me to further probe into this inability to speak, since my questions were unsettling. In fact, I preferred not to 'invade' that sphere of silence, as I feared that my insistence – as a privileged Western researcher – could be taken as an arrogant and numb effort to interpret and represent the silence 'from above' (O'Hanlon 1988; Wagner 2012).

While it may be difficult to directly draw firm conclusions about this experience, silence and embarrassment – also possibly linked to shyness, lack of interest in the research topic or concerns about the implications of what was claimed – highlighted the problematic nature of doing research in marginalised contexts. One of the main challenges was to interpret and write about the interviewees' pauses and silences. In this regard, critical feminist methodologies (Chapter 4) helped me to better understand silences, emphasising – through the concept of ontological pluralism – the importance of thinking across borders and liminal spaces to identify alternative logics of knowing, thinking and, ultimately, being (Blaser 2014; Popke 2016). From a methodological perspective, silences challenged the possibility of identifying and interpreting narrative patterns and discursive strategies. However, the value of the unspoken (O'Hanlon 1988; Wagner 2012) and textual and narrative messiness (Law 2004) highlighted by critical postcolonial, feminist and ethnographic (Gupta and Ferguson 1997) perspectives helped me to recognise continuities and ruptures between colonial and postcolonial/developmentalist climate change narratives and practices in marginal discourses.

Most importantly, silences (more than actual speech) revealed underlying worldviews, assumptions, conflicts and struggles, allowing me to follow unconventional paths. Silences valuably signposted where I should dig more through historical and socio-constructivist analysis, as strongly argued by intersectional scholars. Women's silences on participation and inclusion in Kasache urged me to reflect on the inequality of existing social structures and their causal links with colonial and contemporary development narratives and interventions. Furthermore, the uneasiness I experienced in Kasache forced me to critically think about the impact of the international development projects I was directly engaged in professionally. The question now is, how is marginalisation resisted or counteracted by women in Kasache?

7.5 Self-help groups: a place of creativity and resistance

Some PCSTS scholars interpret silence as a collective or individual form of resistance, the place where marginal groups express their dissent and discomfort (Spivak 1994; Phelan 1990; Wagner 2012). In Foucault's view, anonymity is an antidote to European cultural imperialism since it allows individuals to withhold the knowledge that can be used by hegemonic projects, through observations and records, to create and discipline identities (Phelan 1990; Wagner 2012). By refusing to take part in the dominant discursive formation, the silent subjects become irreducibly unclassified and escape from social structures that are formally inclusionary and supposedly politically neutral.

During consultations in Kasache, some women farmers told me about their 'self-help groups',¹⁰ which they described as forms of collective action originating within informal networks. They talked about what they do 'differently' (i.e. not influenced by external actors) to adapt to climate change: "Some groups of women from other villages come to our group to learn what we are doing to adapt to climate change. NGOs have not yet come to us to learn from our group activities" (FGD, 8 August 2012). Self-help

¹⁰ Women's self-help groups have also been observed in other countries in sub-Saharan Africa. Several women from the same village, generally between ten and twenty, come together and contribute their savings, often providing loans to group members (AWID 2008; IFAD 2010; Arora-Jonsson 2009; CGIAR 2013; Alemu et al. 2018).

groups in Kasache share tools, seeds, and knowledge of several farming methods, (e.g. application of compost manure) with women from other villages. Thriving outside the well-established system of legitimised platforms, these spontaneous initiatives seemingly escape developmentalist classifications, rejecting their gendered culture and institutionalised elitist power.

As noted by Alemu et al. (2018), SHG have been emerging in those contexts where extension services were mainly targeted at men, and where community leadership is mainly exerted by male-dominated collective structures. These are some of the societal features emphasised by women in Kasache (sections 7.2 and 7.3), who lamented a lack of substantial inclusion in decision-making platforms and their inability to access agricultural inputs. In fact, the reference to self-help groups emerged within the same Focus Group Discussions where female farmers mentioned the challenges of accessing credit, tools, knowledge and technologies, and uneven household responsibilities. This could point to a connection between disadvantageous positions in accessing agricultural services and women's affiliation to self-help groups in Kasache.

These groups seem to be a response to donor- or nationally led support measures (see Loveness's case on seed varieties), designed around the assumption that men are the key productive actors in the community. In this sense, women's self-help groups may be interpreted as a sign of resistance and as a creative way of responding to gendered development interventions.

These groups are not an isolated case in Malawi. A study from Kakota et al. (2011) highlighted for instance that women have been particularly active in establishing community woodlots to deal with firewood depletion and increased workload. SHG contribute to challenging women's marginality in many ways, for example increasing access to financial aid and involvement in economic activities (AWID 2008; Arora-Jonsson 2009; IFAD 2010; CGIAR 2013). Women in Kasache have formed banking

groups to support their farming activities with a view to increasing production and preventing loss of food and income: “First we formed a banking group for women, a saving group that can be accessed when needed. We try to raise funds, which we put in our savings, and we grow rice together as a group, sharing it or selling it after the harvest season” (FGD, 8 August 2012). Unlike the LCBCCAP experience (section 7.2.3), which locked women into a specific and climate-vulnerable sector (fishing), SHG allow women to diversify their response to climate risks and explore different sources of livelihood, thus enabling households to become more resilient to climate shocks. They also reinforce social networks, which, as demonstrated by the role of *mbumba* in the history of famines in Malawi (Vaughan 1987), can lead to better income opportunities and food security.

The claim that self-help groups have not yet been ‘classified’ by external actors (“NGOs have not yet come to us to learn from our group activities”, FGD, 8 August 2012) may imply a form of female ‘anonymity’ to counter anthropocentrism and androcentrism in the development context (Mohanty 1994; Louai 2012; Motta 2013; Liska 2015; Seppälä 2016). Gender mainstreaming assumes elitist forms of political engagement as the main form of mobilisation and considers women in the Global South as passive, victimised subjects also because of their specific forms of resistance, which substantially differ from those conceived by Western political thought (Motta 2013; Seppälä 2016). Western political engagement, historically linked to the public sphere or parties, trade unions, and official state organs, entails active forms of protest that emerged as inherent constituents of neoliberal economic frameworks based on masculinised formal labour (Chant 2006; Louai 2012; Motta 2013; Seppälä 2016). With the greater involvement of women in the workforce, women’s struggles extended across sites of production (e.g. factories, trade unions) and reproduction (e.g. families) – the informal and private sphere where they have been historically marginalised (Patil 2013). As discussed with reference to *nyau* (section 7.4), subaltern mobilisation in Malawi also went through different forms of organisation, such as family, kin relations or territorial affiliations.

Moreover, self-help groups allow women to affirm their agency, as their voices emerge from their resilience-building practices (Cornwall 2013; Motta 2013). Subject and object identities are not mutually exclusive, as women are able to cover both object (e.g. marginalised by colonial discourses and socio-economic changes) and subject positions (e.g. leading self-help groups). Women themselves describe these groups as outside the domain of NGOs and international organisations: rather than conforming to dominant participatory standards, they created something different. While men-run committees allow incorporating women's interests 'into the world of men' (Phelan 1990; Escobar 1995), thus reproducing lines of patriarchal and gendered roles, self-help groups enable women to question productive and reproductive structures. Self-help groups in Kasache, for instance, build on and revive matrilineal solidarity as a distinct possibility for the future of Malawian rural communities, as shown in section 7.4.

