



OPEN ACCESS

EDITED BY

Idil Ires,
International Water Management Institute,
South Africa

REVIEWED BY

Ayala Wineman,
Michigan State University, United States
Lars Otto Naess,
University of Sussex, United Kingdom

*CORRESPONDENCE

Margherita Lala
✉ earmlal@leeds.ac.uk
Marion Pfeifer
✉ marion.pfeifer@ncl.ac.uk

RECEIVED 20 January 2023

ACCEPTED 19 June 2023

PUBLISHED 17 July 2023

CITATION

Lala M, Sallu SM, Lyimo F, Moore E, Shirima DD,
Nnyiti P, Mwanga L and Pfeifer M (2023)

Revealing diversity among narratives of
agricultural transformation: insights from
smallholder farmers in the Northern Kilombero
Valley, Tanzania.

Front. Sustain. Food Syst. 7:1148928.

doi: 10.3389/fsufs.2023.1148928

COPYRIGHT

© 2023 Lala, Sallu, Lyimo, Moore, Shirima,
Nnyiti, Mwanga and Pfeifer. This is an open-
access article distributed under the terms of
the [Creative Commons Attribution License
\(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction
in other forums is permitted, provided the
original author(s) and the copyright owner(s)
are credited and that the original publication in
this journal is cited, in accordance with
accepted academic practice. No use,
distribution or reproduction is permitted which
does not comply with these terms.

Revealing diversity among narratives of agricultural transformation: insights from smallholder farmers in the Northern Kilombero Valley, Tanzania

Margherita Lala^{1,2*}, Susannah M. Sallu², Francis Lyimo³,
Eleanor Moore¹, Deo D. Shirima^{4,5}, Petro Nnyiti⁵, Lilian Mwanga⁵
and Marion Pfeifer^{1*}

¹Faculty of Science, Agriculture & Engineering, School of Natural and Environmental Sciences, Newcastle University, Newcastle upon Tyne, United Kingdom, ²School of Earth and Environment, Sustainability Research Institute, University of Leeds, Leeds, United Kingdom, ³Sociology Department, University of Minnesota, Minneapolis, MN, United States, ⁴Department of Ecosystems and Conservation, Sokoine University of Agriculture, Morogoro, Tanzania, ⁵Reforest Africa, Morogoro, Tanzania

The discourse of transformation, as currently adopted in policy arenas, has given scarce attention to diverse knowledges, plural pathways, and politics. Narratives about change and agricultural transformation in African landscapes are diverse. However, failure to recognise diversity among narratives of the predominant food producers—smallholder farmers—in planning and policy processes limits potential to achieve just agricultural transformation. To progress understanding on diverse knowledges, plural pathways, and politics of agricultural transformation in this paper we present smallholder visions of future farms and their narratives of agricultural transformation in an African landscape subject to rapid ecological and livelihood change. We present smallholder narratives of transformation alongside those promoted by national and private-sector blueprints, and critically reflect on the social justice of transformation. From nine participatory workshops conducted with smallholder farmers in the northern Kilombero Valley of the Southern Agricultural Growth Corridor of Tanzania (SAGCOT), four main narratives of transformation were identified: (1) land ownership, (2) expansion of agricultural activities, (3) diversification, and (4) access to water for irrigation. The view of transformation presented by smallholders appears incompatible with national blueprint policies and plans. Despite “win-win” narratives of transformation and the outgrower scheme approach to expansion of sugarcane cultivation promoted by SAGCOT, the national government and the Kilombero Sugar Company, we found that land ownership and expansion remains challenging for smallholders in the present and represents a key aspiration for the future, along with diversification and access to adequate amounts of water for irrigation. These visions of bigger, more diverse farms with access to water, are not necessarily compatible with the expansion of sugarcane cultivation in the area and does not appear, as yet, to be sufficiently recognised in sugarcane expansion plans, creating potential to exacerbate injustice. Given this lack of recognition, smallholders advocate for a stronger role in protecting their interests as citizens in relation to the SAGCOT private-public partners. We demonstrate the need for greater effort among actors in rural African landscapes to realise and recognise the diversity and contextuality of envisaged desirable futures in plans and policies, and the importance of

progressing understanding on inclusive planning and policy-making processes to achieve inclusive negotiation leading to more just transformation pathways.

KEYWORDS

agricultural development, transformation, landscape, sustainability, justice, smallholder farming, sugarcane, participatory scenario development

1. Introduction

Much research attention and political debate surrounds the nature and direction of agricultural, livelihood and landscape transformation in the African continent (Shackleton et al., 2019; Badiane et al., 2021; Brockington and Noe, 2021; Mdee et al., 2021). Such transformations relate to how Africa's futures are imagined through different narratives (Appadurai, 2013; Ouma et al., 2020) and sociotechnical imaginaries, “collectively held, institutionally stabilized, and publicly performed visions of desirable futures” (Jasanoff and Kim, 2015:19). Globally, transformation has most recently been linked to the achievement of several Sustainable Development Goals (SDGs), including most notably, “zero hunger” (SDG2), no poverty (SDG1), health and wellbeing (SDG3), gender equality (SDG5), climate change (SDG13), and responsible consumption and production (SDG 12) (Kanter et al., 2016). The interconnectedness of SDGs necessitates that just agricultural transformations consider the intimate relations that exist among hunger and malnutrition, environmental sustainability, social justice and equity. The most recent UN Food System Summit assigned a pivotal role in agricultural transformation to the private sector and focused mainly on the change that can be brought about by commercial agriculture, multinational corporations, and public-private partnerships (Canfield et al., 2021a,b).

A strategic component of transformation based on private sector and public-private partnerships, is the establishment and development of agricultural growth corridors. These corridors aim to catalyse change by fostering new infrastructure and market linkages (Smalley, 2017). Promoted for the first time by the World Economic Forum in 2008, they have been described as offering opportunities for experimentation of targeted policy reforms and to link “top-down” policy frameworks with “bottom-up” functional initiatives (e.g., outgrower schemes) that lead to employment-creating investment and improved livelihoods (*ibid*). Tups and Dannenberg (2021) argue that agricultural growth corridors enable a strategic “coupling process” by means of creating spatial imaginaries in relation to certain territories and networks of stakeholders. Corridors promoting global agricultural integration are seen as tools to reach a pre-designed teleological future to which the continent should aspire and to claim geographical space for its realization (*Ibid*). Müller-Mahn (2020) describes them as “dreamscapes of modernity” and showcases of “future-making” narratives (Appadurai, 2013; Jasanoff and Kim, 2015), embedded in and further promoting global “modernising” sociotechnical imaginaries (Jasanoff and Kim, 2015). Müller-Mahn (2020) argues that African agricultural transformation is imagined and implemented through agricultural growth corridors in global blueprints with little room left for its inhabitants' imaginaries, aspirations, narratives and visions of the future.

The discourse of transformation was originally associated with structural change and the creation of radically new pathways towards

sustainability, addressing current injustices in social, economic, and political systems (Pelling, 2010; Moore et al., 2014). However, it has been highlighted that the discourse of transformation, as currently adopted in the global policy arena (Blythe et al., 2018; Whitfield et al., 2021) has given scarce attention to diverse knowledges, plural pathways, and politics (Scoones et al., 2020), with negative implications for the social justice of transformation (Whitfield et al., 2021). Following Whitfield et al. (2021) and Scoones et al. (2020), we understand transformation as “fundamental changes in circumstance occurring *to, for and by* people within agriculture and food systems” (Whitfield et al., 2021: 3). In this context, smallholder farmers' own narratives about agricultural transformation have been largely ignored considerably limiting the possibility of plural pathways (Scoones et al., 2020) and understanding of what just agricultural transformation would look like in different contexts.

The philosophical debate about social justice can be traced back to authors such as Rawls (1971), Fraser (1995), Sen (1999, 2009), and Honneth (1995). Rawls famously argued for a perfectly equal distribution of primary goods, consisting in a distribution chosen by a hypothetical person, unaware of his/her social status (Rawls, 1971). Sen, instead, focused on capabilities, related to the capacity to achieve things that people value doing or being (Sen, 2009). Fraser (1995) highlighted the importance of both material inequality (therefore the dimension of *redistribution* in social justice), identity politics (related to the dimension of *recognition*) and social processes or procedural justice. For Honneth, finally, misrecognition, as a form of profound and institutionalised disrespect, is at the origin of all social injustices (Honneth, 1995). Drawing on these authors, *procedural, distributional justice and recognition* were elaborated as the three main dimensions of environmental justice (Schlosberg, 2004, 2007; Walker, 2012). Considering dynamics of these three dimensions over time, across diverse contexts and within research is deemed key to progressing understanding of justice in agricultural and food systems transformations (Whitfield et al., 2021). Whitfield et al. (2021) therefore propose to add a temporal dimension to the analysis of the justice of food system transformation and focus on historical, representational, and distributional justice.

This paper focuses on smallholder farmers view about agricultural transformation in the context of the Southern Agricultural Corridor of Tanzania (SAGCOT). The SAGCOT scheme aims to physically integrate Tanzania's agricultural sector and enable commercialisation and the technological development of agriculture (Scoones et al., 2015). SAGCOT's objectives are, by 2030, to generate a revenue of USD \$1.2 billion and permanently lift two million smallholder farmers out of poverty while “ensur[ing] environmental sustainability through the commercialisation of smallholder agriculture” (SAGCOT, 2022). As an “investment corridor” SAGCOT aims to establish a constant flow of investment towards agricultural value chains (Bergius et al.,

2018). The corridor's implementation was planned to cover one-third of the country from Dar es Salaam to the border with Malawi, Zambia and the Democratic Republic of Congo, following the railway that crosses the country (Sulle, 2020). It was launched by the Tanzanian government in 2006 to spearhead the transformation of subsistence to commercial agriculture for curbing poverty. In line with global narratives of agricultural transformation in African agricultural growth corridors (Byiers et al., 2016; Bergius, 2017; Bergius et al., 2018; Engström and Hajdu, 2019), the private sector was to play a pivotal role.

In the case of SAGCOT, the global narrative of technology and market-driven modernisation underpinning its business model has been combined with a win-win narrative pivoted on “green growth” (SAGCOT, 2013). According to this win-win narrative of Agricultural Green Growth (AGG) (SAGCOT, 2013—see also Section 3.1.2.), transformation will lead the private sector to profit while smallholders lift themselves out of poverty and increase their productivity, Tanzania benefits as a nation, and environmental sustainability is enhanced. Whilst this might be considered successful in aggregating different interests and mobilising funds (Buseth, 2017), its implementation has proven problematic. A national teleological narrative of industrialisation and modernisation has been proposed in the last few years, but it is unclear how, to what extent, and at which pace labour shifting from agriculture—especially the youth—will be absorbed in other sectors (Mdee et al., 2021). Chome et al. (2020) report that the scheme's grand narrative of change is constantly negotiated, resisted and transformed by different stakeholders on the ground, including “bureaucrats, investors, and smallholders” (Sulle, 2020: 332). The scheme's limited engagement with smallholder farmers and their aspirations has been criticised (Engström and Hajdu, 2019; Sulle, 2020; Mdee et al., 2021) and concerns raised about social injustices of the intervention (Sulle, 2020). Examples include: the risks of land and water grabbing (Oxfam, 2014; Ires, 2022), decreased food security (Sulle and Smalley, 2015a; NRGF, 2017), biodiversity loss, decreased sustainability (Mdee et al., 2021), further marginalization of the poorest farmers (Sulle and Smalley, 2015b; Sulle and Dancer, 2020; Gannon et al., 2022), and adverse effects on women (Landesa, 2017; Jeckoniah et al., 2020; Sulle and Dancer, 2020). Moreover, in relation to crops, such as sugarcane, prioritized under the scheme in the Kilombero cluster, farmers would have to bear considerable financial risks (Bergius, 2017; NRGF, 2017), become relatively dependent on fertilisers (Sulle et al., 2014) and would be unable to diversify once they have converted to this cultivation (Oakland Institute, 2015). All these factors undoubtedly influence the dynamics of SAGCOT's implementation, particularly in a context of weak institutions, unclear or unenforced land and resource rights (Kashaigili et al., 2014; Kibugi et al., 2015), and rising land prices which risk to further marginalize poor farmers (Wineman and Jayne, 2018).

Even though smallholders have been presented as one of SAGCOT's main beneficiaries, especially in the win-win narrative of green growth (SAGCOT, 2013; Bergius et al., 2018), farmers' own aspirations, “sociotechnical imaginaries” (Jasanoff and Kim, 2015) and “future-making” narratives (Appadurai, 2013) about transformation are scarcely represented in the policy arena. Smallholder farmers' views and interests are largely absent or taken for granted. Their capability to influence policy making in the scheme's public-private partnership has been limited, with consequences for social justice and the marginalisation of potentially alternative pathways to

transformation. Such marginalisation appears similarly reinforced in recent sustainability envisioning, conservation and restoration planning in the region (e.g., Matejcek and Verne, 2021; Thorn et al., 2021; Wills et al., 2022) where conservation NGOs, driven by agendas of biodiversity conservation and forest restoration, are the key representatives of civil society. Beyond research conducted by Johansson and Isgren (2017) in two communities of the Kilombero Valley, smallholder farmers' narratives of their aspirations for future transformation are poorly documented. In this paper, (1) we present smallholder visions of future ideal farms and their narratives about agricultural transformation in the Northern Kilombero Valley, part of SAGCOT's Kilombero Cluster—a landscape undergoing rapid ecological and livelihood change, (2) we analyse the narratives promoted by national public and international private-sector blueprints, and (3) critically reflect on the social justice of transformation in relation to the previously identified narratives. We demonstrate the need for greater effort among actors governing rural landscapes to realise and recognise the plurality and contextuality of envisaged desirable futures in plans and policies, and the need to actively negotiate inclusive transformation pathways.

