Towards Sustainable Carbon Markets in Tanzania (SUSTCARB)

Introduction

This project examines the dynamics of international carbon markets and how they interact with existing land governance in Tanzania to produce socio-ecological, developmental and institutional outcomes across local, national and international levels.

Many see carbon markets as crucial for rapid, cost-effective climate mitigation and for channelling finance to poor and vulnerable communities [1–3]. The net-zero agenda and expectations for a global compliance carbon market under the Paris Agreement's Article 6 [2,4,5] have escalated the demand for carbon credits, especially from nature-based projects [6]. Alongside this, a plethora of new standard-setting processes and associated technologies for monitoring, reporting and verification are currently being developed aiming to ensure quality and streamline the market [7,8]. Yet, carbon markets continue to face criticism for low environmental integrity [9–11], inequality and rights violations in the global South [12–15], and greenwashing and unequal development [16].

These criticisms have spurred further research to promote environmental integrity [17–24]. A growing literature focuses on how to design carbon market mechanisms for higher environmental integrity, for example, by operationalising key concepts such as additionality [e.g. 21] or improving principles for carbon accounting and monitoring [e.g. 17]. Yet, questions concerning the political economic and institutional consequences of the changing market are rarely covered by this literature reflecting, among other, cross-disciplinary divides [3,16,25–28]. Thus, there is a need for research that explores and seeks cross-disciplinary and policy dialogue, on sustainable and high-integrity carbon markets that promote equitable societal development trajectories, which align with the planetary boundaries.

This project examines how the changing dynamics of carbon markets interact with existing land governance processes to produce socio-ecological, developmental and institutional outcomes. We address three gaps in existing research. First, we examine how the proliferation of new standards and technologies reconfigure the market [2,3,29,30]. Second, we explore how carbon finance interacts with existing land governance to produce benefits, losses and broader developmental impacts [31,32], including hitherto understudied questions of how such markets shape institutional hierarchies across local to global levels. Third, we extend emerging research on offsetting and residual emissions by examining how the production and end-use of carbon credits contribute to shaping broader development trajectories and perceptions of sustainable livelihoods and lifestyles across North-South contexts [33,34].

Research on the changing dynamics of carbon markets is timely for several reasons. First, while negotiations of the rules governing an international compliance market under Article 6 have not been finalised [2], bilateral deals covering millions of hectares of land are already being hashed out between States, e.g. the United Arab Emirates' (UAE) Blue Carbon investment programme and several African Nations [35]. Second, stakeholders across Africa are expressing interest in carbon finance [36], positioning the continent as an opportune place for carbon offset investments, e.g. through the African Carbon Markets Initiative [37]. Yet, researchers and civil society organizations flag concerns about inequitable partnerships and new land grabs [38]. Finally, the voluntary carbon market sees a surge of financial and political interest, while a proliferation of technologies, standards and methodologies are rolled out to address long-standing critiques [6,30,39,40]. As these changing expectations, norms, standards and practices hit the ground in communities and landscapes in the form of carbon projects, they will interact with existing land governance efforts, prompting a need for research to explore the resulting outcomes.

Lessons from research on carbon markets in a Tanzanian context are timely and relevant. Tanzania has a long history with participatory conservation schemes and REDD+ [35–37] allowing us to examine interactions between carbon market finance and existing land tenure relations and conservation interventions. Furthermore, Tanzania currently sees a large influx of carbon market finance spanning the voluntary and emerging compliance market under Article 6 of the Paris Agreement [38,39]. Tanzania's NDC mentions forestry as one of four key mitigation sectors and the country has for two decades implemented REDD+ readiness activities and pilot projects in anticipation of an emerging global compliance market for forest-based carbon credits [41]. To guide the influx of carbon projects and investment, the Government of Tanzania in 2022 issued a set of national carbon trade guidelines [42]. These prescribe procedures and standards for carbon trading, including a prescribed cost-benefit sharing scheme for land-based projects. To our knowledge, no research has been done on how this regulatory framework in conjunction with changes at the international level shapes the development and outcomes of carbon market interventions in the country.