Through their experiences, women ensure survival and create networks of solidarity for themselves and their dependents. In the case of *nyau*, long-standing gender relations were redefined in the context of socio-economic changes introduced by colonialism as a way of ensuring the survival of *mbumba*, and actually reinforced some elements of the matrilineal lineage (men and chiefs' authority). Likewise, women in Kasache adopted and reconfigured some elements of participatory development (e.g. consultation, women's inclusion) around locally rooted structures, such as matrilineal solidarity, creating new forms of participation as well as transformative practices of climate change adaptation.

Most importantly, from a critical feminist perspective, self-help groups speak to different practices about women's societal roles. In Kasache, women support participatory development (see Loveness's case) and gender mainstreaming while, at the same time, relying on practices grounded in indigenous structures (matrilineal). Self-help groups build on the familial, private and caring matrilineal connections to respond to 'public' and collective concerns about access to technology. They fundamentally break down the anthropocentric and androcentric dualism that looks at women as mainly reproductive

and caring agents. In that sense, self-help groups in Kasache should not be read as the outcome of women's history *without* (or in isolation from) gendered colonial and postcolonial practices, but *in spite of* them. Embedded cultural traditions and values in self-help groups show that women's history and experiences are not merely (and passively) shaped by their encounters with colonialism and neoliberal development – nor by the history of Europe – but also by local constitutive factors. Self-helps groups could be read as the result of *hybrid* (Appadurai 1996; Robins 2003) interrelations (also shaped by contextual historical events) between women's groups, donors, NGOs and national structures, in which women appear actively engaged in developing contingent solutions.

Self-help groups have been shaped by encounters and negotiations between local and wider processes, at times drawing on colonial and developmentalist categories. Hegemonic narratives and relations can be resisted through porous venues and flexible strategies in existing power relations. In this sense, not only does women's experience with self-help groups enhance female decision-making power in Kasache, but it also highlights specific practices, ideas and relations that, although disregarded or removed by colonial and developmentalist practices, can contribute to changing women's role in society.

7.6 Conclusions

This chapter explored the continuities and ruptures between present developmentalist and past colonial discourses on gender. Most importantly, it offered a critique of the a-historical and unidirectional account of gender identity formation typical of mainstreaming approaches to gender, climate change and development, pointing to the risk of depriving agency of its socio-historical specificity.

The construction of categorisations (e.g. Third World Women) described as inherently vulnerable to climate change on the basis of rationalist terms (culture vs. nature, masculine vs. feminine) led to taking for granted specific descriptions and solutions to vulnerability whose causes need to be unveiled and deconstructed. My analysis drew

on the intersectional framework of social structures (Garry 2011), which revealed how climate change vulnerabilities in Malawi partially result from collusion and alliances between Western and indigenous patriarchies in transforming matrilineal gender relations across colonial and postcolonial encounters. Through a series of discursive moves (e.g. moral superiority of men-centred families), hegemonic cultural and political projects concealed the roots of female disadvantage stemming from historical change. Crystallising or naturalising women's marginal role in societal structures (nowadays assumed to be *inherently* patriarchal and productive-centred), they deprived them of the opportunity to question masked forms of subordination. Women in Kasache find it difficult to speak about a system that, while permeated with the concept of gender equality, is intimately felt as oppressive and discriminatory. At the same time, the experience of self-help groups may reveal how, far from annihilating local cultural autonomy, colonialism and neoliberal development acted, in certain instances, as a catalyst that protected socio-cultural practices that are functional to the survival of context-relevant relations and worldviews.

However, by drawing on mutually reinforcing positivist dualisms, the climate-resilient development paradigm risks hindering the understanding of the complexity of climate change vulnerability and adaptation policy outcomes. Furthermore, it risks essentialising gender identities and relations, generating institutions and processes that reproduce and exacerbate unequal structures of power. Climate change narratives and praxis based on formal equality and expressed through the idea of gender mainstreaming may preclude the identification and criticism of substantive inequality. Key to this chapter are the reflections on how epistemological conflicts (e.g. around the definition of climate gender vulnerability) actually involve ontological struggles over the fundamental role assigned to women in Western-inspired men-women relations (Plumwood 1991; Blaser 2014; Popke 2015; Goldman et al. 2016). Through my critical feminist and ontological reading, gender and climate change mainstreaming policies and programmes in Malawi are revealed to be inadequate to address local concerns (adaptation to climate change,

inclusion, participation). They tend indeed to reinstate the positivist ontological assumption that there is only one reality (rationalist, male-centred) to be described, understood and supported, thus erasing or domesticating situated knowledges or practices, such as those grounded on caring and familial relations. In the case of Malawi, climate-resilient development projects seem to be lacking or neglecting the conceptual categories that allow recognising or supporting knowledges and practices that are relevant to specific contexts (e.g. *ganyu* or self-help groups). As emerged from my empirical chapters, the inclusion and consideration of alternative epistemologies and ontologies of climate change may reveal the fundamental connections between climate-resilient development paradigms, dominant rationalities (anthropocentric, ethnocentric, androcentric), and unbalanced international or local relations of power.

Women's voices in Kasache are not only valuable because they offer alternative strategies for adapting to climate change. Beyond the individual stories, they account for the processes by which women's marginality is produced, concealed, recast, questioned. This chapter ultimately argues that an intersectional and ontological approach to gender and climate change may provide helpful insights for 'decolonising' climate-resilient development tropes (Plumwood 1993; Lugones 2010; Mohanty 2013), as further explored in the next and final part of this work.

Chapter 8

Conclusions

8.1 Climate change in Malawi: the making of a hybrid

In this chapter, I will present my conclusions on the way processes of climate change policy and knowledge production engage with grounded practices and worldviews in the context of Malawi. In the following sections, my final observations will cross-refer to my initial research questions to explore the emerging features of a multi-sited climate change epistemology (Table 10).

The analysis of the multi-scale relationships between climate change knowledge and policy unveiled a multiplicity of ways in which the co-production of knowledge on climate change articulates *between* and *within* spatial (international, national, local), historical (colonialism, neo-liberalism) and epistemological (élite/subaltern, expert/non-expert, gender) localities. My research highlights how various sets of actors (international development organisations, policymakers, NGOs, farmers) differently perceive, recognise and in turn experience and practice climate change. Climate change representations come into existence simultaneously, reinforcing and/or contrasting each other within and between communities, and across geographical and temporal scales. The case of Malawi shows how encounters between experiential, sensorial and embodied knowledges of climate change on one hand, and globally produced representations on the other, generate new ontologies, opening up alternative and additional meanings, worldviews and practices.