2. Material and methods

2.1. Case study

The Northern Kilombero Valley (Figure 1) is located in the Kilombero District of Morogoro Region, Tanzania. The climate is tropical. Annual rainfall is 1,200–1,600 mm with two rainy seasons normally in March–May and November–January/February, with some variation (Harrison and Laizer, 2007). The study landscape is crossed by one of the most important tributaries of the Rufiji River, the Great Ruaha River. A large industrial sugarcane plantation, covering around 10,000 ha (Sulle, 2020; KSC, 2022), was established in the 1960s and is currently managed by Kilombero Sugar Company (KSC). This is centrally located within the study landscape and surrounded by 16,000 ha of land farmed in diverse ways by smallholder farmers, some of whom participate in the Kilombero Growers outgrower scheme (Sulle and Dancer, 2020; KSC, 2022). Cane Supply Arrangements (CSA) collectively regulate the payment to outgrowers based on the quantity of sugarcane delivered and the measurement of sucrose level made by the company. Cutting, loading, and transportation are carried out by external contractors hired by farmers' associations. A certain percentage of farmers' payment is also retained after the cane has been sold according to sugar price at the moment of the sale (Sulle and Smalley, 2015b; Sulle, 2020). Northern Kilombero Valley is nationally and internationally recognised for biodiversity conservation and forest restoration activities (Milheiras et al., 2022). Agricultural lands are surrounded by strictly conserved protected areas—the Udzungwa Mountains National Park on the Western side and Nyerere National Park, Mikumi National Park and Magombera Nature Reserve on the Eastern side.

This landscape is a particularly interesting case for the study of smallholder narratives of agricultural transformation as the Kilombero Sugar Company, a member of SAGCOT, is in the process of expanding its sugarcane production three-fold (Illovo, 2022a). Alongside this agricultural expansion, a number of conservation and sustainability initiatives are being planned and implemented. These include, among

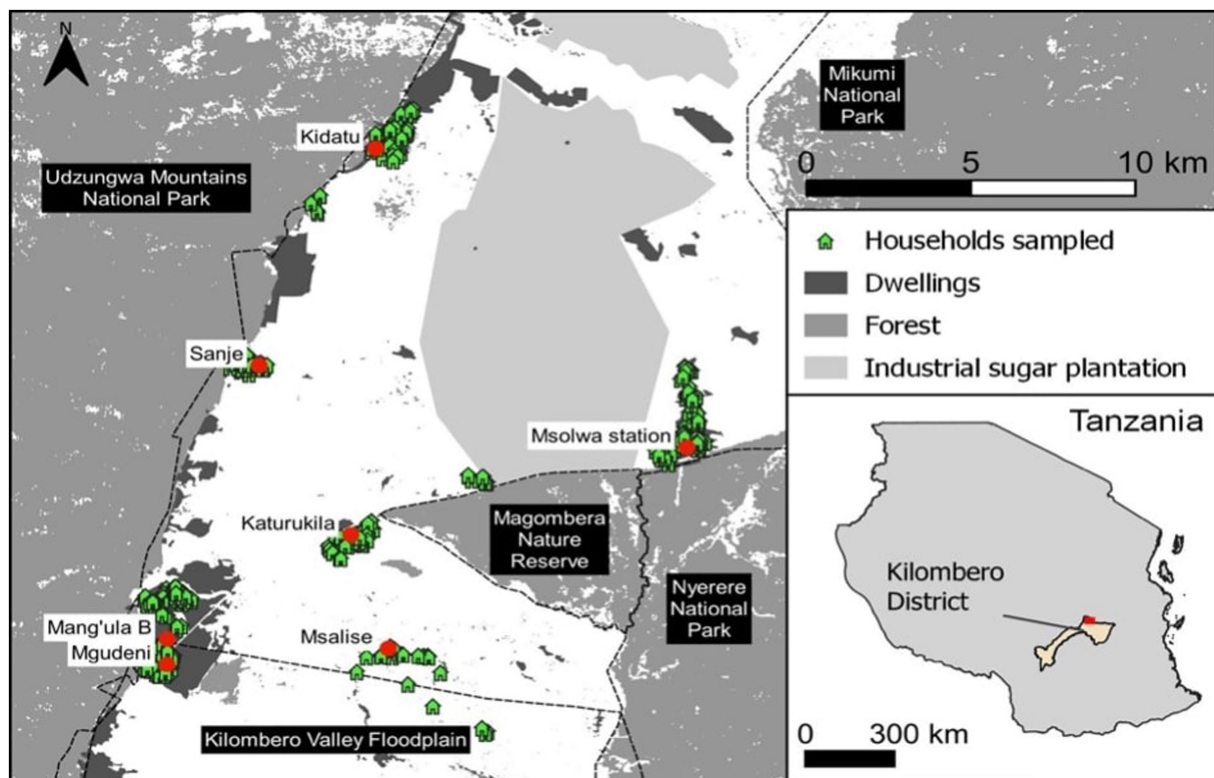


FIGURE 1

The Northern Kilombero Valley case study landscape, Tanzania. Study villages included Sanje, Kidatu A, Kidatu B, Kidatu Kati, Msolwa Station, Katurukila, Mang'ula B, Msalise, and Mgudeni.

others, establishment of a corridor to facilitate elephant mobility and forest restoration activities along rivers, protected area boundaries and within the corridor. Elephants are indeed causing significant crop damage and accidents. Considerable change in the landscape is predicted (Msofe et al., 2020).

2.2. Methods and analysis

Nine participatory focus group workshops with 80 smallholder farmers¹ from nine villages (Figure 1) were conducted in the Northern Kilombero landscape between July and August 2021. Smallholders are defined as farmers cultivating less than 5 ha and medium-scale farmers as people cultivating 5–100 ha (Jayne et al., 2016; Wineman and Jayne, 2018). We aimed to focus specifically on smallholders as they are depicted as protagonist of transformation (SAGCOT, 2013) but their views about how they envision transformation is rarely investigated. Workshops therefore aimed to explore smallholders' aspirations for the future and elicit narratives of change on farms in the context of agricultural transformation (cf. Knickel et al., 2018; Mausch et al., 2018; Bennike et al., 2020) triggered by the current sugarcane expansion in the SAGCOT context. Environmental

narratives (Leach et al., 2010) are seen as a key component of future-making narratives (Appadurai, 2013) referred to in the introduction of this paper and as “a crucial aspect of understanding future possibilities” (Myers and Kitsuse, 2000: 227) in relation to transformation (Whitfield et al., 2021) and agricultural corridors as defined in the introduction of the paper.

The workshops were organized by age group (20 participants under 35 years were involved in two workshops and 60 people above 35 years participated in seven of them), gender (38 women, 42 men), and wellbeing.² Each workshop lasted around 6 h, structured in two parts. During each workshop men and women, divided into separate groups, described their current and future ideal farm. After describing their current farms, participants were asked to think about how they wished their farm would look like in 5–10 years' time and were free to describe them in their own terms (Activity 1). This timeframe was chosen because the landscape is and will be affected by rapid agricultural transformation triggered by the planned expansion of Illovo Sugarcane Company described above (Section 2.1). The construction phase should last until 2023 and the first effects of transformation, according to Illovo, should be experienced by smallholder farmers in 2028 (Illovo, 2022a). The description of the ideal farm normally included its size and composition, its main

¹ Mobile pastoralists were not included in the research due to the focus on smallholder sedentary cultivation and associated future farms.

² Sampling followed a previous study exploring wellbeing in the studied area (Milheiras et al., 2022) based on a household survey.

characteristics (such as the presence of trees, canals, wells, vegetable gardens, etc.), and the main crops cultivated. Some participants referred to their current farms while envisaging their ideal one and some compared them with that one of other participants. In Activity 2 the same groups discussed challenges and opportunities to achieve their ideal farms. Plenary sessions in between the two activities prompted exchange of ideas within the whole group, allowing men and women to discuss their point of view. During workshops the ideal farm was also referred to as the “dream farm”, the farm they would wish to have if they had no challenges to overcome and if they could exploit all the opportunities present in the landscape. Participants were then left free to elaborate their own conception of the “ideal” farm and drew on their actual present resources to several extents.

Two local artists supported the discussions by drawing each participant’s future ideal farms (Annex 1). The integration of art helped each participant to share, explain, synthesize and compare visions of their future farms during workshops. A similar approach was adopted in the Kilombero Valley by Johansson and Isgren (2017) who investigated large-scale land acquisition through participatory art and the co-creation of paintings representing the past, the present, and the future. Visual art is increasingly used to support future envisioning in relation to socio-environmental change (Palomo et al., 2011; Hanspach et al., 2014; Oteros-Rozas et al., 2015) because it supports the discussion of participants’ preferences and knowledge and the identification of potential future pathways (Schneider and Rist, 2013; Wiek and Iwaniec, 2014). All workshops were audio recorded, transcribed (taking care to match individual participant descriptions of current with future visions of farms and associated perspectives of opportunities and challenges) and translated.

The first stage of analysis involved three rounds of qualitative coding conducted using Nvivo11 (Saldaña, 2021). Firstly, open coding identified emerging dominant themes, e.g., the importance of land distribution, reference to droughts and flooding experienced, and the distribution of trees within the farm, among others. The challenges and opportunities described by participants were also analysed in this first round of coding. During the second round of coding, the main characteristics of ideal and current farms were summarised in analytic memos, and the narratives of transformation identified. In the third round of coding, we identified “vignettes” that exemplify one or more of the narratives in the case of individual farmers (Example vignettes are presented in Annex 2 of this paper).

In the second stage of analysis, global and national narratives emergent were examined through a review of published materials, specifically SAGCOT Greenprint (2013) and SAGCOT Blueprint (2011), the UNFSS (2021a,b) and the ASDP-II (2017), and scholarly reviews of these documents (Buseth, 2017; West and Haug, 2017; Wineman et al., 2020; Canfield et al., 2021a,b; Covic et al., 2021; Montenegro de Wit and Iles, 2021).

In the third stage of analysis the theoretical framework of Whitfield et al. (2021) was used to structure critical reflection on justice in agricultural transformation in the Northern Kilombero Valley context, specifically relating the emergent narratives to different forms of (in)justice, e.g., *historical*, *representational*, and *distributional*.

3. Results

We present results following the structure of the staged analysis process: (1) smallholder farmers’ narratives of transformation, (2)

challenges and opportunities to achieving their ideal farms, (3) presentation of narratives of transformation promoted by SAGCOT, the Tanzanian government, and the Kilombero Sugar Company, and (4) social justice implications of agricultural transformation in the Northern Kilombero Valley.

3.1. Smallholder farmers’ narratives of transformation

Four main narratives emerged from the analysis strongly conveying local ambitions for (1) *land ownership* and (2) *expansion*, (3) *agricultural livelihood diversification*, and (4) *access to water for irrigation* to cultivate two or three times per year and increase productivity.