Project objectives

The development objective is more sustainable carbon markets. We recognise that the word 'sustainable' can mean many things [43]. Here, we consider carbon markets sustainable when they contribute towards more equitable societal development trajectories that align with the planetary boundaries [44,45]. We acknowledge that we can never objectively assess whether carbon markets are sustainable in this sense. Yet, we believe a continuous critical examination of carbon markets and targeted communication of such research across disciplines are critical components in promoting more sustainable practices. Throughout the history of carbon markets, stakeholders have debated how to improve their environmental integrity and contributions to development [30,46]. We aim to contribute novel research insights to this ongoing debate.

The immediate objectives of the project are:

- Research objective: Understand how international carbon market dynamics interact with existing land-related governance to produce socio-ecological developmental, and institutional outcomes.
- Capacity development objective: Enhance the capacity of involved institutions and research participants to critically engage in teaching and research on carbon markets.
- Policy objective: Develop and communicate recommendations for sustainable carbon markets to Tanzanian and global carbon market actors.

We pursue our overarching research objective through three questions:

1. How is carbon in Tanzanian ecosystems commodified?
2. How are different livelihoods, lifestyles and interests supported and negated by carbon market developments?
3. How are institutional and knowledge hierarchies reconfigured by carbon market developments?

Conceptualization and empirical approach

Three conceptual lenses of enquiry inspire our three research questions: commodification, uneven development, and institutional hierarchies. These are, in turn, derived from the intersections of three theoretical traditions, namely science and technology studies, political economy and feminist and decolonial theories (see Figure 1 next page).

Commodification

The process of commodification is a key entry point to examine the values inscribed in and by carbon markets, and how standards, expertise and technologies are leveraged to create carbon markets, including how these shape governance at various levels [54–58]. Commodifying carbon within ecosystems relies on several interrelated processes. First, the establishment of the link between the ecosystem and the carbon credit through ecological-technological processes, which increasingly rely on digital technologies, big data, and automation [55,59–61]. Second, the existence, ownership and transferability of carbon credits are established through legal processes [62–64]. Third, affective processes are necessary to establish the qualities of the carbon projects and credits necessary to convince stakeholders of the benefits of the market [65,66]. In these processes, the carbon value of ecosystems tends to be prioritised over, e.g. biodiversity, livelihoods and benefit distribution, while certain ways of viewing and knowing the world are emphasised [27,54,67–69]. Here, we examine how carbon markets affect the valuing of different landscape elements and, in turn, landscape governance, particularly focusing on the techno-scientific tools and practices employed to establish, monitor, and measure carbon projects [55,56,70–73] and how these shape local and wider systems of valuation and knowledge production [74–77]. In this, we pay attention to how current land-use and governance systems are represented through the commodification of nature for carbon credits. The lens is developed from science and technology studies and political economic theories.

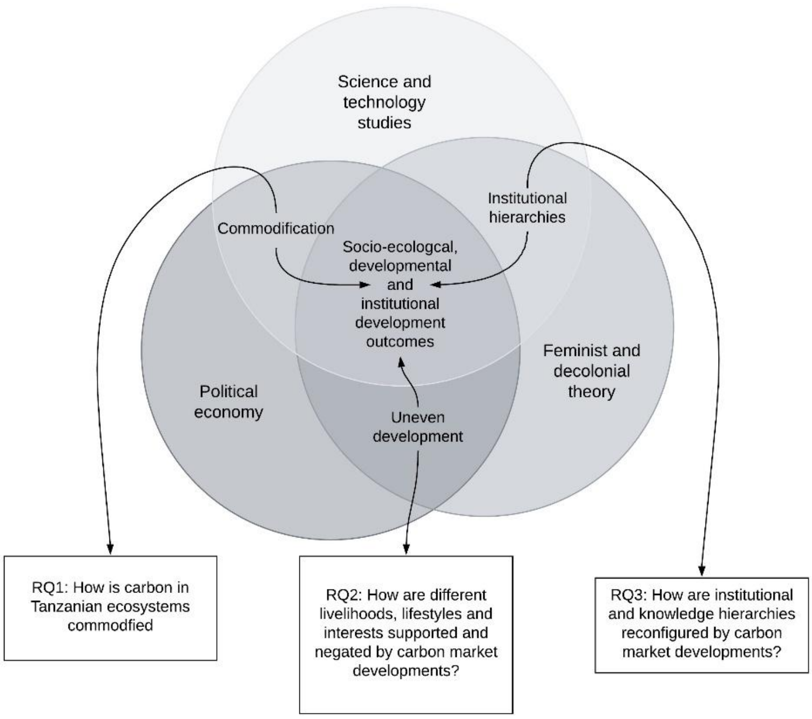

Figure 1: Overview of research questions, lenses of enquiry and their theoretical bases.