My analysis shows that three key features characterise the hybrid climate change epistemology in Malawi:

1. It is a mobile, culturally and politically embedded construct that shows ruptures and continuities with colonial and postcolonial representations of weather,

- climate and societal development;
2. It is situated and grounded on context-specific practices connected to relational and/or positivist ontologies;
 3. It is power-laden, shaping identities and agencies through its interplay with contextual structures of power (capabilities, roles, networks).

My findings particularly highlight interactions and overlapping traits between the epistemological and ontological spheres across the three observed features. Furthermore, the analysis of a multi-sited and hybrid climate change epistemology points to an alternative way of framing climate change adaptation, which may potentially overcome the ‘all-encompassing’ (Blaser 2014) climate change epistemology and provide a space for alternative knowledges, practices and solutions to emerge.

Table 10 – Research questions

Research questions
1. How does knowledge and policy production on climate change in Malawi interact with dominant discourses emanating from international scientific and policy frameworks for climate-resilient development?
2. How do interventions inspired by the climate-resilient development paradigm relate to temporally situated (colonial and postcolonial) and cultural framings on weather and climate in Kasache?
3. How are individual and collective vulnerability, adaptation and agency in Kasache enabled, limited or otherwise affected by international policy discourses on gender and community empowerment?

8.1.1 Climate change as a travelling cultural construct

My first research question concerned the ways in which global climate change epistemologies acquire legitimacy and authority in Malawi’s public policy domain. My consultations with national climate change decision makers in Lilongwe highlighted how climate change is mainly understood as an issue pertaining to the natural science and techno-managerial domains.

From their perspectives, climate policy decisions should be based on ‘certified’ (by international scientific and policy bodies) scientific knowledge. Because of the perceived *analytical purity* (Eriksen et al. 2015) of climate science, the knowledge produced by global scientific institutions is highly regarded by national decision makers.

STS and PCSTS critiques of universal scientific paradigms and structural power marks in knowledge constructs were particularly useful for outlining several interesting insights. First, the decision makers’ bias towards quantitative and abstract techniques and expertise is likely to be rooted in the positivist epistemological belief that natural science is a superior source of knowledge to socio-cultural accounts. My analysis highlighted the influence of the positivist conceptualisation of climate change on policy actors’ perceptions of knowledge *usability* in policymaking. According to most, an evidence-based response to climate change needs to be translated into measurable and quantifiable policy targets and requires expert (technical or managerial) competences.

Second, interviews confirmed that the international donor community played a key role in influencing the perception of what is *usable* climate change knowledge for policymaking. The conceptual shift from a ‘climate-first’ to a ‘development-first’ approach, aimed at addressing the societal inequalities deriving from climate change, did not question the dualistic foundational view defining the international scientific and policy regime on climate change. Financial support, provided by multilateral and bilateral development agencies and mainly directed at central government departments in Malawi, influenced the formulation and implementation of national policies and programmes in Kasache. On the basis of the ‘climate rationale’, access to public investments has been increasingly linked to the use of the best available scientific data, ‘certified’ by global bodies of scientific knowledge (e.g. the IPCC). Malawi’s NAPA, for example, is grounded in an abstract and universalistic concept of risk and in single-sector and techno-managerial approaches, neglecting the possible contribution of grounded knowledges and experiences (Chapter 5).

The construction of climate change meanings and practices emerged as transversally connected across multiple spatial scales: from international policy and scientific organisations to national decision makers, from non-state actors to climate-exposed communities. However, universalising and reductionist conceptualisations of climate change led centralised policy-planning practices to guide multi-level policy interaction. In Malawi, climate-resilient development policies have been translated at the local level by state or non-state actors who have not necessarily enquired into the spatial relations of power governing climate change knowledge-making.

Third, policymakers expressed an interest in the ‘non-certified’ elements of climate change knowledge (e.g. cultural and geographical specificity), showing a strong desire for a greater integration between policy and science and, at the same time, expressing their agency. Decision makers in Malawi shared alternative views about the usability of climate science (grounding it in local cultural practices) and, at the same time, deployed mainstreaming narratives (evidence-based policy) to mobilise international financial support for NAPA implementation. Since knowledge is conceived of as usable and applicable when it is deeply linked to contextual factors such as local experience and social and cultural values, the recognition of different and situated understandings of climate ‘knowledge’ may challenge the standard hegemonic definition of knowledge. Practices that have proven effective for certain people in specific contexts but were historically neglected by colonial and neoliberal naturalist epistemologies may be recovered. This could point to a more or less conscious desire to legitimise the ‘excluded’ epistemologies and their qualities.

My analysis shows how weather and climate representations travel not only synchronically across geopolitical spatial scales (international/national/local), but also diachronically across time. Current understandings of climate change were shaped in the lineage and continuity of power processes across history. They originated in colonial ideologies and still permeate contemporary climate change narratives and practices in Malawi.

Contemporary climate reductionism, for instance, retains the ‘explicative power’ of positivist climate determinism, assigning primacy to predictive techniques for ensuring objectivity and disinterestedness in policymaking (Hulme 2011). Similarly, the recent emphasis on the ‘climate rationale’ in the international development community upholds the possibility of managing climate-resilient development on the basis of unbiased and rationalist scientific assumptions, while actually grounding it in partial and situated knowledge systems (positivism, rationalism).

As evidenced by my case study, these epistemological premises have far-reaching epistemological and ontological consequences in Malawi. The different ways in which climate change is approached reflect different underlying views of the relationships between and *within* human societies and ecosystems that are seldom questioned. My research, as further detailed below, revealed the interplay between different – spatially and temporally located – perceptions and knowledges (epistemologies) and the multiple ways (ontologies) in which climate change is experienced by people, shaping opportunities for context-relevant policymaking. This interaction may explain why the inclusion of women’s views in community-based adaptation is not sufficient to increase women’s capacity to adapt to climate change and variability in Kasache, as power imbalances in household decision-making (ontologies) influence the outcome of adaptation initiatives in the community.

The emphasis on climate science influences the nature of knowledge and expertise flowing into policy actions at the national and subnational levels. The positivist nature-culture binary and interrelated dualisms (masculine-feminine) have been systematically integrated into the main national policy documents, such as the NAPA, and translated to the community of Kasache through homogenising perspectives on community and gender vulnerability. The gender and climate change interventions I analysed explain human exposure and response to climate perturbations through single variables (e.g. gender, space, economic status) and along binary (men vs. women) axes

of identity. On the assumption that female-headed households are less resilient to climate change, women are provided with improved access to material means (e.g. technology, finance, trainings, etc.). Yet, by neglecting the importance of situating unequal household relations within broader historical frameworks and interconnected forms of oppression (Eriksen et al. 2015), these interventions hardly have an effect on gendered conditions of vulnerability. Most likely, they end up serving only part of the households or communities, such as male farmers or women in elite positions.