3.1.1. Land ownership

The majority of farmers expressed a desire for land ownership. This narrative, as will be shown in the next section, is intimately related to narratives of *expansion* and *diversification* and to the challenge of land scarcity. There was widespread opinion that land rental prices are too high and hamper the possibility of long-term “development”. Investing capital in rent results in less money for other household needs, such as school fees or health care, without any guarantee that the mainly rain-fed agriculture will be productive enough to repay farmer efforts each year. Additionally, with timing, preparation, and continuous care essential for agricultural activities, landholders are not keen to rent plots to the same person every year, because of the insecurity of their tenure, especially if they do not live in the area. Consequently, the work needed to prepare the farm is often done superficially or has to be repeated every year, causing a considerable loss of energy and time among farmers who rent their plots. For instance, it is very common to remove trees and small hills with the aim of increasing the fields’ productivity. However, these operations often cannot be done if the farm has been rented. As a participant explained:

I am talking again about the challenge of land availability; it is a common challenge because most of the farmers (...) rent the farms. If you rent the farm which has hills and trees, you can decide to create a good environment by clearing the farm well so that next year you would also use the same farm. But, unfortunately, the next year you discover that the owner wants to rent the farm to someone else. (Adult man)

Gender and intersectionality are particularly relevant to this narrative. When asked about their ideal farms, a few participants, mainly women, found it challenging to describe its characteristics and instead emphasized the importance of having a farm. A young woman, for instance, claimed that owning a farm was the most desirable feature of her ideal farm. When asked what she wanted to cultivate or how big she wanted her ideal farm to be, she replied that her “*biggest dream, before anything else, is to own a farm.*” Other women, especially widows, who had experienced negative events that worsened their life situation, could barely rent. They relate their poverty and marginalization, amongst other things, to the fact that they do not have land to cultivate, likely because of traditional land inheritance mechanisms (Wineman and Liverpool-Tasie, 2017). Figure 2 shows

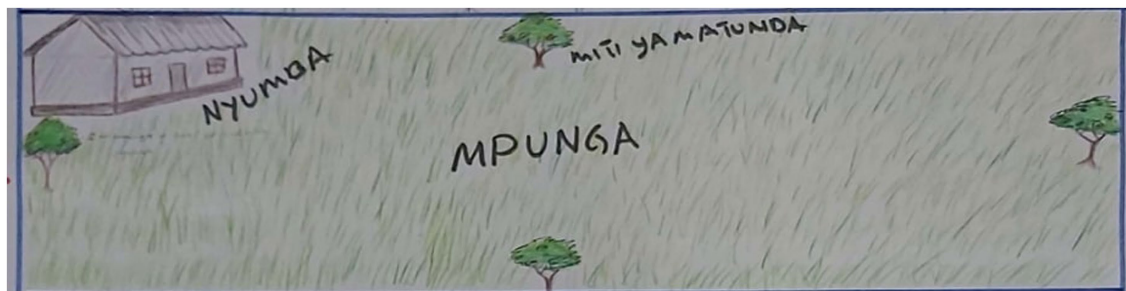


FIGURE 2

A young woman ideal farm. She wishes to own a farm with a house, to cultivate rice, and for it to be surrounded by fruit trees.

the ideal farm of a young women who wishes to own a rice farm surrounded by fruit trees.

3.1.2. Land expansion

The other transformation smallholders wish to see in next 5–10 years relates to the size of their farm. Both men and women wish to increase the amount of land they cultivate, with some exceptions.³ Men were generally more ambitious in relation to the number of hectares they wish to have in their ideal farm. Expansion, together with irrigation, is seen as a key way to increase productivity in a context where soil fertility is perceived to be decreasing, pests are described as a major problem, fertilisers and pesticides are expensive and farmers do not necessarily know how to use them.

When expansion was envisaged, it was quite common for smallholders to refer to land redistribution as a means to make agricultural land available and agricultural interventions more inclusive. The government was identified as the only stakeholder able to design and implement such reform. Some participants simply wished to increase the area of their farms to upscale their production of crops already cultivated. This featured mainly in the cases in which rice and/or sugarcane were cultivated as a monoculture and the farms were surrounded by neighbours cultivating the same crops. One of these cases was described by a woman living in the village of Katurukila as follows:

My desire or expectation is to add ten acres in total—five acres of rice and five acres of sugarcane—to my current 5 acres (2 of rice and 3 of sugarcane)... I want my rice farm to be surrounded by rice farmers and sugarcane farm to be surrounded by sugarcane farms ... That is all I want, I just want to expand the size of the farms. (Adult woman)

More frequently, the narrative of expansion was associated with that of diversification, which will be explored in the section below. Some farmers want additional land to cultivate new crops and/or to start income generating activities, such as the cultivation of trees and beehives. There are two main patterns through which different

smallholders depict this ideal transformation of their farms. Some smallholders want to acquire an additional plot in which they wish to cultivate a specific crop and/or vegetables or to start a tree farm, some relating the latter to income generating activities such as beehives. These farmers typically own several plots and cultivate crops suitable to the very composite environmental and geographical conditions (Figure 3). Other smallholders wish to have only one plot—bigger than at present (Figure 4)—and divide it into different allotments for crops they want to cultivate. This option, probably less feasible due to land fragmentation in the area, would however likely allow smallholders to have their farm close to home and decrease transportation costs (often reported as a key challenge)—while maintaining or increasing the diversification of their agricultural activities.

3.1.3. Agricultural livelihood diversification

Despite 12 farmers stating that they want to cultivate only rice in their ideal farm and four people claiming that they wish to switch to sugarcane as a monoculture, the desire to diversify the household income by means of cultivating different crops and using the land for income generating activities strongly characterized farmers' accounts of their ideal agricultural transformation. It is important to highlight that diversification was normally based on one or two of the main crops cultivated in the area. Indeed 75% of the respondents imagine growing rice in their ideal farm, 42% wish to have sugarcane and 38% maize. The narrative of diversification builds on the one of ownership and expansion. Being owners of bigger farms means that smallholders could strategically add to the main crops cultivated to maximise their chances to guarantee household food security, while earning cash, developing small income generating activities and improving their livelihood resilience to the risk of harvest failure and climatic changes (Figure 5).

The addition to the ideal farm was frequently maize for family consumption, sometimes intercropped with pigeon peas or cultivated with trees or bananas. Cassava was also mentioned as an additional crop they would like on their ideal farms. The addition of a vegetable garden, normally with a well for irrigation, was considered as a useful way to exploit the hills in a wet paddy farm or in areas near to shelters on the farm, if present. Bananas were often mentioned on the ideal farm, especially by women as a nutritious food. The participants willing to put banana plants in their ideal farm want them along the borders or in a separate portion of their plot. Some participants, however, claimed that banana plants attract elephants. Vegetables are

³ Some farmers claimed that they could not afford to cultivate more land, because of the high costs this would imply in terms of labor and agricultural inputs.

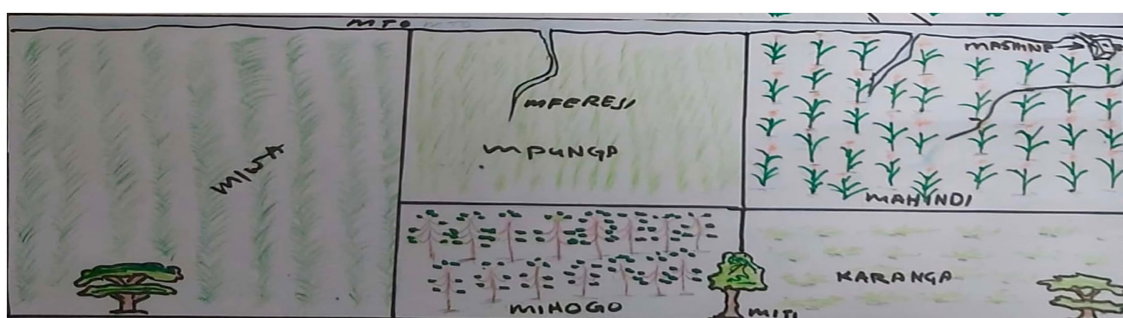


FIGURE 3

The ideal farm of a young man who wishes to expand and diversify through the acquisition of new plots in different areas. He wishes to have a mix of food and cash crops: sugarcane, rice, cassava, maize, and groundnuts. He wants some trees to mark the borders and a river with canals to irrigate the farms.



FIGURE 4

An example of expansion and diversification. An adult man wishes to own 12 acres all in the same location and to divide them as follows: two acres will be used for cultivating paddy, two for cassava, and two for sugarcane. The other two will be allocated to watermelons and peanuts, respectively. Vegetables, such as pumpkins, cow peas, and amaranth will be grown in the additional acres. This participant considered all the crops except sugarcane as subsistence crops. A further addition to his ideal farm would be a teak tree plot. He also wishes to have a well to irrigate vegetables.

a key component of ideal farms as they can increase household income while guaranteeing its food security and a healthy and varied diet. Women, commonly in charge of providing and preparing food for the family, said that they engaged in small businesses selling fresh vegetables to the neighbours and buying small fish and beans with the earnings obtained. A young farmer described the benefits of cultivating vegetables:

I started a vegetable garden because my wife was selling vegetables. She was waking up early in the morning to go to the farmers who have them. After I realized that the farm near our house was bare, I went to talk to the owner to ask for permission to cultivate it. [...] I have divided the small land to grow five main food crops. The farm is surrounded by a seasonal stream but I do not use the stream too much because beside the farm there is a water pipe. The farm allows me to cultivate in both dry and rainy season [...] and is helping me, because vegetables provide for much of the family's income. [...] people come to buy vegetables at home [...] and even the vegetable vendors who sell bitter tomatoes and okra in the streets come to my farm and I sell to them. I benefit from having a balanced diet for my family. In the morning my family can eat bananas with tea, but there are also amaranth, vegetables and pumpkins, so it helps me a lot because I'm not relying too

much on paddy farming. My wife harvests vegetables and she goes to sell them. When she wants to buy other types of food like small fish or beans, she uses the money earned. (Young man)

Farmers also want to have trees in their ideal farm, either at the borders or in small allotments. They wish to grow mainly commercial multi-purpose trees of several species that can also serve household needs such as fruit, construction material and firewood. The envisaged tree farms normally occupied a separate plot in the ideal farm with irrigation described as a key factor for the success of the activity, especially useful for the next generation, who could enjoy its economic benefits while covering less costs. A small proportion of farmers who want tree farms also mentioned beehives as an income generating activity with the potential of keeping elephants away as human-wildlife interaction is currently perceived as very challenging. If the farm was far from home, building a small temporary or permanent shelter was considered ideal to ease agricultural activities.

Finally, some farmers expressed their desire to have some space to keep small livestock. Fishponds were also mentioned as income generating activities, but their management was considered too challenging by some participants. Some farmers reported that fish farming failed in other areas because of lack of knowledge. Others, especially women, expressed their doubt about the ponds' security for

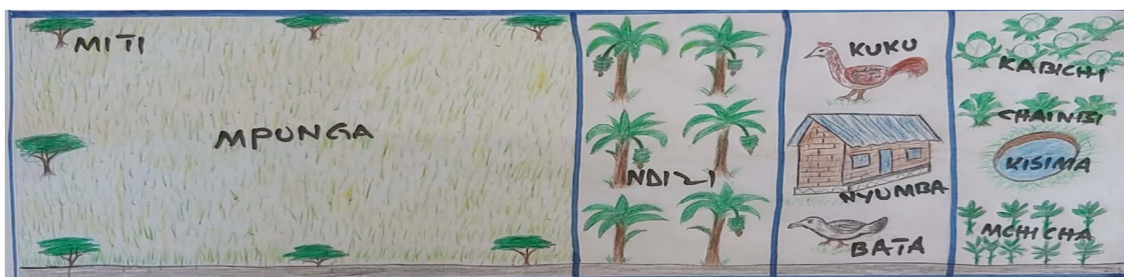


FIGURE 5
 This adult woman wishes to continue cultivating paddy in a farm surrounded by trees so that she can use them for firewood and at the same time mark the boundaries of her property. In addition to this she wants to have a plot for bananas, and another for vegetables, grown with water from a small well. She wishes to have a road at the border of her farm to make transportation easier and to build a shelter where she can also keep small livestock such as chicken and ducks.



FIGURE 6
 One of the few cases in which the ideal farm of a young man is constituted by 50 acres of sugarcane monoculture. This farmer already cultivates sugarcane and believes that his income and achievements up to present were due to this choice. He wants his farm to have good access to water and be close to Illovo factory to contain transportation costs. He wants to be surrounded by other sugarcane farmers and he aims to convince local leaders to ask the company for costly harvesting equipment. This participant also wants to cultivate maize once per year after he has harvested sugarcane to make the most of his land. He also mentions challenges that were often referred to in the case of sugarcane cultivation, such as the lack of capital to invest, instability of markets, lack of sugarcane production knowledge, delay in the supply of agricultural inputs, poor governance of farmers' associations, problematic procedures of sugarcane weighing and sucrose level measurements.

children and small livestock, or were concerned that, if the farm is far from home, there is high risk that the fish can be stolen. Finally, water scarcity was mentioned as another potential constraint. For these reasons, especially women, on average, tend to prefer to keep chicken and goats.

Even though diversification was certainly a strong emerging narrative, it is important to highlight that four participants wished to see a different kind of transformation in the landscape. Figure 6 is dedicated to one of the few cases in which a young man described his ideal farm based on a switch to mechanised agriculture and the cultivation of sugarcane.

3.1.4. Access to water for irrigation

Irrigation is deemed essential for the success of agricultural activities. Some farmers advocated for the construction of large-scale irrigation schemes, especially for rice and sugarcane, but furrows, canals, wells and to a certain extent, rivers are described as the preferred way to irrigate their ideal farms. Wet farms in the valley are considered ideal for rice cultivation, whereas elevated farms are normally designed to cultivate other crops, such as cassava, maize and/or vegetables, according to water access and the specific

characteristics of the plot. The farm's location near to a river is considered by some as an opportunity to control the furrow system but at the same time other workshop participants experienced flooding in the last few years, and this is the reason why they wish to have the possibility to keep a certain distance from the river in future. Together with the expansion of land cultivated, irrigation would allow farmers to increase productivity by means of cultivating more than once per year and potentially increase farmers' ability to cope with climatic changes. With small-scale irrigation schemes smallholders would be able to cultivate "in all seasons and maybe the economy will be improved", as one participant claimed.