Uneven development

Carbon markets shape peoples' lives both materially, by reconfiguring access to land, finances, and other resources, and discursively, by positioning people and lifestyles as more or less sustainable. Materially, carbon markets and projects distribute benefits and losses and support divergent development trajectories [16,47]. We will examine how projects align and interact with existing land governance processes and interventions (e.g. wildlife conservation, herder or farming systems) to reconfigure land and livelihoods, e.g. by creating or enforcing enclosure, dispossession, and changing landscape governance [48–52]. We will also examine how carbon projects enable new labour opportunities for local communities and other actors, such as technical experts, corporations and civil servants, along the carbon project development pipeline and the carbon credit value chain [53–55]. We focus on how benefits and losses are distributed across geographies, classes, livelihoods, gender, and ethnicity [56,57] and how carbon markets shape broader development trajectories across North-South divides [34,58,59]. Such material effects are, in turn, underpinned discursively by legitimating narratives. To examine these, we explore discourses circulating among actors from local to international levels. Which types of actors are framed as essential (and others nonessential) to the development of sustainable carbon markets? How is the distribution of benefits and costs within and across carbon projects framed? Here, we build on political economy and feminist and decolonial theories.

Institutional hierarchies

Science and technology studies and feminist and decolonial theories have for long illustrated how knowledge production is also an act of power that may shape individual and institutional hierarchies [60]. In the case of carbon markets, new technologies and global standards are set to create new institutional requirements and capacity needs in an already unequal global context [61,62]. Research has indicated how the construction of carbon and other sustainability and development projects tends to rely on a rationalised epistemic knowledge system, which prioritises metrics and measurability [63] and tends to exclude the forms of knowledge held by local project partners and communities in project areas [64]. We will document how standards and technologies create needs for new capacities and, thus, reconfigures power dynamics within and across local, national and international institutions enforcing and/or altering hierarchies [65,66]. We will explore how stakeholders in carbon projects respond to the changing (and growing) techno-bureaucratic demands, e.g. for documentation [67,68] and the use of digital technologies like remote sensing and machine learning in monitoring projects [40,69–71]. Further, we will explore how these changing needs position local and national stakeholders vis-à-vis international stakeholders and how it reconfigures notions of expertise as well as power relations at both individual, communal, and institutional levels [72,73].

Project organization

The project comprises five work packages (WP) (Figure 2). WPs 1-3 focus on research, whereas WPs 4 and 5 deliver capacity development and policy dissemination, respectively. The three lenses of enquiry outlined above inform the research processes in WPs 2 and 3.

WP1 prepares the ground for the research by mapping the larger universe of carbon projects in Tanzania. It starts with a systematic mapping of existing carbon forestry interventions in Tanzania to gain an overview and identify projects for further study. We start from the list of projects registered with the National Carbon Monitoring Center, currently comprising 51 projects, including projects within the waste and energy sectors that will not be in focus [74]. We reach out to all listed projects to understand where they are in implementation, their project-type (described below), and to gain consent for a more in-depth interview at a later stage. On this basis, we seek to sample three projects for further research. In addition to these three projects selected for on-the-ground research, we will do remote interviews and desk-based analyses of a further 3-5 projects that have been abandoned, intending to understand at a broader level the challenges faced by carbon project interventions.