Furthermore, the construction of climate change as a technological-scientific problem led to a specific typology of aid to Malawi, based on technology and capacity transfers, as attested by NAPA pilot projects. National decision makers often emphasised the lack of climate data, information or capacities to explain the country's difficulty in negotiating in international climate change policy processes, its perpetual *lack of capacities*, and the need for donor-driven support. By benchmarking Malawi's scientific, technical and policy capacities against positivist standards of science and technology, these perceptions echo the idea of a North-South knowledge divide, which assumes that science and technology can be seamlessly transferred from a Northern to a Southern context (Escobar 1995; Everett 1997). In other words, policy actors in Malawi project themselves as *those in need*, as a result of which specific conceptualisations of capacity or knowledge gaps are taken for granted. Nonetheless, national policy actors also identified potential ways of expanding Western-led knowledge production, for example by advocating the creation of South-South Cooperation groups within the IPCC (in section 8.2, I will further elaborate on the opportunities for agency expressed by national decision makers).

The global epistemology of climate change emerges from my research as culturally and politically rooted, as well as spatially and historically mobile. National decision makers' perspectives accounted for variations and/or dissent *within* the rationalist climate change epistemology, yet they highlighted the existence of alternative

worldviews of climate change that are deeply embedded into cultural, historical and socio-economic systems, as further discussed in the next section.

8.1.2 *Kusintha kwa nyengo* through situated knowledges

The findings I have discussed so far highlight the difficulty in separating the idea of climate change as observed and known through different historical and spatial perspectives (e.g. colonialism/developmentalism/national/local) from the way climate change is experienced, lived and enacted (Goldman et al. 2016). My experience in Kasache provided examples of alternative framings and response actions engendered by climate change knowledge in particular geographical and historical contexts.

At the community level, several individuals started their interview expressing uncertainty about how to define and identify a change in climate. From an FSTS perspective that tackles conceptual problems as ontological issues, these interviews show that the understanding of climate change proceeds through personal, physical and spiritual experience rather than through abstract and quantitative features only, as framed by national policymakers (section 8.1.1). Climate change seems to be experienced mainly through the senses, where perceptual activity emerges in the continuous relation of the whole being (body *and* mind) with its environment (Feld 1996; Paterson 2009; Serres 2009). There is a special relationship with the elements of the physical environment (the wind is a sort of good ‘adviser’), and a feeling of care between nature and the individual (as evidenced by the rainmaking rituals) could point to an ethical responsibility towards nature, which differs from the anthropocentric ideal of human (masculine) mastering of nature (Plumwood 1991). According to a recurring discursive pattern in interviews, God and the Spirits share joint responsibility – along with human action (e.g. through deforestation) – for climate change.

The statements I collected in Kasache are quite striking compared to the conversations on climate change I had with national decision makers (section 8.1.1). Most of the

government officers I interviewed framed climate change as an expert-led technical issue, emphasising that national planning processes are generally guided by international scientific standards, with limited consideration of local knowledges. Malawi's national policy actors displayed faith in the 'climate rationale' criteria for public finance investments and policy promoted by the international development community. In their views, local knowledges exist as plural perspectives on a singular reality of climate change – rather than as a historical, contingent and intersecting activity coproduced with society. Policymakers' perceptions are in tension with the relational ontologies expressed by several individuals in Kasache. While the former emphasise universality and objectivity as necessary characteristics of climate change knowledge, the latter refer to the heterogeneity and intersectionality of the components coproducing situated knowledges (beliefs, experiences, kin networks).

Another key trait of climate change knowledge emerging from my work is the *epistemological pluralism* generated by the interaction between spatial and historical scales (Goldman et al. 2016; Popke 2016). In my research experience, climate change evoked a multiplicity of meanings expressed by interviewees in apparently distinct but profoundly (historically and/or spatially) related discourses. For instance, the persistence of spiritual beliefs in current community narratives points to the circulation of colonial power within locally based knowledges and world visions under missionaries' control. Furthermore, it shows the deep spirituality characterising Malawian local communities, who deploy spiritual discourses (about witchcraft, rainmaking, secret rituals) embedded in the local cultural heritage to configure and withstand socio-political change and relationships (Englund 1996; Ranger 1996; Englund 2007; van Binsbergen 2011). I argued that the concept of human-induced climate change in Kasache echoes the link between deforestation, land degradation and climate change (and the fundamental anthropocentric idea of human rational control over natural resources) disseminated during colonial rule, which has remained unchanged in the developmentalist paradigm. Not only did these representations spread from 'the West' to the local through

global narratives, but to a degree they are also independently produced at each scale. Farmers' narratives in Kasache not only reflect ideas put forward by international development and non-state organisations but are also symptomatic of positivist ideologies that travelled from the colonial past to the present day, blending into contextual epistemologies and ontologies.

Contemporary 'progressive' climate and development practices – labelled as 'gender mainstreaming' or 'community-based adaptation' – recognise a plurality of ways of perceiving and understanding climate change, which assume that inclusive and democratic decisional processes can be achieved by integrating the various perspectives (Blaser 2014).

However, epistemological pluralism does not account for the many ways of *being* (not only knowing or perceiving) in the world (Ingold 2010; Goldman et al. 2016; Popke 2016). As illustrated by this case study, individuals intimately relate to climate change in different ways and hence *act* differently. In Kasache, this was evidenced by examples of deep relational interactions with the natural environment (e.g. the wind 'telling' individuals when to plant), which may foster either mutual caring or 'passive' attitudes (e.g. being a part of "God's will and plan", climate change does not require individual action). Or by more instrumental and rational relations emerging from individuals' willingness to govern nature and address human-induced climate change (tree planting or farming technologies). Furthermore, I showed how adaptation to climate change in Malawi has historically come into being in different forms, from labour division to societal re-organisation (e.g. men's outward migration, women's household responsibilities, informal job relations), in response to cultural, political and economic changes.

On the basis of these findings, my work offers a critique of the mainstreaming climate-resilient development paradigm and initiatives introduced by multilateral, bilateral and non-governmental development organisations in Malawi. My argument is that a focus on the plurality of knowledges does not question the fundamental

ontological apparatus (e.g. hegemonic relations of power) underlying the multiple perspectives and responses to climate change. For example, the concept of women's inherent vulnerability to climate change, introduced in Kasache by international organisations through standardised practices of community and gender participatory development, is potentially hampering their adaptation to climate change and variability. These interventions seem to exacerbate gender unbalances that are deeply rooted in patriarchal, anthropocentric, mechanistic cultures. Cases in point are women's reliance on male access to technology and dependence on subsistence farming, which substantiate women's vulnerability and adaptive capacity to climate change in Kasache. Alternative and possibly relevant measures, such as *ganyu*, women self-help groups or options that leverage the relational connection with the natural environment (e.g. *nyau*), are hardly acknowledged by mainstreaming approaches.

From this perspective, many of the conflicting perceptions on climate change I encountered in Kasache may be ascribed to the way the international policy regime defines this issue. Or to the way climate change is embedded and experienced locally, on the basis of intimate, personal and life-based experiences as well as historically stratified meanings and power relations. The climate rationale concept, for instance, by solely relying on greater integration between disciplines (planners, scientists, communities), risks overlooking the spatial relationships of power embedded in colonial and postcolonial history that make developing countries 'deficient' in 'rational' knowledge standards. Most importantly, it does not recognise that knowing and acting are essentially blended into the historical and political power processes from which they originated, as further discussed in the next section.