3.2. Challenges and opportunities to achieving the ideal farm

Several challenges and opportunities were identified by smallholders to prevent or enable them from achieving their ideal farms. The challenges and opportunities can be divided into two groups—those related to assets (e.g., money to invest, availability of land, and water to irrigate) and those related to farmers' agency (e.g.,

representation in policy and decision-making processes). These issues intersect and inform the four main narratives of transformation in several different ways. Workshops' participants mentioned challenges more frequently than opportunities and they perceived their current situation, regarding present changes in the valley, to be quite problematic. However, they often also referred to some of the challenges—such as loans, extension services, and agricultural inputs—as potential opportunities, if they were tailored to smallholders' needs.

Limited access to fertile land and water for irrigation were two frequently mentioned challenges to achieving ideal farms. Overcoming these challenges was perceived to lead to desired transformation described by narratives of land ownership and access to water. The narrative underpinning availability of land was that some farmers are able to accumulate this resource and are renting it to smallholders for perceived high prices. Land reforms were advocated by many of the workshops' participants that wished the government would intervene to redistribute this resource. A woman, for instance, highlighted how land tenure, poverty, soil fertility and agricultural productivity were all affecting her situation. In her words:

Land is “tired” but we have to cultivate because there are no other farms. But at the same time, you can see someone has 200 to 300 acres, but they do not cultivate them. They say: “if you want, you can rent for 100,000Tz Shs per acre, but it is expensive, so we decide to go back to the farms where we can only get our harvests in low quantity. (Adult woman)

Some smallholder farmers explained that an improved system for irrigation offers an *opportunity* to cope with climatic changes. Participants indeed observed more frequent droughts and flooding—especially of Ruaha River that destroyed the surrounding farms—and increasing uncertainty in rainfall patterns compared to the past. Tree planting was also cited by some as a potential way to “bring the rain” and improve the climatic conditions around the farm.

Soil fertility is considered as a *challenge* by many farmers. Some claim that since they are cultivating on the same plot every year and the population in the area is increasing, they experience a deterioration in the quality of the soil which, according to some, could be exacerbated by the use of chemical fertilizers that has increased soil salinity. For a few participants, inorganic fertilizers and pesticides could also be dangerous for human health. Their use, however, has become fundamental to increase productivity and most of the participants wished they could be affordable and arrive in time, as much as other agricultural inputs.

Smallholders perceive extension services, that inform them on the correct use of inputs, as potential *opportunity*, even if these services are currently considered as a challenge because of the way in which they are implemented. Fake and low-quality inputs are also considered as a *challenge*, because many farmers do not have the ability to recognize them.

Moreover, regardless of gender and age, many participants, feel that the main obstacle they need to overcome to transform their farms is the financial constraint. Their income is perceived as too limited to expand their agricultural activities; particularly to buy new land, agricultural inputs, and to pay for crop transportation as the majority of smallholders' plots are located far from their homes. Additional costs are incurred by agricultural tools, such as tractors, that are often

rented. A woman summarises in this way, the interrelated challenges she faces:

There are many challenges. The first is the challenge of money, but also government brings inputs out of time, the time for planting when we need fertilizers for planting, there are no fertilizers, and they bring fertilizers during harvesting season, so even the crops price is very low. We have to spend much for farming, and we get low yields because we did not use fertilizers. Finally, we sell for a very low price. With the income from eight sacks for one acres cultivated, we have to pay for school contributions, food and farm preparation in the next season. So, it is difficult to use the money to buy another farm and expand agricultural activities. (Adult woman)

The income from agricultural activities was described by smallholders as limited because of unfavourable market conditions and low prices both for rice and sugarcane. Many participants referred to dubious weighing systems for both crops and, in relation to sugarcane, some farmers perceived unfair measurement of sucrose levels, the monopoly of sugarcane market and the consequent lack of bargaining power as challenges. Some farmers suggested that the government should intervene to create more stable markets and regulate prices. According to a young participant, for instance, at the time of workshops (July–August 2021), the price of 100 kg rice was 70,000 Tshs (the price that is typical during harvest season) but between December and February, the price increased to 130,000–150,000 Tshs.

Because of the constant need for capital, many smallholders referred to loans as *opportunities* to try and overcome this challenge, to buy agricultural inputs and tools. However, participants also reported that the banks' conditions were highly unfavourable and that they did not consider the specific needs and circumstances of smallholders. Some of them thought that they were designed only for farmers that were already relatively wealthy. Many participants therefore perceived loans not as an opportunity but as a *challenge*. One farmer, for instance, claimed that a “*rice farming loan is deadly*” and reported the case of villagers that had to run away because they could not afford to pay their debts. Another one bitterly said that, given these conditions, it is better to do business rather than agriculture. He claimed he wanted to become a middleman, buying rice for a low price and reselling it in the market for profit. He added that uncertain rains had recently worsened the situation. The following quote also relates loans, in this case made by wealthier farmers, with climate change and agriculture:

There are people who are also farmers, they have money they lend to the others, they give money and ask you to repay one sack of paddy after harvesting. If you need money, you just accept the conditions, it can be 50,000 shs or 200,000 shs. After you have taken the money, unfortunately a drought might appear, you will have no harvest, and then you find them coming with the empty sack to take the paddy. When this creditor takes you to court [because you did not pay] without any witness, the court fails to solve the matter. Agriculture has become very difficult.... when you tell him that you did not harvest because of weather changes, he replies that he wants his crops, and conflict arises. I can say in recent years agriculture has become very hard. (Adult man)

Many smallholders are convinced that the government must intervene to lower bank interest rates and promote payment schedules that are more favourable for them.

Other important *challenges* articulated by smallholders during the workshops were their coexistence with pastoralists and elephants. Some participants perceived that Masai and Sukuma did not respect the borders of the territory assigned to them by the government, whereas the occurrence of fatal accidents led to an increasingly difficult situation for human-wildlife coexistence.

Finally, a general narrative characterizing challenges and opportunities for smallholders was that many of the workshops' participants wished to increase their representation in decision-making processes associated with land and land use change. As one young farmer put it, when talking about smallholder farmers' relationship with Illovo sugarcane company: *Farmers alone cannot go to the company to raise their concerns because they are not knowledgeable, the government should help them to make their voice heard.* This was a crosscutting issue involving farmers' associations, the private and the public sector but the government was identified as the only stakeholder that could intervene effectively to protect smallholders' interests.

3.3. Narratives of agricultural transformation in blueprints, policies and plans

In the Kilombero SAGCOT cluster, the transformation that will be promoted in the next 5–10 years—triggered by the planned sugarcane expansion—will be key for current and future generations. Smallholder farmers aspirations and narratives about transformation in the near future and in relation to their current situation, are key to understand how agricultural transformation will unfold in this specific area and in relation to longer-term change, which will take place over generations. Narratives of agricultural transformation in the Northern Kilombero therefore need to be contextualized in broader understandings of socioeconomic change at the national level. A teleological narrative of industrialisation and modernisation has been proposed in the last few years, but it is unclear how, to what extent, and at which pace labour shifting from agriculture—especially the youth—will be absorbed in other sectors (Müller-Mahn, 2020; Mdee et al., 2021). This section will therefore present farmers narratives explored in Section 3.1 in the context of wider narratives of agricultural transformation: the ones proposed by SAGCOT (Section 3.3.1), the Tanzanian Government (Section 3.3.2) and the Kilombero Sugar Company (Section 3.3.3).

3.3.1. SAGCOT narratives

Two main documents have been released in the 2010s to describe SAGCOT's vision of agricultural transformation, the Blueprint (SAGCOT, 2011) and the Greenprint (SAGCOT, 2013). While the Blueprint highlights mainly the unexploited potential in terms of natural resources—land and water—for the expansion of large-scale commercial agriculture, the Greenprint stresses the scheme's sustainability and inclusiveness (Buseth, 2017). Overall, SAGCOT's account of transformation is essentially built on two main narratives: (1) technology, innovation, and market driven agricultural growth, fostered by the creation of infrastructure and the commercialisation

of agriculture, and (2) “win-win” narratives that reconcile different stakeholders' interests and are based on the concepts of “green growth” or “green transformation” that became dominant in the global political arena around one decade ago (Buseth, 2017). These are referred to in the Greenprint as Agricultural Green Growth (AGG). An example of a “win-win” narrative contained in the Greenprint is the opportunity analysis on precision agriculture (PA) that uses several technologies to increase efficiency, profit and productivity while reducing the impact on the environment (SAGCOT, 2013: 12). “Sustainable intensification”—increasing yield per unit area maximising the use of agricultural inputs and respecting a set of principles to avoid environmental degradation—is also mentioned to increase profit, food production and food security (SAGCOT, 2013: 25–26). Diversification—based on “crop rotations and/or spatial diversification of crops, livestock, and trees” (SAGCOT, 2013: 26)—is reported as one of the core ideas underpinning and enabling sustainable intensification and it is claimed that *in principle* it is compatible with large-scale agriculture (SAGCOT, 2013: 26). In other parts of the Greenprint (SAGCOT, 2013: 73), however, it is claimed that commercial surplus obtained by sustainable intensification and not the cultivation of different plots will guarantee smallholders' food security. This narrative of transformation proceeds as follows: increased productivity and marketing opportunities provided by farmers associations will lead smallholders to gradually move out of subsistence farming and join outgrowing schemes while the ones who are not affiliated to the agricultural scheme “will move into other lines of work” (SAGCOT, 2013: 73). Smallholders will therefore be unwilling to expand their agricultural activities and “new subsistence plots on marginal land will diminish”, also decreasing pressure on forests and environmental degradation (SAGCOT, 2013: 73).

SAGCOT recognises a key role for outgrowers cultivating on their land under contractual arrangements with private companies such as Kilombero Sugar Company. According to the Blueprint this model guarantees “mutual benefits” (SAGCOT, 2011; Bergius, 2017), providing smallholder farmers integration to global value-chains, access to the market and extension services. The outgrowing approach, widely criticised in terms of its effective benefits for smallholders (e.g., Bergius, 2017; Sulle, 2017), also reflects global discourse, born in the early 2000s, which depicts smallholders as entrepreneurs able to lift their selves out of poverty if properly connected to the market in the context of a broader agricultural transformation, mainly neoliberal in nature, based on foreign private investment. This vision of the future of agricultural transformation triggered by the involvement of the private sector has not changed in the last decade and it has been put forward more recently by the 2021 United Nations Food Systems Summit (UNFSS). The latter has promoted the role of the corporate world in agricultural transformation and world food system governance, with Civil Society organisations claiming they were systematically side-lined in the conversation at the global level (Canfield et al., 2021a,b).

Finally, in relation to irrigation, the Blueprint highlights the high potential to develop Tanzanian agriculture through irrigation schemes, while the Greenprint promotes an “efficiency-oriented approach” (SAGCOT, 2013: 10) in which water use is adequately distributed across sectors; water use efficiency is improved, especially in agriculture, and effective watershed management increases the quantity of the water available. Climate change is identified as one of the factors increasing the need for irrigation (SAGCOT, 2013, C-9;

Mirzabaev et al., 2023) and investments in irrigation are ascribed mainly to the national government (SAGCOT, 2013: 23).

3.3.2. National agricultural sector and development narratives

The Tanzanian national narrative resonates with the narrative of technology and market driven agricultural growth and “win-win” narratives of sustainability, inclusiveness and economic growth proposed by SAGCOT. The Tanzanian government’s vision for agricultural transformation is indeed expressed mainly in the Tanzanian Agricultural Sector Development Program Phase II (ASDP-II), the objective of which is to transform “smallholders into sustainable commercial farmers” (URT, 2017: 41). ASDP-II is part of the Tanzania Development Vision 2025, which aims to “transform [the country] from a low productivity agricultural economy to a semi-industrialized one, led by *modernized* and highly *productive* agricultural activities” (URT, 2015a,b: 2). The Agricultural Sector Development Strategy II (ASDS II), finally, is the tool to promote these agricultural policies between 2015 and 2025. This document identifies three priorities, namely (1) the use of technology, (2) “irrigation, finance, mechanization, agroprocessing and access to markets”, and (3) its synergy with other sectoral initiatives such as SAGCOT (SAGCOT, 2013: 13).

While ASDS II identifies diversification of crop and livestock as a strategy to protect farmers from variations in price and productivity, ASDP II also recognises the need for “strategic diversification” (ASDP-II, 2017: 31) supporting a range of income generating activities in horticulture and livestock keeping, but its specific emphasis is on commercialisation. The role assigned to private sector investors, commodity value chains, and surplus commercialisation is key in ASDP-II, in contrast with ASDP-I, which focused on state interventions on one side, and smallholder farmers on the other. According to the national vision, commercialisation of agriculture will lead to the creation of job opportunities and poverty reduction (URT, 2017: 2–3), in line with SAGCOT’s narrative of change. National narratives, as argued by Aminzade et al. (2018), even if there are some inconsistencies in national documents, often depict medium scale farmers—and not smallholders—as the potential change makers in current forms of transformation.⁴ In addition to this, it promotes efforts to “help subsistence smallholders graduate to the ranks of small-scale commercial farmers” (URT, 2017: 45) and acknowledges that even though some progress has been made through ASDP I, ASDP II still needs to increase farmers’ involvement in the decision-making process over natural resource management (URT, 2017: 31).