WP2 organizes the research on the three projects selected for on-the-ground research with a focus on what happens from local to national levels, i.e. how carbon projects interact with existing land governance processes to produce carbon commodities and the resulting impacts. We start with a thorough consultation with project implementers and host communities to establish the conditions of our research, including specific commitments to render the research of value to these local stakeholders. Upon reaching such agreements, we turn towards a desk- and interview-based study and a longitudinal basic remote sensing imagery analysis (á la [75]) to examine the longer trajectory of local socio-ecological relations, including prior development interventions and land governance arrangements. Second, we embark on a phase of long-term research presence (lead by the two PhDs and Tanzanian postdoc who will each work in one project site) to enable participatory observation, complemented with a mixed-methods approach involving interviews, simple livelihood surveys, and project document analysis to understand how projects enable carbon commodification in practice as well as the resulting socio-ecological, developmental and institutional outcomes, including their distribution across class, livelihood, gender, and ethnic differences [76–78]. At project to national levels, we conduct stakeholder mapping and network analysis to outline the cross-level landscape of project-related actors [79,80]. We then explore through interviews and document analysis how projects have gained a legal foothold in their sites, as well as how other local to national stakeholders position (i) Tanzanian ecosystems and (ii) particular livelihoods and lifestyles as conducive for carbon projects and, finally, (iii) the kinds of institutional restructuring set in motion by the carbon finance.

WP3 focuses on the national to international level to trace the connections from project sites to the international carbon markets using extended case study approaches [81,82]. Drawing on network analysis [79,80], publicly available data, and interviews, we map the international actors who are involved in Tanzanian carbon projects (as donor representatives, investors, consultants, standard-setters, buyers etc.). This builds on the mapping exercise of Tanzanian carbon initiatives conducted in WP1, as we trace local projects' connections with international stakeholders, but also involves an online search to identify international actors who are not (yet) connected to existing projects. Through conventional and digital ethnography [5,83,84], document analysis, and interviews, we explore how international stakeholders establish nature-based carbon credits as a tradeable and investable commodity and carbon markets as a credible mechanism for climate mitigation, both techno-ecologically and affectively. With the same methodological approaches, we further explore what claims as well as direct and indirect benefits and costs are derived from the market by various international actors and how these are discursively legitimised or challenged. We examine how practices and narratives around carbon offsetting position different livelihoods and lifestyles as more or less sustainable as well as some emissions as more or less necessary and/or hard-to-abate and therefore worthy of offsetting. Finally, we explore how new standards and technologies reconfigure institutional and knowledge hierarchies across international levels with a focus on the African Carbon Markets Initiative, the Integrity Council for Voluntary Carbon Markets and the Voluntary Carbon Markets Integrity Initiative, among others.

WP4 delivers the capacity development outputs. The workshop on carbon-market-related curricula reviews existing and develops new curricula for courses across the three partner institutions. The workshop entails that all project participants bring existing course curricula and/or ideas for new courses. Furthermore, at least 10 faculty with related teaching responsibilities and interests at UDOM and SUA bring their curricula and ideas. This part of WP4 also supports the research by illustrating how ideas about the role of carbon markets in sustainable development are reproduced in (parts of) Tanzanian and Danish higher education [85]. We organize two virtual workshop series on scientific writing and research grant writing, respectively, with the participation of at least 10 faculty members across UDOM and SUA in each workshop series, in addition to project participants. Finally, early in the project we organize (i) a physical workshop for co-PIs on equity in research partnerships and (ii) an online workshop for project participants on digital ethnography with an invited expert aimed at supporting the research in WP3.

WP5 develops and delivers the policy outputs. It involves a desk study of insights from existing research on and attempts at rendering carbon markets more sustainable and just. Those insights are considered in light of the research within WP3 on international carbon market actors. The stakeholder forums here serve as a venue for testing our impressions and ideas for recommendations. We will also do a desk-based study of research on the broader role of corporations in sustainability transformations [e.g. 86,87]. This will result in recommendations for sustainable carbon markets addressing (1) burden and benefit sharing of carbon projects; (2) procedural inclusion across stakeholders; (3) the role of standards and technology in shaping institutional hierarchies; (4) positioning of particular livelihoods and lifestyles as sustainable or not; and (5) the role of carbon markets in corporate and national mitigation and wider sustainability transformations. We share these elements in five policy briefs (see also under Heading 10) and media articles.

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