8.1.3 Vulnerabilities and power asymmetries in Kasache

My fieldwork in Kasache revealed another key feature of multi-sited climate change epistemology: its embodiment in power processes and ability to shape subjective agency and aspirations. The impacts of specific categorisations embedded in

political and cultural projects (e.g. international development projects) can be at once marginalising or empowering.

As regards the first set of impacts, in Malawi these emerged from the interviews I conducted with national decision makers and farmers. While the former perceive Western expertise, through the work of the IPCC, as best positioned to ensure policy legitimisation (see section 8.1.1), the latter seem to view technology-based measures as necessary for climate change adaptation. Farmers in Kasache, for example, openly valued technical and managerial support from external organisations. This perception, however, fuels notions of passivity since it increases dependency in specific relations of power (e.g. international aid or expert-advice dependency).

These narratives confirm the pervasiveness of positivist rationality in Malawi. First, colonialism succeeded in introducing the nature-culture dualism by appropriating local belief systems on weather and climate. Then, the developmentalist paradigm deployed under Banda's regime increased dependency on specific crops on the basis of technological-managerial prescriptions, making technical assistance and technology transfers vital to a successful resolution of productivity issues. At the same time, it ensured compliance with the international and national development apparatuses. In both cases, the alternative worldviews (relational) and practices (e.g. informal kin networks) characterising the context of Malawi were excluded by the dominant paradigms of science, knowledge and technology. In other words, climate change reductionist narratives do not simply generate labels ('climate vulnerable'), but they also influence the way individuals and groups perceive and project themselves. Therefore, both the decision makers and the farmers demand support, identifying themselves as *those in need*. Similarly, the women I interviewed in Kasache, despite being aware of their different vulnerability, tend to portray themselves as a uniform group that suffers because of its marginal position compared to men. Like farmers and decision makers, they are also longing to take part in international development initiatives.

This finding is crucial. Hegemonic cultural/economic epistemologies risk reinforcing identities and categorisations that prevent both contestation and the production or recognition of empowering and non-hegemonic solutions.

Women's self-help groups (SHG) in Kasache are a revealing case in point. These groups were formed as the answer to women's unmet need for useful information and tools to diversify livelihoods in a changing climate. SHG have evolved from informal networks, and seemingly build on the historical matrilineal solidarity that played a crucial role in safeguarding household food security during climate shocks. In Kasache, they represent a creative and alternative way of responding to those development interventions that replicate anthropocentric and androcentric dualisms (women as mainly reproductive and caring agents) that relegate women to the private sphere and hinder their access to agricultural extension services.

FSTS argues that individual and collective agency – mainly expressed in the daily habits, routines, and skills through which individuals shape their important choices – can emerge from situations of conflict and contradiction that allow new possibilities for action to become visible. From this perspective, the women in Kasache, whose material needs, social circumstances and agency were silenced by dominant decision models and interventions (e.g. LCPC), developed alternative consultative and supportive methods that may eventually counter colonial and patriarchal structures. Self-help groups can be read as a way of challenging traditional notions of identity based on the clear-cut separation between masculine and feminine spheres. Since they build on intimate, special and familial matrilineal connections to address the 'public' and collective problem of accessing farming services, SHG situate women's identity and roles in the realm *between* private and public. More broadly, they challenge the North/South and tradition/modernity dualisms. By incorporating values and ideas from local cultural traditions, self-help groups show that women's experiences are not exclusively and passively shaped by the knowledge- and world-making apparatuses

of international policy processes (e.g. UNFCCC, IPCC), but also by local constitutive factors.

In short, essentialising knowledges can produce empowering outcomes originating from the multiplicity, conflicts and messiness that these epistemologies generate in their encounters with grounded (past and present) worldviews and experiences. As such, many of the analytical concepts informing the climate-resilient development paradigm should be rethought from a multi-sited (spatial and temporal) ontological perspective. This would allow tracing the legacy of culturally dominant projects in current narratives and practices, as well as digging into daily habits and routines that, through the identification of ambiguities and divergences, allow creating spaces for agency.

To sum up, climate change emerged in my work as a hybrid construct of biophysical and socio-cultural practices, variable spatialities and multiple temporalities, at once binding and empowering. The same meanings and categories can generate either compliance or resistance, depending on the hierarchical positions and narrative power of the single subjects. The case of Malawi offers plenty of supporting statements for inherently oppressive power systems (e.g. North-South knowledge and capacity transfer). As these have been merging and blending with local worldviews and practices, it is now very hard for individuals to detect them and detach. In effect, an ontological separation is hardly achievable. After centuries of dynamic and transformative interactions, a radical distinction would reassert the rationalist dualism that sees traditional societies as isolated, static and backward and opposed to the Western world (Blaser 2014).

The next question, then, is: how can individual and collective agency be fostered in a fuzzy and porous situation in which no ‘authentic’ local knowledges on climate change exist?

8.2 Decolonising climate change knowledge: reflections from the case of Malawi

My framing of climate change knowledge as a hybrid construct aligns with many critical geography reviews that have recently explored and documented the nature of climate change as a hybrid entity, where ‘hybrid’ is interpreted as a feature that holds together and merges different ways of knowing and being (Carr and Owusu-Daaku 2016; Goldman et al. 2016; Nightingale 2016; Popke 2016; Hulme 2017). However, little attention has been paid in these studies to the emancipating power of the concept of hybridity. Given my strong focus on PCSTS and FSTS, the use of the term hybridity (Bhabha 1994) indicates the repositioning and empowering of alternative knowledges and experiences in the dominant discourse of climate change.

Because of the way climate change knowledge is enacted in the context of development – a space that embraces colonial and Western-influenced conditions of identity formation – the idea of a hybrid climate change epistemology can help destabilise the foundations of well-consolidated stereotypes (e.g. vulnerable developing countries or women).

My work outlines how a hybrid climate change epistemology creates new ontologies and practices where the space for negotiation of identities and categories is provided by the everyday experiences of climate change at different policy scales. To argue my point, I will refer to the case of women in Kasache. Some of the women I interviewed believe they have been excluded from internationally legitimised decision-making platforms. At the same time, women’s exclusion from the main decision platforms emerged as a key factor for the reconfiguration of imported elements of participatory development (e.g. community-based) around context-relevant structures, such as matrilineal solidarity. Women’s marginal condition allowed self-help groups to emerge. In the imitation of or aspiration to external knowledge and praxis, women in Kasache showed agency, creating something new

and irreducible to hegemonic models. They managed to counter the marginalising effects of mainstreaming climate-resilient development by altering the meanings of stereotyped categorisations and practices.

The framing conditions of individual agency, which determine more or less liberating results, certainly depend upon historically and context-specific power structures and the position of individuals with respect to those power relations. For example, women's inclusion in climate-related decision processes in Kasache is limited by how gender participation is internationally framed (formal) and locally translated (shaped by transformation of household roles during British colonialism).