⁴ An example of the inconsistencies characterizing different documents, can be found between ASDP-II and the Tanzania Development Vision 2025: while the ASDP-II claims that its “design reinforces smallholder commercialization focus with the view to support farmers to graduate from subsistence farming to semi-subsistence/semi-commercial status, practicing farming as a business” (ASDP-II, p. 30). According to the Tanzania Development Vision 2025, instead, “Lacking scale, smallholders forego advantages enjoyed by commercial farmers such as lower operational costs, better access to farming inputs and greater farming expertise” (Tanzania Development Vision 2025 2013: 6 in Aminzade et al., 2018).

Similarly, ASDP II plans for further progress in the implementation of priority investments started with ASDP I, especially in the irrigation domain. According to the document, irrigation is indeed part of the first component of priority investment on *sustainable water and land use management for crops, livestock and fisheries* (URT, 2017: 33). The Tanzanian government plan stresses the importance of land use planning in relation to irrigation while committing to invest in infrastructural development schemes’ management and maintenance (URT, 2017: 33).

3.3.3. Kilombero Sugar Company expansion narrative

Kilombero Sugar Company’s narrative of transformation is characterised by technology driven development, commercialisation of agriculture and the need to “promote further foreign direct investment” (Illovo, 2022c). It is therefore well aligned with Tanzania Development Vision 2025. Moreover, the company promotes a narrative of expansion, which should be both vertical and horizontal. Vertical expansion entails improving yields on existing outgrower farms with the introduction of inputs and extension services whereas horizontal expansion is based on the acquisition of new land and/or uptake of sugarcane by new farmers that are contracted in the outgrowing scheme.

The Kilombero Sugar Company documents emphasise the need to increase efficiency in water delivery as sugarcane production is highly dependent on irrigation (Hess et al., 2016). Water in the area should accommodate different needs, spanning from agriculture to wildlife conservation, tourism, domestic uses, and the alimentation of the Nyerere hydropower station. In consequence, the Kilombero Sugar Company, in line with national development policies of the Tanzanian government, acknowledges the fundamental importance of integrated water management in the landscape. Whilst the Company investigated in 2017 the feasibility of drip irrigation, in response to water scarcity in the area (Illovo, 2017), it remains unclear if irrigation will be promoted among outgrowers. It is also not clear if sugarcane irrigation schemes could compromise access to water for the smallholders who decide not to participate in the sugarcane scheme. It is indeed not sure if the construction of a new mill would impact their water usage, even if the 2017 Illovo’s report claims that the factory water consumption footprint was neutral and 89% of the water used for mills and “non-cane operations” was recycled (Illovo, 2017: 23). It is quite difficult to understand how irrigation systems will be transformed in relation to the company’s expansion and how this will impact smallholders’ agricultural activities because the current environmental and social assessment for the planned sugarcane expansion is not public, in open contradiction with Illovo’s guidelines on Land and Land Rights, which claim that “the appropriate assessment documentation will be made readily available to the affected people” (Illovo, 2022b).

3.4. Farmers narratives and the social justice of transformation in the Northern Kilombero Valley

Smallholders’ narratives and their challenges in the achievement of the ideal farms invite a reflection on the social justice of current and future transformation in Northern Kilombero. As seen in Section 3.1,

an unfair natural resource distribution indeed underpins the narratives of land ownership and access to water for irrigation. Land distribution would also be crucial to smallholders' expansion and diversification. Moreover, the main challenge identified by smallholders is a lack of recognition and representation, which makes it difficult for them to overcome other challenges. In this section, following Whitfield et al. (2021) framework, we therefore critically reflect on historical, representational, and distributive injustice.

3.4.1. Historical legacies of injustice

The case of the Northern Kilombero and its sugarcane plantation illustrates well how present narratives of transformation are entrenched in Tanzanian history. The narrative surrounding the considerable potential for agricultural transformation offered by the area is indeed not new. In the colonial period, the valley was described as "a great alluvial plain which could—with proper interventions for irrigation—be turned into one of the finest cotton, sugar, and rice producing areas in the world" (Ormsby-Gore, 1925: 121). While German colonists envisaged large scale cultivation of rice, British targeted cotton and it was in fact under Nyerere that the narrative of rural transformation pivoted on sugarcane production started to be developed. The narrative of the untapped agricultural potential that needed to be developed through global investments was therefore already present in colonial times, and modernization narratives accompanied by the establishment of big estates characterized to a certain extent also the idea of agricultural development after independence. However, the father of the nation aimed to promote the flow of migration of unemployed youth for the urban areas to the countryside and was eager to differentiate the project from previous colonial estates claiming, in 1956, that foreign investment in sugarcane was going to be accepted as long as Africans could "participate in the scheme not as labourers providing cheap labour but as partners" (Nyerere, 1966). The Kilombero settlement and agricultural scheme was then promoted and sustained for its political more than economic value (Jackson, 2021). Present investments in outgrowing schemes, developed in the same areas (Sulle and Smalley, 2015a) can be read in continuity with these efforts, while representing an attempt to find an alternative to land grabbing typical of large scale land acquisitions and proposing a model in which farmers, at least on paper, can be included (Cotula, 2009; von Braun and Meinzen-Dick, 2009; cf. Little and Watts, 1994; Oya, 2013).

Transformation has its roots in the past and never straightforwardly starts from a present condition of perfect systemic order. Moreover, injustices are socially and historically constructed and can be replicated or addressed by different types of transformation. The narratives of agricultural transformation and ideal visions of the future for rural Tanzania have historical roots and were already present *in nuce* in the colonial period. The investment in agricultural corridors—and the narrative of integration in the global economy as the preferable way to plan for agricultural development—can indeed be read in continuation with the past establishment of colonial estates, developmental schemes, and state farms (Hall et al., 2015), which are all underpinned by a "modernising" sociotechnical imaginary (Jasanoff and Kim, 2015), based on the pivotal role assigned to technology and global integration as the key instruments to achieve a universally desired future (Müller-Mahn, 2020). However, the narrative of a win-win transformation differs from previous ones, as, differently from the past, it depicts smallholders as beneficiaries of the

scheme, who can lift themselves out of poverty by means of taking advantage of the current transformation. Despite this win-win narrative, which kind of transformation is desired by smallholder farmers is taken for granted and virtually never explored, while their participation in SAGCOT's public-private partnership decision-making process is limited, resulting in a lack of recognition and representational injustice.

3.4.2. Contemporary representational injustice

The scarce representation of farmers' interests towards both the government and the private sector strongly emerged in the workshops' participants' description as one of the challenges they face in the present situation to achieve their ideal farms and a very widespread idea amongst the farmers' interviewed is that their representational mechanisms should be improved. Some of the most frequently mentioned objectives that farmers should be pursuing, according to what emerged during workshops, are an equitable weighing system for rice and sugarcane and, in the specific case of sugarcane, a fair calculation of sucrose level. Moreover, representational injustice in the present situation prevents farmers from obtaining fairer loans and a timely and equitable distribution of fertilizers and pesticides. Smallholders are also currently under-represented on issues of land tenure, irrigation, and conservation policies (Bergius, 2017; NGRF, 2017; Smalley et al., 2021). Finally, some farmers expressed doubts about the priority currently established for sugarcane. In sum, representation would be key for farmers to tackle all the main challenges that are currently affecting them and that prevent them from achieving the ideal farm in the future. Many participants identified the national government as the main actor that they perceive to be responsible for protecting their interests and considered the current forms of representation offered by farmers association in the context of large-scale interventions as ineffective.

3.4.3. Distributional justice, misrecognition, and alternative transformation pathways

According to narratives of land ownership, expansion of agricultural activities and irrigation that emerged during workshops, partially because of scarce representation, farmers have different degrees of access to resources, such as water and land. Transformation, indeed, does not—and will not—impact all farmers in the Northern Kilombero Valley in the same way. According to the smallholder farmers' narratives described in the results, the distribution of natural resources such as land and water is currently unfair. The narratives of irrigation, ownership, and expansion highlighted the importance of control over key assets such as water and land, even in the context of an outgrowing scheme. Indeed, despite the formula of outgrowing, internal differentiation meant that wealthier farmers—"big farmers"—could invest and expand this asset, augmenting their productivity and income (Sulle and Smalley, 2015a), whereas the poorest ones could not do so. Wealthier farmers also have the possibility to purchase farms with a good geographical location, good access to water and/or some form of irrigation, while investing in farming inputs and mechanised agricultural tools and to pay for additional labour to help during harvest. Many smallholders interviewed instead had to move or to commute amongst different rented plots, a rather common practice which forces them to stay away from their family for long periods. Women also have less access to the resource of land and their

desire to cultivate food crops near home will become more difficult to realise if smallholder farmers decide to switch to sugarcane cultivation.

4. Discussion

The combination of the analysis of farmers' narratives of transformation explored in Section 3.1 with the global and national ones explored in Section 3.3 and their social justice implications investigated in Section 3.4 lead to highlight some key messages about agricultural transformation in the Northern Kilombero Valley.

Firstly, agricultural transformation promoted by the Kilombero Sugar Company and SAGCOT is influenced by the specificities of context of the Northern Kilombero Valley, both in historical and geographical terms. Secondly, indeed, due to the specific configuration of the landscape, imagined as ideal for large-scale agriculture based on foreign investment since colonial times, smallholder farmers' narratives of *land ownership*, *expansion*, *diversification*, and, to a certain extent, *irrigation* are incompatible with SAGCOT's "win-win" account. Due to the specificity of the context, in the Northern Kilombero, where land is a scarce resource, agricultural transformation will result in winners and losers, across the lines of land ownership and gender differentiation. These dynamics of marginalization have their roots in colonial times and are deeply entrenched in forms of historical injustice as described by Blache (2019). Thirdly, amongst all the challenges described in Section 3.2—which are all relevant to transformation in the valley—the most important one seems to be the challenge of representation, because it is key to overcome all the others. It results in representational injustice, which, in turn, risks to exacerbate distributional injustice in the future, especially in relation to land distribution, which has also been problematic in the area since colonial times and Ujamaa. The current lack of political and institutional recognition and representation of smallholder farmers risks silencing potentially alternative pathways to transformation based on farmers' own narratives, desires and aspirations, which are often ignored or taken for granted by national and international narratives described in Section 3.2. Taken together these key messages point towards the need to recognise plural and contextual narratives, and make concerted effort to tackle, and prevent exacerbating inequality in an integrated management of the Northern Kilombero landscape which is also inclusive of smallholder farmers' voices and narratives of transformation.

Historically, as seen in Section 3.4.1, narratives of transformation about the landscape, the establishment of estates and the integration of the area with the national and the global economy were present since colonial times. Moreover, the fact that in Northern Kilombero commercial agriculture coexists not only with smallholder farming but also with conservation and restoration initiatives complicates land and water planning and management. This is partially acknowledged in the Greenprint, which recognises that, in the specific case of the Kilombero cluster, the land available for agricultural expansion is limited. The risk that smallholders could be displaced to the southern wetland and/or to the forest is acknowledged in the document but no measure to prevent this from happening is mentioned (SAGCOT, 2013: C-9).

Therefore, because of the specificities of the Northern Kilombero, smallholder farmers' narratives of *expansion*, *diversification*, *land ownership*, and, to a certain extent, *irrigation* are incompatible with

SAGCOT's "win-win" account of agricultural transformation. *Expansion* appears as a theme in both SAGCOT's and farmers narratives (as described in Section 3.3). Farmers' desire to expand (and, at the same time, diversify) does indeed not necessarily coincide with the expansion planned by the Kilombero Sugar Company or the way in which these two narratives are dealt with in national and international blueprints. In theory, it is possible to claim that, thanks to the planned expansion, smallholders can opt to diversify and expand by means of uptaking sugarcane, therefore leading to a profitable and beneficial situation for both farmers and the Kilombero Sugar Company, as predicted in national and international win-win narratives. However, the specificity of the landscape and sugarcane cultivation, which needs to rely on irrigation, economies of scale and be cultivated on adjacent plots (Hess et al., 2016), makes this possibility quite unlikely to be realised in the future. The cooperation of smallholder farmers cultivating the same crop emerged in the workshops as a potential solution improving their possibility to benefit from the scheme even without owning big portions of land. However, this was also perceived as difficult to organise and cooperation with neighbours was generally described as a resource which, however, could be challenging at times, with quarrels often emerging on farms' management and borders. SAGCOT Greenprint recognises that not all the smallholders can be involved in the outgrowing scheme and predicts that they will change their livelihood (see Section 3.3). Illovo indeed claims that by 2028 smallholder farmers who will chose to switch to sugarcane cultivation will be between 14,000 and 16,000 whereas they are now 7,500, with an additional 2,000 people expected to be employed as a result of the expansion (Illovo, 2022a). However, the desire to be employed by the sugarcane company did not emerge clearly from the workshops, even though a few participants highlighted that "agriculture is hard" and would have liked to switch to other activities.

Diversification, instead, appears in different forms and with a different weight in SAGCOT's and national narratives but also in smallholders' narratives (see Section 3.3). Different stakeholders' narratives of diversification are also problematic in relation to expansion as a strategy that smallholders farmers employ to guarantee their households food security. Cultivating food crops for the household remains critical for smallholders but, even though diversification and crop rotation are tangentially mentioned in the Greenprint (SAGCOT, 2013: 25–26) and in national plans (URT, 2015a,b: 31) (see Section 3.3), the main narrative of transformation emerged from the document seems to be that smallholders' food security will be guaranteed by an increase of income due to participation in the outgrowing scheme and/or to new employment opportunities created by the scheme (SAGCOT, 2013: 73).

Finally, SAGCOT's and national win-win accounts can also be questioned in relation to farmers narratives of *land ownership and access to irrigation*. Distributional injustice indeed risks to characterise land in the Northern Kilombero. According to the Kilombero Sugar Company and SAGCOT, the already tested formula of the outgrowing scheme prevents land grabbing. However, workshops' participants claimed that, already in the present, only some farmers—the "big farmers", as they were referred to in workshops—are able to profit from the key asset of land. A high degree of internal differentiation, however, limits smallholders' possibility to own and acquire land. This resonates with broader national trends of rising land prices, which might represent a barrier for young adults to become farmers and

means a further restricted access to land for smallholders and the possibility for landowners to increase their wealth (Wineman and Jayne, 2018). If the value of land increases because of sugarcane expansion, rental prices, which are already perceived as high, will also augment, further diminishing smallholders' access to land. The Kilombero Sugar Company planned horizontal expansion might risk exacerbating the situation in the future and inequality is likely to increase between those owning and not-owning land and having access to off-farm opportunities. In a similar case, the paddy production in the Great Ruaha Basin within SAGCOT, Ires has shown that farmers who owned land also became more resilient to weather shocks. It was reported indeed that they could successfully overcome the 2015–16 drought and even increase their harvest. The situation was however very different for smallholders, who still highly depend on rainfed agriculture and have scarce access to water for irrigation (Ires, 2021). Women also seem to be particularly affected, as their access to land is limited (Landesa, 2017; Sulle and Dancer, 2020). Moreover, women participants in the workshops claimed that they prefer to cultivate food crops such as rice, maize, vegetables and bananas. The increasing scarcity of fertile land causes the displacement of food crops and women, who normally cultivate them (Sulle and Smalley, 2015a), have to walk longer distances to reach the plots they cultivate. A similar expansion of sugarcane cultivation took place, for instance, in Uganda, where private sector agendas resulted in corporate control over food systems and unequal distribution of assets such as land and water, reducing the land available for food crops and therefore food security (Mwavu et al., 2018).

As Kashaigili et al. (2014) argued, the notion of “untapped” land underpinning horizontal expansion and the fact that it could be made more profitable through intensification and irrigation—the narrative of vertical and horizontal expansion promoted by the Kilombero Sugar Company (Section 3.3.3)—have been undermined by accounts of biodiversity losses and competition for land and water, reported already by several sources (e.g., Landesa, 2017; NRGF, 2017: 14). As much as land, indeed water in the Northern Kilombero is essential for agriculture, conservation, restoration, tourism, domestic uses, and energy, as Nyerere hydropower station depends on the Rufiji River and competition amongst sectors characterises the use of this resource. In the occasion of the 2015–2016 drought, for instance, the Tanzanian Electric Supply Company, managing the Nyerere dam, blamed irrigation schemes and farmers of the electricity crisis that pervaded the nation (Ires, 2021). As sugarcane production is highly dependent on irrigation (Hess et al., 2016) and with the construction of a new mill, it is not clear how water will be distributed in the region after the Kilombero Sugar Company expansion. In relation to access to water for irrigation—a key narrative emerged in the workshops—further studies would be needed to understand if the sugarcane expansion could compromise access to water for the smallholders who decide not to participate in the sugarcane scheme or do not have the possibility to do so.

Thirdly and finally, of all the challenges to achieve the ideal farm described in Section 3.1.3, the most important one appears to be a lack of representation. A very widespread idea amongst the farmers' interviewed is indeed that representational mechanisms should be improved to advance smallholders' interests towards both the government and the private sector. National narratives of transformation contained in the ASDP II emphasize the need to

increase beneficiaries' involvement in the management of natural resources “based on transparent processes” (ASDP-II). The “win-win” and “inclusive green growth” narrative underpinning SAGCOT also strongly emphasizes the role of smallholders as protagonist of transformation. However, what emerged from the analysis of framers' narratives and the challenges they currently experience, smallholders were never systematically consulted about how they envisage current agricultural transformation. International organisations, such as IUCN and Landesa stress how this is particularly relevant for women and pastoralists, traditionally marginalized in the area (Landesa, 2017; NRGF, 2017). In 2014, according to Bergius (2017), more than 50 SAGCOT partners came from the private sector and only four partner organizations were farmers' associations. Of the latter, three had strong connections with private sector partners whereas MVIWATA, one of the most important smallholder farmers' networks in Tanzania, did not participate in any of the stages of the scheme's design or implementation, with representatives expressing concerns over the scheme's genuine targets. Currently, MVIWATA figures as the only farmers association involved in the corridor (SAGCOT, 2022). Even MVIWATA, however, according to Martiniello and Nyamsenda (2018), is regarded by some farmers' grassroot organisations as unsuitable to represent all smallholders. The current limitation to the fairness of SAGCOT's decision-making process inevitably leads to distributional injustice and the unfair distribution of resources described in the previous two paragraphs of this section. Moreover, the current lack of political and institutional recognition and representation of smallholder farmers risks to silence potentially alternative pathways based on farmers' own narratives.

The fragmentation of farmers associations has been growing since KSC privatization. These organisations were 2 in 1998 and 15 in 2014 and this considerably limits current smallholders bargaining power. Moreover, the requirement of owning 50 ha or more of land to obtain a leadership position in farmers' organisations has led medium scale farmers to these positions (Sulle and Smalley, 2015b). In addition to this, farmers organization are also in charge of tenders for cutting, loading and transport sugarcane to the mills and the equipment for these activities is often owned by these leaders and/or medium scale farmers (Sulle and Smalley 2015b). More effective smallholder farmers representation would mean a more united voice and the disentanglement of representation from the delivery of services, such as, for instance, transportation, to the sugar company. These changes should be informed by the open acknowledgment that smallholder farmers interest might differ from medium scale ones.

According to Smalley et al. (2014), smallholder farmers have been successful in opposing land acquisition from Illovo at the borders of the company's estate near Msolwa Ujamaa by means of occupying the land and pretending compensation from the government. They attracted attention from international movements and organisations. Solidaridad, an organization from Netherlands, was later involved in consultation with smallholder farmers organizations (Sulle and Smalley, 2015b) and has supported sugarcane farmers in Malawi in their struggle towards representation (Solidaridad, 2019). IUCN has also committed to provide support for farmers associations (NRGF, 2017) and several Civil Society Organisations (CSOs) have written their recommendations and feedback to the Greenprint (ActionAid Tanzania et al., 2012). This kind of international engagement could

be instrumental for further farmers' led initiatives. According to the smallholders' views gathered in the workshop, however, it is ultimately the government that should enable the transformation they envisage and help them overcoming the challenges they are currently facing.

5. Conclusion

Even though smallholder farmers are often depicted as the protagonist of agricultural transformation in “win-win” global and (partially) national narratives—such as the ones characterizing UNFSS, SAGCOT, and the Tanzanian ASDP-II and ASDS II—their views about which kind of change they aspire to are currently under-investigated. This paper contributes to the exploration of potentially alternative narratives in relation to agricultural transformation with the aim of “taking plural pathways seriously” (Scoones et al., 2020) and promote fair forms of transformation (Whitfield et al., 2021). This paper aimed to address the current research gap on farmers narratives and aspiration in relation to agricultural transformation by means of (1) exploring smallholder farmers' narratives of desired transformation in the Northern Kilombero Valley, and the challenges and opportunities to achieve their ideal farm (Section 3.1) (2) introducing global blueprints and national vision and plans (Section 3.3), and (3) reflecting on the social justice of the planned sugarcane expansion in the context of this landscape (Section 3.4). The paper has therefore presented the case study (Section 2.1) and methods (Section 2.2), introduced the results of the analysis in Section 3 and discussed them in Section 4.

Instead of a linear process of transformation leading to a universally desirable future to which smallholders should aspire, characterized by the market integration and technology adoption narratives promoted by the Kilombero Sugar Company, SAGCOT and ASDP II, farmers imagine alternative futures in a more composite scenario and do not necessarily comply in the implementation of globally designed transformation. Four narratives emerged from the description of smallholder current and ideal farms: (1) land ownership, and (2) expansion, (3) agricultural livelihood diversification and (4) access to water for irrigation. These narratives of desired transformation are based on land redistribution, regulated prices for rice and sugarcane, access to loans with favorable conditions, and an increased control over fertilizers, pesticides and other agricultural inputs, accompanied by some forms of support in the development of other income generating activities, such as small livestock keeping, fishponds or beehives. Other challenges that according to smallholder farmers should be addressed to achieve their ideal farm are the presence of elephants in the landscape and their impact on agriculture and pastoralists' use of land for livestock keeping, which is also perceived as interfering with their livelihood activities.

This paper has overall argued that the account of transformation that emerged from smallholder narratives is incompatible with SAGCOT and national modernising and win-win narratives underpinning the Kilombero Sugar Company expansion in the northern Kilombero Valley due to the specificities of its context. Moreover, the current lack of recognition and representation of smallholder farmers—the representational injustice described in Section 3.4.3—risks to result in redistributive injustice with winners and losers in relation to the management of natural resources such

as land and water and a risk for further marginalisation of women and land-poor smallholders (Section 4). There is a need for greater effort among actors in rural landscapes to address potential injustice at the level of representation, recognition and redistribution. The plurality and contextuality of envisaged desirable futures should be recognised in plans and policies, and inclusive transformation pathways should be actively negotiated. There is a risk that distributional injustice and inequality will otherwise increase in relation to the expansion of sugarcane cultivation and social unease will increase in the area.

The analysis of the narratives of smallholder farmers and the challenges they face in relation to the achievement of their ideal farms leads to draw some concluding remarks and identify future research directions. Firstly, the challenges that smallholder farmers are currently facing described in Section 3.1.2 and the narratives of transformation described in Section 3.1.1 are deeply inter-related and a landscape approach is needed at the regional and national level to formulate and implement integrated policies. This is particularly evident in relation to the narrative of land ownership and access to water for irrigation as both land and water serve competing needs across the sectors of agriculture, conservation, restoration, and energy (see Section 4). Policies and interventions based on farmers' needs and envisaged transformation as sketched above should be designed to support smallholder farmers in the context of agricultural growth corridors. A necessary starting point for this would be that the sugarcane company planning process actively engages with multiple stakeholders. A social and environmental assessment has indeed been conducted by the Kilombero Sugar Company but it is not public yet, which prevents civil society organizations to participate in the decision-making process, protect different stakeholders' interests and evaluate from their perspective the sustainability of the project.

Secondly, and relatedly, the challenge of representation and consequent representational injustice (described in Sections 3.1.2 and 3.4.2) points towards the need to promote effective communication and interaction amongst different stakeholders, and their participation to the decision-making process. Different forms of continuous assessment, monitoring and evaluation should be present at the local level to ensure that the social and environmental dimension of transformation are properly addressed throughout the different stages of project development.

Thirdly, further research is needed to better understand longer-term change in relation to the farm-family circle, the youth's aspirations, and intergenerational aspects of change. The following 5–10 years will be key for the socioeconomic transformation of the Northern Kilombero Valley but a more gradual transformation will take place over-generations in the context of a changing national political economy. Moreover, the increasing importance of medium scale farms in the area suggests that future research should focus also on medium scale farmers' narratives of transformation.

Future research should consider and focus on both the need of integrated and landscape management and the challenge of representational and distributional justice. Interdisciplinary research can indeed support the decision-making process by means of providing an analysis of the trades-off associated with transformation at the landscape level in the present and in the future. Secondly, academic research should engage in promoting the fairness of agricultural transformation. Even though researchers cannot speak on farmers' behalf, they can explore and expose different stakeholders' narratives of change in context to open up the debate taking into

account different interests, advocate for and support the development of more structured forms of representation and sustain the emergence of alternative futures (Whitfield et al., 2021) or pathways leading towards socially just forms of transformation (Scoones et al., 2020). In the specific case of the Northern Kilombero Valley academic research should complement the monitoring and evaluation initiatives promoted and implemented by the private sector. Some themes that emerged in the current research and require further attention, especially during the first phase of the sugarcane expansion, which will take place in 2023, are the gendered dynamics that will characterise women's participation in the proposed agricultural transformation, but also food security in relation to land and water management.

Data availability statement

The anonymised raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was granted by the University of Leeds Ethics Committee (ref: AREA 19-017) and Research Permission was granted by COSTECH (ref: 2019-118-NA-2016-101) in accordance with the local legislation and institutional requirements. The participants provided their witnessed verbal informed consent to participate in this study, this included consent from the individual(s) for the publication of any potentially identifiable images or data included in this article. Participants informed consent was based on a participant Information Sheet with a project description in Kiswahili and English; these can be found in the [Supplementary Material](#).