However, it is in the erasure and transgression of established roles (e.g. dancers or drama performers in knowledge platforms) and structures (e.g. LCPC) that women manage to establish new and empowering relations. As a result of the contradictions experienced by women in Kasache, other options materialised that transcended commonly accepted and dichotomous choices (e.g. women are either included yet 'invisible' in the LCPC *or* excluded and vulnerable at home) that do not substantially improve women's situation. Self-help groups in Kasache allowed alternative worldviews and perspectives about societal women's roles to emerge, suggesting different and more effective ways of articulating needs and designing policy solutions.

In this sense, the mismatches and tensions between spatial, historical, temporal and epistemological scales I experienced in my journey (women's mixed feeling about gender mainstreaming or the decision makers' desire for integration/independence from positivist climate science), can be related to more profound political and ontological disconnections. By not considering the various ways knowledges interact and interfere, mainstreaming climate change policy practices can only be moderately adequate to speak for different ontologies and design fully inclusive

and transformative solutions. The value of hybrid solutions such as women's self-help groups resides exactly in providing a space for negotiating and revisiting fixed identities and roles.

Because of its hybrid outcomes, multi-sited climate change epistemologies can allow contradictions and hidden assumptions in the understanding of climate change to emerge and be questioned. Acknowledging the hybrid, contested and political nature of climate change can help recast the focus of climate change adaptation knowledge and praxis from exclusive policy-planning support to a socially empowering element.

In that sense, climate change knowledge should undergo a systematic 'decolonising' reading to unveil the climate change-related experiences of individuals against the world systems of power (colonialism, neo-liberalism, patriarchy) (Lugones 2010). This process should be especially undertaken by scientific and policy organisations (international to national) working in the development context of climate change, which, as in the case of Malawi, played a major role in translating reductionist epistemologies to national and local scales. The process of decolonising climate change will pose some theoretical and practical challenges, which I will discuss in the following and final sections.

8.2.1 Detecting conflict, transforming adaptation

In order to be identified and explored, climate change multi-sited epistemologies and ontologies required a novel form of inquiry that mixed a series of theoretical and methodological approaches. While there is a growing body of literature (Crate 2011; Eriksen et al. 2015; Popke 2016) demanding a cross-scale, multi-stakeholder and interdisciplinary approach to climate change, the specific methods and praxis remain so far largely unexplored. Hence the value of my experimental methodology, which, by combining several conceptual resources (social constructivism, power-agency, multi-sited ethnography, etc.), appears to be suitable for exploring different empirical complexities without erasing tensions and contradictions.

One of the key theoretical challenges in my research was related to identifying the narrative and material ‘places’ in which power and agency operate in relation to climate change.

In Malawi, where climate change emerges as closely entrenched, signified and enacted through development practices, and therefore dependent on Western situated rationalities (section 8.1.1), it was particularly hard to detect a space for national decision makers’ or communities’ agency. In their statements, decision makers and men and women farmers expressed the desire to take part in and benefit from global scientific, technological, economic and socio-political advancements. From a postcolonial perspective, their position might have appeared as ‘subjugated’ (Foucault 1972; 1982) and reliant on external categories, worldviews and self-perceptions. Most of the contacts I had during this research process showed that some forms of (epistemological and practical) resistance through hybridity are only happening *within* the working frames of postcolonial and neoliberal relations. So, how to deploy the concept of hybrid, multi-sited climate change in an inclusive and transformative manner?

8.2.2 The policy implications of my research

My entire research was intentionally and extensively connected to my professional field, making the ‘after’ stage of my fieldwork not a one-period experience but a continuous unwinding between professional and academic life. My position sometimes allows me to influence thinking processes through the analytical contribution I am requested to provide. A fundamental way of making the most of my research observations is to act as a catalyst introducing change and new perspectives.

For instance, I have been working on several publications on behalf of my former employer, the Geneva-based UN Institute for Training and Research (UNITAR), focusing on issues of skills development, policy planning and international negotiation for adaptation planning. In this process, I have introduced some of the key concepts explored during my

research. In Chapter 4, I highlighted how the concept of climate-resilient development encouraged the institutionalisation of rationalist planning, budgeting, implementation and monitoring techniques in LDCs, which pin countries and individuals to specific skills and policy results. Being aware of that, I contributed to a recent publication, “Skills Assessment for National Adaptation Planning: How Countries Can Identify the Gap” (UNITAR, UNDP and GEF 2015), urging the application of the Socio-Cultural Action Analysis (SOCAA) approach (Renshaw et al. 2001). This is an integrated method based on ethnographic and qualitative research techniques that helps analyse the socio-cultural, political and economic contexts defining climate change adaptation activities. The adoption of SOCAA was not without resistance from members of the UN contributing team, since it was perceived to be too cumbersome, complex, and most likely not suitable for producing the quick, linear and visible results most appealing to donors.

Thanks to my research experience, I developed skills that increasingly enable me to question the status quo and introduce elements of change into the managerial practices designed to ensure aid effectiveness. With respect to my professional activity, this means providing critical inputs during the development of knowledge products (reports) and initiatives (training) that are especially designed to build climate change-related capacities in specific regions of the world. The opportunity to translate research insights into my day-to-day professional life is the main transformative impact this research can contribute to, and it represents a way of making my work relevant to those who assisted me.

My research also pointed to how knowledge constructions, in the attempt to adapt to the exercise of power, produce enacting effects. For example, in the case of Malawi, national decision makers deployed specific aspects of climate narratives (developmentalist view) to achieve relevant policy objectives (mobilising and accessing climate finance). In this case, dominant epistemologies were instrumentally used to alter externally imposed identities and build alternative responses. Thus, decision makers could bring national and local views and narratives to move ‘upwards’, speak and stand out in the national and

international planning arenas where a certain idea of climate change is still dominant. One possible way of influencing this process would be to share and discuss the results with the group of decision makers I consulted, analysing together different approaches to climate change and development, understanding the assumptions upon which the UNFCCC operates and how they can most effectively affect international processes through the COPs. Arguably, it will be crucial in the near future that national decision makers deploy the climate rationale concept – or any criteria that ‘scientifically’ ground policies and projects – at its full extent (WMO-GCF, forthcoming). It is not only the physical elements of climate change that need to be identified, but also the chain linking the biophysical and societal causes of climate vulnerability to the impacts of policy action. Below, I provide further recommendations aimed at supporting policymakers or climate change technical specialists (from the scientific or international development domains) faced with the task of designing and implementing public policy interventions or activities related to or affecting adaptation processes. By not considering climate change as a hybrid socio-political process, this target audience risks propagating hegemonic epistemologies (e.g. Western-oriented, expert-based), supporting or undermining specific identities and agencies.

8.2.3 A new knowledge space: from pluralising epistemologies to hybrid ontologies

My work highlighted how certain adaptation interventions may reinforce the authority of multi-sited élites (e.g. local chiefs at the village level, or IPCC experts internationally), exacerbating marginalisation and exclusion (women and elders in LCPC or developing countries in international negotiations fora) as well as delegitimisation of context-relevant knowledges.

Increasing participation of marginal groups (from countries to individuals) in formal and externally-designed mechanisms – which has not yet reached its full potential, as shown by the case of Kasache – is a possible solution to this challenge, but not the only one.