Author contributions

MP, SS, ML, and EM were involved in the conception of the work, the critical revision of the article and the final approval of the version to be published. ML and SS led the methodological design, data collection, data analysis, and interpretation. FL and DS contributed to data collection, critical revision of the article, and final approval. PN

References

ActionAID Tanzania, Agenda Participation 2000, Environmental Protection and Management Services (EPMS), Haki Ardhi, International Union for Conservation of Nature (IUCN), Journalists' Environmental Association (JET), Katiba Initiative (KAI), Lawyers Environmental Action of Tanzania (LEAT), Legal and Human Rights Center (LHRC), Mtandao wa Jamii wa Usimamizi wa Misitu Tanzania (MJUMITA), Njombe Agriculture Development Organization (NADO), Parakuiyo Pastoralists Indigenous Community Development Organization (PAICODEO), Participatory Ecological Land Use Management (PELUM), Policy Forum Research on Poverty Alleviation (REPOA), Rural Livelihood Development Company (RLDC), Rural Urban Development Initiative (RUDI), Tanzania Forest Conservation Group (TFCG), Tanzania Forest Industries Federation (SHIVIMITA), Tanzania Network for Indigenous Pastoralists (TANIPE), and World Wide Fund for Nature (WWF) (2013). Feedback and recommendations from civil society Organisations for the "Greenprint" strategy of the southern agricultural growth corridor of Tanzania initiative. Available at: <https://tnrf.org/Greenprint.pdf>

Aminzade, R., Schurman, R., and Lyimo, F. (2018). Circulating discourses: the case of agricultural development in Tanzania. *Soc. Dev.* 4, 70–93. doi: 10.1525/sod.2018.4.1.70

and LM conducted data collection. All authors contributed to the article and approved the submitted version.

Funding

This research was conducted as part of the "What to plant, when and where?—Designing integrated forest-agricultural landscapes to enhance multiple livelihood benefits to and from agriculture" (GCRF-AGRISYS project) with funding from UKRI Biotechnology and Biological Sciences Research Council (BB/S014586/1). Additional funding to extend the timeframe of fieldwork and support write up and dissemination of this work was achieved through UKRI COVID-19 Grant Extension Allocation and ESRC Impact Accelerator Account (IAA) administered through the University of Leeds, and the Science for Nature and People Partnership CORRESTOR project. EM is supported by the ONEplanet DTP Natural Environmental Research Council (NERC) program (NE/S007512/1).

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The reviewer LN is currently organizing a Research Topic with the author SS.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fsufs.2023.1148928/full#supplementary-material>

Appadurai, A. (2013). *The future as cultural fact. Essays on the global condition*. Verso, London.

ASDP-II document is United Republic of Tanzania – URT (2017) Agricultural sector development plan phase II (ASDP II). The United Republic of Tanzania. Available at: <https://asdp.kilimo.go.tz/>.

Badiane, O., Diao, X., and Jayne, T. (2021). "Africa's unfolding agricultural transformation" in *Agricultural development: new perspectives in a changing world. Part two: regional issues in agricultural development, Chapter 5*. eds. K. Otsuka and S. Fan (Washington, DC: International Food Policy Research Institute (IFPRI)), 153–192.

Bennike, R. B., Rasmussen, M. B., and Nielsen, K. B. (2020). Agrarian crossroads: rural aspirations and capitalist transformation. *Can. J. Dev. Stud./Rev. Can. Etudes Dev.* 41, 40–56. doi: 10.1080/02255189.2020.1710116

Bergius, M. (2017) Expanding the corporate food regime in Africa through agricultural growth corridors: the case of Tanzania. *Global governance/politics, climate justice & agrarian/social justice: Linkages and challenges*, Colloquium paper Bergius.

- Bergius, M., Benjaminsen, T., and Widgren, M. (2018). Green economy, Scandinavian investments and agricultural modernization in Tanzania. *J. Peasant Stud.* 45, 825–852. doi: 10.1080/03066150.2016.1260554
- Blache, A. (2019). *Grabbing Land, Catching Votes! Land and the 2015 Election Campaign in Kilombero District, Tanzania*. Les Cahiers d'Afrique de l'Est/The East African Review, (53).
- Blythe, J., Silver, J., Evans, L., Armitage, D., Bennett, N. J., Moore, M. L., et al. (2018). The dark side of transformation: latent risks in contemporary sustainability discourse. *Antipode* 50, 1206–1223. doi: 10.1111/anti.12405
- Brockington, D., and Noe, C. (2021). *Prosperity in rural Africa? Insights into wealth, assets, and poverty from longitudinal studies in Tanzania* Oxford: Oxford University Press.
- Buseth, J. T. (2017). The green economy in Tanzania: from global discourses to institutionalization. *Geoforum* 86, 42–52. doi: 10.1016/j.geoforum.2017.08.015
- Byiers, B., Bizzotto, M., and Engel, P. (2016) Agricultural growth corridors: mapping potential research gaps. Report commissioned by the independent science and partnership council of the CGIAR. March, 2016 European Centre for Development Policy Management. Available at: https://www.researchgate.net/publication/313861730_Agricultural_Growth_Corridors_Mapping_potential_research_gaps_on_impact_implementation_and_institutions.
- Canfield, M. C., Anderson, M. D., and McMichael, P. (2021a). UN food systems summit 2021: dismantling democracy and resetting corporate control of food systems. *Front. Sustain. Food Syst.* 5:103. doi: 10.3389/fsufs.2021.661552
- Canfield, M. C., Duncan, J., and Claeys, P. (2021b). Reconfiguring food systems governance: the UNFSS and the battle over authority and legitimacy. *Development* 64, 181–191. doi: 10.1057/s41301-021-00312-1
- Chome, N., Gonçalves, E., Scoones, I., and Sulle, E. (2020). 'Demonstration fields', anticipation, and contestation: agrarian change and the political economy of development corridors in eastern Africa. *J. East. Afr. Stud.* 14, 291–309. doi: 10.1080/17531055.2020.1743067
- Cotula, L. (2009). Land grab or development opportunity?: agricultural investment and international land deals in Africa. *Iied*.
- Covic, N., Dobermann, A., Fanzo, J., Henson, S., Herrero, M., Pingali, P., et al. (2021). All hat and no cattle: accountability following the UN food systems summit. *Glob. Food Sec.* 30:100569. doi: 10.1016/j.gfs.2021.100569
- Engström, L., and Hajdu, F. (2019). Conjuring 'win-world'—resilient development narratives in a large-scale agro-investment in Tanzania. *J. Dev. Stud.* 55, 1201–1220. doi: 10.1080/00220388.2018.1438599
- Fraser, N. (1995). Recognition or redistribution? A critical reading of Iris Young's justice and the politics of difference. *J. Polit. Philos.* 3, 166–180. doi: 10.1111/j.1467-9760.1995.tb00033.x
- Gannon, K. E., Pettinotti, L., Conway, D., Surminski, S., Ndilaha, E., and Nyumba, T. (2022). Delivering the sustainable development goals through development corridors in East Africa: a Q-methodology approach to imagining development futures. *Environ. Sci. Pol.* 129, 56–67. doi: 10.1016/j.envsci.2021.12.013
- Hall, R., Scoones, I., and Tsikata, D., eds. (2015). *Africa's land rush: Rural livelihoods and agrarian change*. Oxford: James Currey
- Hanspach, J., Hartel, T., Milcu, A. I., Mikulcak, F., Dorresteyn, I., Loos, J., et al. (2014). A holistic approach to studying social–ecological systems and its application to southern Transylvania. *Ecol. Soc.* 19. doi: 10.5751/es-06915-190432
- Harrison, P., and Laizer, J. (2007) Socio-economic baseline assessment of villages adjacent to Magombera Forest. Unpublished report for WWF Tanzania Programme Office.
- Hess, T. M., Sumberg, J., Biggs, T., Georgescu, M., Haro-Monteagudo, D., Jewitt, G., et al. (2016). A sweet deal? Sugarcane, water and agricultural transformation in sub-Saharan Africa. *Glob. Environ. Chang.* 39, 181–194. doi: 10.1016/j.gloenvcha.2016.05.003
- Honneth, A. (1995). *The struggle for recognition: the moral grammar of social conflicts*. Cambridge, Massachusetts: MIT Press.
- Illovo (2017) Tanzania socio-economic impact assessment – Internal I report. Available at: <https://www.illovosugarafica.com/media/documents/socio-economic-impact-report/Illovo-Impact-Report-Tanzania-Dec17.pdf>.
- Illovo (2022a) Kilombero announces significant sugar expansion project. Available at: <https://www.illovosugarafica.com/announcements/kilombero-announces-significant-sugar-expansion-project>
- Illovo (2022b) Illovo group guidelines on land and land rights. Available at: <https://www.illovosugarafica.com/group-guidelines-on-land-and-land-rights>
- Illovo (2022c) Kilombero Sugar Company. Available at: <https://www.illovosugarafica.com/about-us/tanzania> (Accessed July 2022).
- Ires, I. (2021). Intensive agriculture as climate change adaptation? Economic and environmental tradeoffs in securing rural livelihoods in Tanzanian River basins. *Front. Environ. Sci.* 9, 531. doi: 10.3389/fevns.2021.674363
- Ires, I. (2022). *Brokering development? The private sector and unalleviated poverty in Tanzania's agricultural growth corridors* (vol. 126). Bielefeld: Transcript Verlag.
- Janoff, S., and Kim, S. H. (2015). *Dreamscapes of modernity: sociotechnical imaginaries and the fabrication of power*. University of Chicago Press. Chicago.
- Jayne, T. S., Chamberlin, J., Traub, L., Sitko, N., Muyanga, M., Yeboah, F. K., et al. (2016). Africa's changing farmland ownership: the rise of medium-scale farms. *Agric. Econ.* 47, 197–214. doi: 10.1111/agec.12308
- Jeckoniah, J. N., Akyoo, E. P., and Kabote, S. (2020). Large scale agricultural investments and its impact on gender relations and wellbeing of small holder farmers: evidence from Kilombero Valley in Tanzania. *African J. Land Policy Geospat. Sci.* 3, 036–047. doi: 10.48346/IMIST.PRSM/ajlp-gs.v3i3.17966
- Jackson, J. M. (2021). 'Off to Sugar Valley': the Kilombero Settlement Scheme and 'Nyerere's People', 1959–69. *J. East. Afr.* 15, 505–526.
- Johansson, E. L., and Isgren, E. (2017). Local perceptions of land-use change: using participatory art to reveal direct and indirect socio environmental effects of land acquisitions in Kilombero Valley, Tanzania. *Ecol. Soc.* 22:3. doi: 10.5751/ES-08986-220103
- Kanter, D. R., Schwoob, M. H., Baethgen, W. E., Bervejillo, J. E., Carriquiry, M., Dobermann, A., et al. (2016). Translating the sustainable development goals into action: a participatory backcasting approach for developing national agricultural transformation pathways. *Glob. Food Sec.* 10, 71–79. doi: 10.1016/j.gfs.2016.08.002
- Kashaigili, J., Mdemu, M., and Kadigi, R.. Situation analysis for SUSTAIN-Africa Programme. Draft Final Report (2014).
- Kibugi, R., Wardell, D. A., Cordonier Segger, M. C., Haywood, C., and Gift, R. (2015). Enabling legal frameworks for sustainable land-use investments in Tanzania: legal assessment report. Working Paper, no 191. CIFOR, Bogor, Indonesia.
- Kilombero Sugar Company – KSC (2022) Our story. Available at: https://kilomberosugar.co.tz/index.php?option=com_content&view=article&id=4&Itemid=107&lang=en.
- Knickel, K., Redman, M., Darnhofer, I., Ashkenazy, A., Chebach, T. C., Šumane, S., et al. (2018). Between aspirations and reality: making farming, food systems and rural areas more resilient, sustainable and equitable. *J. Rural. Stud.* 59, 197–210. doi: 10.1016/j.jrurstud.2017.04.012
- Landesa, (2017) Case study: Kilombero sugar company ltd. in Tanzania prepared for Landesa's responsible Investments in Property and Land (RIPL) project February 2017
- Leach, M., Stirling, A. C., and Scoones, I. (2010). *Dynamic sustainabilities: technology, environment, social justice*. London & New York: Taylor & Francis, 232.
- Little, P. D., and Watts, M. (Eds.) (1994). *Living under contract: contract farming and agrarian transformation in sub-Saharan Africa* Univ of Wisconsin Press.
- Martiniello, G., and Nyamsenda, S. (2018). Agrarian Movements in the Neoliberal Era: The Case of MVIWATA in Tanzania. *Agrarian South: J Polit Econ.* 7, 145–172. doi: 10.1177/2277976018779860
- Matejcek, A., and Verne, J. (2021). Restoration-as-development? Contesting aspirational politics regarding the restoration of wildlife corridors in the Kilombero Valley, Tanzania. *Eur. J. Dev. Res.* 33, 1022–1043. doi: 10.1057/s41287-021-00403-2
- Mausch, K., Harris, D., Heather, E., Jones, E., Yim, J., and Hauser, M. (2018). Households' aspirations for rural development through agriculture. *Outlook Agric.* 47, 108–115. doi: 10.1177/0030727018766940
- Mdee, A., Ofori, A., Chasukwa, M., and Manda, S. (2021). Neither sustainable nor inclusive: a political economy of agricultural policy and livelihoods in Malawi, Tanzania and Zambia. *J. Peasant Stud.* 48, 1260–1283. doi: 10.1080/03066150.2019.1708724
- Milder, J., Garabach, K., DeClarck, F., Montenegro, M., and Discroll, L. (2012) *Moving beyond ideology to close yield gaps and 'nature Gaps' in 21st century agriculture: an assessment of the multi-functionality of Agroecological intensification*. Ithaca, NY, EcoAgriculture Partners
- Mirzabaev, A., Olsson, L., Kerr, R. B., Pradhan, P., Ferre, M. G. R., & Lotze-Campen, H. (2023). Climate change and food systems. *Science and Innovations for Food Systems Transformation*, 511
- Milheiras, S. G., Sallu, S. M., Loveridge, R., Nnyiti, P., Mwangi, L., Baraka, E., et al. (2022). Agroecological practices increase farmers' well-being in an agricultural growth corridor in Tanzania. *Agron. Sustain. Dev.* 42, 1–14. doi: 10.1007/s13593-022-00789-1
- Montenegro de Wit, M., and Iles, A. (2021). Woke science and the 4th industrial revolution: inside the making of UNFSS knowledge. *Development* 64, 199–211. doi: 10.1057/s41301-021-00314-z
- Moore, M. L., Tjornbo, O., Enfors, E., Knapp, C., Hodbod, J., Baggio, J. A., et al. (2014). Studying the complexity of change: toward an analytical framework for understanding deliberate social-ecological transformations. *Ecology and society* 19
- Msofe, N. K., Sheng, L., Li, Z., and Lyimo, J. (2020). Impact of land use/cover change on ecosystem service values in the Kilombero Valley floodplain, southeastern Tanzania. *Forests* 11:109. doi: 10.3390/f11010109
- Müller-Mahn, D. (2020). Envisioning African futures: development corridors as dreamscapes of modernity. *Geoforum* 115, 156–159. doi: 10.1016/j.geoforum.2019.05.027
- Mwavu, E. N., Kalema, V. K., Bateganya, F., Byakagaba, P., Waiswa, D., Enuru, T., et al. (2018). Expansion of commercial sugarcane cultivation among smallholder farmers in Uganda: Implications for household food security. *Land* 7:73.
- Myers, D., and Kitsuse, A. (2000). Constructing the future in planning. *J. Plann. Educ. Res.* 19, 221–231. doi: 10.1177/0739456X0001900301
- NRGF (2017) Natural resource governance in Kilombero cluster and the SAGCOT initiative: an assessment of key issues and recommendations for action. Report prepared for CEESP and IUCN.