Participation in formal institutions, in fact, bypasses entrenched inequalities rather than challenging them, as it builds on asserted and essentialised conceptualisations. Both at the international level through North-South or South-South cooperation mechanisms and at the local level via community-based platforms, these participatory systems tend to neglect alternative knowledge systems and responses. Epistemological and ontological freedom will be achieved not by having marginalised women and elders in Kasache become ‘agents’ (as recommended by gender mainstreaming or community-centred approaches), but by deconstructing and unpacking the causality of their marginalisation through reflections on the politics of knowledge and being.

According to my analysis, climate change knowledge should be regarded as having ‘hybrid’ characteristics originating from the intersection with various spatial and temporal layers of meanings and experiences – and as a locus where conditions of cultural hegemony can be detected and destabilised by diverse actors.

From the perspective of national policymakers, designing adequate and transformative responses to climate change is not about filling knowledge gaps or integrating knowledges, but rather about questioning the hierarchy that establishes which knowledge (or which quality in a specific epistemology) is predominant (Hulme 2017). Since no single and exclusive actor or consultative process can really establish a unique and ‘right’ adaptation trajectory on a fair basis, the solution would be to reflect on procedural and methodological issues and ask questions such as: what to do when multi-sited epistemologies and ontologies clash? Most importantly, establishing which knowledge matters should be linked to reflections about what kind of power (and group) is going to be reinforced and privileged by that knowledge (Ingold 2010; Hulme 2017). The methodological (rather than theoretical) focus on ‘asking the *other* question’ is crucial to overcoming these tensions (Kajiser and Kronsell 2014; Popke 2016; Hulme 2017).

In the case of Malawi, the *other* question could be, for example, what has been missed

by having alternative ontologies removed or forcibly fit (through climate-resilient development projects) into the global climate change discourse. Some aspects of the relational ontology emerging from the interviews in Kasache, such as the caring qualities associated with nature (which is not considered to be in an inferior position to humanity), may suggest alternative conceptions of the human-nature relation. Such perspectives would challenge ideas of human autonomy and superiority to nature (which justify the exploitation of the natural environment as a non-sentient resource) and urge individuals to be more sensitive to the functioning of ecological balances, acknowledging human dependency on nature (or God, as in the case of Kasache).

While several individual (Burnham et al. 2016; Goldman et al. 2016; Popke 2016) and collective research efforts (e.g. the Millennium Ecosystem Assessment, MEA 2006) have addressed the diverse epistemologies and ontologies in climate decision-making, practical policy experiences are rarer. The MEA (2006) noted that the recognition of epistemological and ontological pluralisms often requires the creation of new mechanisms, such as fora and platforms for negotiation or conflict resolution, trust building, and joint action, which can be open to additional stakeholders.

The identification of conflicting, incongruent or contradictory climate-related narratives and experiences may also provide an opportunity for decolonising climate change knowledge. Acknowledgement of *kusintha kwa nyengo*, for example, may help to advance alternative and more effective pathways for climate-resilient development projects. This could help to rethink the Western dualistic view of the world, opening to alternative logics of environmental care and responsibility that are centred less on human self-interest and more on the sustaining relationships between humans and the Earth (Plumwood 1991).

Alternative experiences – especially those related to adaptation options – could be further investigated in relation to *mbumba*, *nyau* or *ganyu*, which so far have not been given

much consideration from community-based approaches to climate change. All these practices build on the intangible resources, social connections and grounded worldviews that have historically mediated individual and collective responses to climate variability and change.

In addition, an ontological turn (Escobar 2010; Blaser 2014) in climate change epistemological pluralism may help identify *co*-emerging and urgent political problems (women's marginalisation, natural resources depletion) to be addressed in the context of climate change. Given the interrelation of Western ontological dualisms, challenging the centrality of one of them could create opportunities for destabilising the whole rationalist apparatus, generating multiple empowering effects. Thus, recognising women's situated and conflicting practices in Kasache may help to assess causality between different and (apparently) disconnected forms of oppression. As shown by self-help groups, women's climate vulnerability in Malawi is being addressed through collective social formations building on matrilineal cooperation and mutuality. These target not just one but several dimensions of female empowerment (political, economic, psychological, etc.), so as to generate multiple socio-environmental and political outcomes (adaptation to climate variability, access to funding, improved female decision-making, enhanced self-confidence). Observing such connections may foster the understanding and resolution of interconnected crises, which, in the case of Malawi, are grounded in unequal power relations and disembodied conceptions of the human-nature relation.

The ultimate contribution of this work lies in its aim to shift the focus from mainstreaming practices to the untapped potential of Malawi's contextual climate change ontologies. Policy as well as academic debates should rethink the analytical concepts through which the qualities left out from the 'all-encompassing' climate change epistemology – the 'particular', the 'feminine', the 'relational', the 'private' – are identified and explored (Plumwood 1991). This would help to reframe worldviews and practices erased by colonial and developmentalist experiences, as well as crafting policy actions that can

better express and materialise the vision of a ‘decolonised’ climate change knowledge. As suggested by Blaser (2014), a space could be carved out to listen to and engage in alternative kinds of world-making, producing the conditions for adequately responding to the Earth’s changing climate through a culture of coexistence and inclusion.

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Annex I - Guiding questions for interviews in Lilongwe

- 1) Who are the main producers of climate change knowledge in Malawi (e.g. universities, government or corporate labs)?
- 2) Does the local scientific community act as a recipient of knowledge or also as an agent of knowledge production?
- 3) Are linkages between knowledge and policy established through institutional structures?
- 4) Is climate science responsive to social and political institutions in Malawi?
- 5) Is there a demand for scientific expertise from political institutions?

Annex II – Guiding questions for interviews in Kasache

- 1) How do you frame the issue of climate change? How do you see the problem?
- 2) How do you measure it (qualitative vs. quantitative; diachronic vs. synchronic observations)?
- 3) How do you describe climate change adaptation? Have you always tried to adapt to the changing climate or is it something ‘new’ and brought from outside (projects, NGOs)?
- 4) Where do you turn for information on climate change (elders, specialists, NGOs)?
- 5) How do you relate this information to your everyday life experience and to other forms of knowledge/experience (scientific, local)?
- 6) Do you favour an action/benefit-driven knowledge approach? Do you try to combine climate change adaptation and poverty reduction/natural resource management?
- 7) Who are the repositories of this knowledge? Have information and knowledge always been taken into account (DRR assessment i.e.)?
- 8) Have you ever been consulted on issues regarding climate change in your community?
- 9) Which resources do you find most useful for relating information on climate change adaptation (metaphors, models, narratives, experts/external sources, radio-listening, theatre, dance, maps, scenarios)?
- 10) What are the expectations in terms of knowledge exchanges between external organisations and the community?
- 11) Is there a preferred form of knowledge for community-based adaptation projects/initiatives?
- 12) How are vulnerability assessments produced in your community? (e.g. through sharing information, deliberative discussions, reasoning together, mutual learning)
- 13) Do they allow for knowledge systems pluralism?
- 14) Is there any cross-scale integration of information (local, regional, global)?
- 15) Do you think different knowledge systems (local and indigenous knowledge vs. scientific/external knowledge) are used together or integrated?
- 16) What are the challenges and constraints of this integration?