- Nyerere, J. *Freedom and unity: a selection from writings and speeches, 1952–56*. Dar es Salaam: Oxford University Press (1966)
- Oakland Institute (2015) *Irresponsible investment: Africa's broken development model in Tanzania*. The Oakland Institute, Greenpeace Africa, and Global Justice Now. Oakland Overseas.
- Ormsby-Gore, W. G. A. (1925). *Report of the East African Commission*, vol. 2387 HM Stationery Office. The intext reference should become: (Ormsby-Gore, 1925 : 121).
- Oteros-Rozas, E., Martín-López, B., Daw, T. M., Bohensky, E. L., Butler, J. R. A., Hill, R., et al. (2015). Participatory scenario planning in place-based social-ecological research: insights and experiences from 23 case studies. *Ecol. Soc.* 20:32. doi: 10.5751/ES-07985-200432
- Ouma, S., Hughes, A., Murphy, J. T., and Opondo, M. (2020). Envisioning African futures: perspectives from economic geography. *Geoforum* 115, 146–147. doi: 10.1016/j.geoforum.2019.05.030
- Oxfam (2014). “Moral Hazard? ‘Mega’ public-private partnerships in African agriculture.” Briefing Paper 188. Oxford: Oxfam GB. Accessed October 1, 2014. Available at: www.oxfam.org/sites/www.oxfam.org/files/file_attachments/oxfam_moral_hazard
- Oya, C. (2013). Methodological reflections on ‘land grab’ databases and the ‘land grab’ literature ‘rush’. *J. Peasant Stud.* 40, 503–520.
- Palomo, I., Martín-López, B., López-Santiago, C., and Montes, C. (2011). Participatory scenario planning for protected areas management under the ecosystem services framework: the Doñana social–ecological system in southwestern Spain. *Ecol. Soc.* 16:23. doi: 10.5751/es-03862-160123
- Pelling, M. (2010). *Adaptation to climate change: from resilience to transformation* Routledge.
- Rawls, A. (1971). *Theories of social justice*.
- SAGCOT (2011). Southern agricultural growth corridor of Tanzania: investment blueprint.
- SAGCOT (2013). The SAGCOT Greenprint. AgDevCo/Procurista. Available at: <http://www.sagcot.com/>
- SAGCOT (2022). *Welcome to SAGCOT* Available at: <https://sagcot.co.tz/index.php/en/>
- Saldaña, J. (2021). *The coding manual for qualitative researchers*, 4th Edn. Washington, D.C: SAGE Publications Ltd. 1–440.
- Schlossberg, D. (2004). Reconceiving environmental justice: global movements and political theories. *Environ. Politics* 13, 517–540. doi: 10.1080/0964401042000229025
- Schlossberg, D. (2007) *Defining environmental justice: theories, movements, and nature*. Oxford: OUP.
- Schneider, F., and Rist, S. (2013). Envisioning sustainable water futures in a transdisciplinary learning process: combining normative, explorative, and participatory scenario approaches. *Sustain. Sci.* 9, 463–481. doi: 10.1007/s11625-013-0232-6
- Scoones, I., Newell, P., and Leach, M. (2015). *The politics of green transformations* (pp. 19–42). London: Routledge.
- Scoones, I., Stirling, A., Abrol, D., Atela, J., Charli-Joseph, L., Eakin, H., et al. (2020). Transformations to sustainability: combining structural, systemic and enabling approaches. *Curr. Opin. Environ. Sustain.* 42, 65–75. doi: 10.1016/j.cosust.2019.12.004
- Sen, A. (1999). *Commodities and capabilities*. OUP Catalogue.
- Sen, A. (2009). *The idea of justice*. Penguin, London.
- Shackleton, S., Masterson, V., Hebinck, P., Speranza, C. I., Spear, D., and Tengö, M. (2019). Editorial for special issue: “livelihood and landscape change in Africa: future trajectories for improved well-being under a changing climate”. *Land* 8:114. doi: 10.3390/land8080114
- Smalley, R. (2017) Agricultural growth corridors on the eastern seaboard of Africa: An overview APRA working paper 1, Future Agricultures Consortium. Available at: <https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/13564/Agricultural%20Growth%20Corridors.pdf?sequence=1>
- Smalley, R., Sulle, E., and Malale, L. (2014) The role of the state and foreign capital in agricultural commercialization: The case of sugarcane outgrowers in Kilombero District, Tanzania, working paper 106, Futures Agricultural Consortium. Available at: <https://www.africaportal.org/publications/the-role-of-the-state-and-foreign-capital-in-agricultural-commercialisation-the-case-of-sugarcane-outgrowers-in-kilombero-district-tanzania/>
- Solidaridad (2019) Sugarcane framers association takes action for sustainable growth. Available at: <https://www.solidaridadnetwork.org/news/sugarcane-farmers-association-takes-action-for-sustainable-growth/>
- Sulle, E. (2015). Land grabbing and agricultural commercialization duality: insights from Tanzania's transformation agenda. *Afriche e Orienti* 17, 109–128.
- Sulle, E., and Smalley, R. (2015a). “The state and foreign capital in agricultural commercialisation: the case of Tanzania's Kilombero sugar company” in *Africa's land rush: Rural livelihoods and agrarian change*. eds. R. Hall, I. Scoones and D. Tsikata (Oxford: James Currey), 132–149.
- Sulle, E., and Smalley. (2015b). Study of sugarcane outgrowing at Kilombero. Available at: https://www.future-agricultures.org/wp-content/uploads/2015/05/Kilombero-stakeholder-report_English-Version2.pdf
- Sulle, E. (2017). Social differentiation and the politics of land: Sugar cane outgrowing in Kilombero. *J. South. Afr. Stud.* 43, 517–533.
- Sulle, E. (2020). Bureaucrats, investors and smallholders: contesting land rights and agro-commercialisation in the southern agricultural growth corridor of Tanzania. *J. East. Afr. Stud.* 14, 332–353. doi: 10.1080/17531055.2020.1743093
- Sulle, E., and Dancer, H. (2020). Gender, politics and sugarcane commercialisation in Tanzania. *J. Peasant Stud.* 47, 973–992. doi: 10.1080/03066150.2019.1632294
- Smalley, R., Sulle, E., Chome, N., Duarte, A., and Gonçalves, E. (2021). *Agricultural Investment Corridors in Africa: Does Smallholder and Women's Participation Count?*.
- Sulle, E., Smalley, R., and Malale, L. (2014). Opportunities and challenges in Tanzania's sugar industry: Lessons for SAGCOT and the new Alliance. Available at: https://repository.uwc.ac.za/bitstream/handle/10566/4314/fac_pb_76_opportunities_challenges_tanzaniaG%C3%87%C3%96s_sugar_industry_lessons_for_sagcot_and_the_new_alliance_july_2014.pdf?sequence=1&isAllowed=y
- Thorn, J. P. R., Wijesinghe, A., Tam, C., Nakei, J. B., Magesa, R., Mbwambo, L., et al. (2021) Kesho Mpya (new tomorrow): envisioning a sustainable future for the southern agricultural growth corridor of Tanzania (SAGCOT). Available at: <https://developmentcorridors.org/publications/>.
- Tups, G., and Dannenberg, P. (2021). Emptying the future, claiming space: the southern agricultural growth corridor of Tanzania as a spatial imaginary for strategic coupling processes. *Geoforum* 123, 23–35. doi: 10.1016/j.geoforum.2021.04.015
- UNFSS (2021a). UN food systems summit 2021 – private sector engagement guidelines. Available at: https://www.un.org/sites/un2.un.org/files/unfss_private_sector_guidelines_fe_b2021.Pdf.
- UNFSS (2021b). Summit compendium 2021. Available at: <https://foodsystems.community/food-systems-summit-compendium/> (Accessed August 2021).
- United Republic of Tanzania – URT (2015a) Agricultural sector development strategy. Available at: <https://leap.unep.org/countries/tz/national-legislation/agricultural-sector-development-strategy-ii-20152016-20242025>
- United Republic of Tanzania – URT (2015b) Tanzania development vision 2025, the United Republic of Tanzania. Available at: <https://extranet.who.int/nutrition/gina/en/node/8600>
- United Republic of Tanzania – URT (2017) Agricultural sector development plan phase II (ASDP II). The United Republic of Tanzania. Available at: <https://asdp.kilimo.go.tz/>.
- Von Braun, J., and Meinzen-Dick, R. S. (2009). *Land grabbing by foreign investors in developing countries: risks and opportunities*.
- Walker, G. (2012). *Environmental justice: concepts, evidence and politics*. New York: Routledge.
- West, J., and Haug, R. (2017). Polarised narratives and complex realities in Tanzania's southern agricultural growth corridor. *Dev. Pract.* 27, 418–431. doi: 10.1080/09614524.2017.1307324
- Whitfield, S., Apgar, M., Chabvuta, C., Challinor, A., Deering, K., Dougill, A., et al. (2021). A framework for examining justice in food system transformations research. *Nat. Food* 2, 383–385. doi: 10.1038/s43016-021-00304-x
- Wiek, A., and Iwaniec, D. (2014). Quality criteria for visions and visioning in sustainability science. *Sustain. Sci.* 9, 497–512. doi: 10.1007/s11625-013-0208-6
- Wills, A. R., Shirima, D., Villemaire-Côte, O., Platts, J. P., Knight, S., Loveridge, R., et al. (2022). A practice-led assessment of landscape restoration potential in a biodiversity hotspot. *Philos. Trans. R. Soc. Lond. B Biol. Sci.* 378:20210070. doi: 10.1098/rstb.2021.0070
- Wineman, A., and Jayne, T. S. (2018). Land prices heading skyward? An analysis of farmland values across Tanzania. *Appl. Econ. Perspect. Policy* 40, 187–214. doi: 10.1093/aep/ppx038
- Wineman, A., Jayne, T. S., Isinika Modamba, E., and Kray, H. (2020). The changing face of agriculture in Tanzania: indicators of transformation. *Dev. Policy Rev.* 38, 685–709. doi: 10.1111/dpr.12491
- Wineman, A., and Liverpool-Tasie, L. S. (2017). Land markets and land access among female-headed households in northwestern Tanzania. *World Dev.* 100, 108–122. doi: 10.1016/j.worlddev.2017.07.027