Annex III – Questionnaire for policymakers

The role of the science-knowledge interplay in influencing the formulation of climate change policies and epistemologies in Malawi

Semi-structured questionnaire

1. General information:

- Name:
- Age:
- Nationality:
- E-mail:
- Telephone number:

2. Professional role and affiliation:

- How do you define your professional role? (Please tick/highlight/underline one option)
 - Researcher/Analyst
 - Project coordinator
 - Field-officer
 - Technical adviser
 - Other (please specify)

- What is your professional affiliation? (Please tick/highlight/underline one option)
 - Government
 - Research institution/University
 - United Nations Agency
 - Local/Community NGO
 - National/International NGO
 - Private sector
 - Other (please specify)

- In which department/unit/faculty do you work?

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3. Qualifications and knowledge background

- What is your highest level of education? (Please tick/highlight/underline one option)

- PhD/Post Doc
- MSc
- BSc
- College/High school
- Other (please specify).....

- What is your professional field of specialization?

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- Is your current professional role dealing with climate change-related issues? (Please tick/highlight/underline one option)

- Yes
- No

If Yes, which kind of aspects do you especially deal with? (Please tick/highlight/underline one or more options)

- Climate change physical science (models, scenarios, data, etc.)
- Climate change adaptation and mitigation analysis/assessments
- Climate change policies/projects/programmes design
- Climate change projects/programmes implementation

- What is your climate change knowledge mainly focused on? (Please tick/highlight/underline one or more options)
 - Climate science/Meteorology/Climatology
 - Adaptation analysis/assessments
 - Climate change policy development
 - Climate finance and mitigation analysis/assessments
 - Disaster risk reduction methodologies/analysis/assessments
 - Other (please specify).....

- How do you rank your knowledge on climate change in relation to the aspects specified above? (Please tick/highlight/underline one option)
 - Very good
 - Good
 - Medium
 - Poor
 - Very poor

4. Climate change knowledge production

- Does Malawi possess local knowledge on climate change?
 - Yes
 - No

If YES, can you explain at what level (community, academy, etc.)?

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- How does this local knowledge contribute to the national and international debate on climate change science and policy?

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○ Does the local knowledge of Malawi contribute to your academic/professional knowledge? (Please tick/highlight/underline one option)

- Yes
- No
- Other (please specify).....

If YES, in which way?

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If NO, why?

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○ Do you perceive any knowledge gap in Malawi in relation to climate change? (Please tick/highlight/underline one option)

- Yes
- No
- Other (please specify).....

If YES, where/in which field (data on impacts, climate models, socio-economic scenarios, adaptive/mitigative options, etc.)?

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- How do you rank the link between climate change science and policy in the formulation of effective climate change adaptation and mitigation interventions?

(Please tick/highlight/underline one option)

- Very relevant
- Relevant
- Neither relevant nor irrelevant
- irrelevant
- Very irrelevant

- Do you think the linkages between climate change science and policy are visible in Malawi (through collaboration between academia and policy-makers for example)?

(Please tick/highlight/underline one option)

- Yes
- No
- Other (please specify).....

- If YES, in which way?

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..... If NO, please specify why not.

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- Do you think your academic knowledge and/or professional experience influence your perception of climate change? (Please tick/highlight/underline one option)

- Yes
- No
- Other (please specify).....

If YES, in which way?

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○ Do you think climate change as a new emerging scientific/environmental/development issue is in competition with other ideas/facts in gaining scientific and political visibility? (Please tick/highlight/underline one option)

- Yes
- No
- Other (please specify).....

○ If YES, which of the following issues do you consider as being in competition with climate change? (Please tick/highlight/underline one or more options)

- Natural resource management
- National budget considerations
- Human development issues (poverty reduction, gender empowerment, etc.)
- Disaster risk management
- Other (please specify).....

○ Is there any issue that climate change can otherwise reinforce?

- Natural resource management
- National budget considerations
- Human development issues (poverty reduction, gender empowerment, etc.)
- Disaster risk management
- Other (please specify).....

- Is there any aspect of the climate change issue which you do not agree upon? (Please tick/highlight/underline one or more options)
 - Scientific explanations/conceptual framing/validity of scientific claims
 - Political strategies at global/national levels
 - Level of alarmism/relevance given at global level
 - Other (please specify).....

Can you please argument a bit more on your choice?

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- Have you ever questioned the legitimacy of the global climate change science? (Please tick/highlight/underline one option)
 - Yes
 - No

- Do you perceive the global climate change science as culture/value-free? (Please tick/highlight/underline one option)
 - Yes
 - No

- Do you think the climate change knowledge produced or assessed by the global North (e.g. through IPCC reports) is influencing the climate change knowledge generation and policy formulation in Malawi? (Please tick/highlight/underline one option)
 - Yes
 - No

If YES, in which way?

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If NO, please specify why not

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Annex IV - Photo gallery (2010-2017)



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1, 2, 3, 4, 6, 7 - Introductory meetings with the COOPI Project Manager in Salima, Group Village Heads, Traditional Authorities and Local Civil Protection Committee (LCPC) representatives in Msosa and Kasache

5 - Local meeting point for weather-related emergencies



7



8 - Consultations with Group Village Heads
 9 - Focus Group Discussion with female farmers
 10, 11 - Kasache
 12 - Focus Group Discussion with farmers
 13 - Lingadzi River Valley
 14 - Individual interview with a female elder





15



16



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18

15 - Individual interview with a female farmer
 16 - House building in Kasache
 17, 18 - Kasache
 20 - Individual interview with a female elder
 19, 21 - Individual interview with a male farmer



19



20



21



22

22 - Focus Group Discussion with male farmers

23 - Individual interview with a female elder

24 - Group of female farmers

25 - Kasache

26 - Focus Group Discussion with female farmers

27, 28 - Focus Group Discussion with elders



23



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32

28 - Individual interviews with a Local Civil Protection Committee (LCPC) representative
29 - Bush fires around Kasache
30, 31, 32 - Smallholder farms around Lingadzi River banks
33, 34 - Lingadzi River Valley



34



35



37



36



38

35 - Individual interview with Traditional Authority in Msosa

36 - Kasache

37 - Focus Group Discussion with elders

38 - Community consultation during a post-flood assessment in Karonga (Malawi 2011)

39 - Stakeholder meeting organised by the Department of Disaster Risk Management Affairs (Karonga, Malawi 2011)

40, 41 - Effects of flooding on households in Karonga (Malawi 2011)



39



40



41



42

42 - Group-work with Malawi's policymakers (Dakar 2010)



43

43 - National training workshop on National Adaptation Plans (NAPs) in Lesotho (Maseru 2015)

44 - National training workshop on National Adaptation Plans (NAPs) in Mauritania (Nouakchott 2015)

45 - Country work on National Adaptation Plans in a Regional Training Workshop (Abidjan 2017)

46 - Representing UNITAR at the UNFCCC (Bonn 2017)

47 - Working with Malawian decision makers (Addis Ababa 2014)



45



44



46



47

