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RESEARCH ARTICLE

Using anticipation to unveil drivers of local livelihoods in Transfrontier Conservation Areas: A call for more environmental justice

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Abstract

1. Calling on the concept of environmental justice in its distributive, procedural and recognition dimensions, we implemented a coelaborative scenario building approach to explore sustainable livelihoods pathways in four sites belonging to two Transfrontier Conservation Areas (TFCAs) in southern Africa.
2. Grounded on participation and transdisciplinarity, as a foundation for decolonised anticipatory action research, we aimed at stimulating knowledge exchange and providing insights on the future of local livelihoods engaging experts living within these TFCAs.
3. Our results show that wildlife and wildlife-related activities are not seen as the primary drivers of local livelihoods, despite the focus and investments of dominant stakeholders in these sectors. Instead, local governance and land use regulations emerged as key drivers in the four study sites. The state of natural resources, including water, and appropriate farming systems also appeared critical to sustain future livelihoods in TFCAs, together with the recognition of indigenous culture, knowledge and value systems.
4. Nature conservation, especially in Africa, is rooted in its colonial past and struggles to free or decolonise itself from the habits of this past despite decades of

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reconsideration. To date, the enduring coloniality of conservation prevents local citizens from truly participating in the planning and designing of the TFCAs they live in, leaving room for limited benefits to local citizens and often limiting Indigenous people's capacity to conserve.

5. A practical way forward is to consider environmental justice as a cement between the two pillars of the TFCA concept, that is, nature conservation and socio-economic development of local or neighbouring communities, as part of a more broadly and urgent need to rethink the relationships between people in, and with, the rest of nature.

KEYWORDS
futures, governance, local communities, participatory approach, protected areas, recognition justice, southern Africa, well-being

1 | INTRODUCTION

The western concept of nature conservation emerged in the late 19th century in the United States (Adams & Hutton, 2007; Cronon, 1996). This movement was born in the midst of the colonial era and was rooted in a worldview in which Western patriarchal white societies felt they had the right to impose their values on the world, including the relationship between people and nature and between human populations. Despite the end of the colonial era in the second part of the 20th century, some colonial values still prevail in parts of societies and the conservation sector is no exception (Trisos et al., 2021). In the 1990s, efforts to replace the dominant colonial conservation model of 'fortress conservation' by models in which local residents would be more involved in the governance of natural resources attempted to balance the power relationship between external and local stakeholders (Adams & Hulme, 2001). However, the coloniality of conservation is enduring, particularly in Africa (Adams & Mulligan, 2002; Domínguez & Luoma, 2020; Garland, 2008).

Local worldviews and knowledge and value systems still suffer the most from the domination of the western worldview in conservation, which results in their incapacity to thrive despite their relevance for local contexts. Externally imposed concepts and paradigms undermine concepts of social and environmental justice: who contributes to the governance of natural resources, how and who benefits from natural resources? How to ensure that local cultures and indigenous knowledge systems are respected and valued, that is, recognised (Honneth, 2016)? How are conservation costs and benefits distributed? The need for the decolonisation of conservation is therefore linked to the tripartite typology of concerns of environmental justice: distribution, procedure and recognition (Martin et al., 2016).

The recent history of conservation in southern Africa navigates around the concepts of decolonisation of conservation and environmental (in)justice back and forth. In the region, many National Parks (NPs) were designated during the colonial or apartheid eras, in areas merely unfit for any other forms of modern land use, albeit inhabited by indigenous communities (Andersson et al., 2014). The creation of protected areas has been largely imposed on local communities, who were in many instances forcibly evicted from their land and alienated from meaningful access to all critical natural resources and culturally important sites (Adams & Hutton, 2007; Guerbois et al., 2013; West et al., 2006). Colonial top-down governance and environmental injustice towards local residents of NPs prevailed.

Since the second half of the 20th century, globally, conservation models have exhibited several regime shifts, mainly influenced by evolving meanings and values of nature in western cultures (Mace, 2015; Manfredo et al., 2016). From the mid-1980s on, the southern African conservation sector spearheaded innovative initiatives promoting the devolution of the management of natural resources at the periphery of protected areas to local communities (Nelson et al., 2020). In these Community-Based Natural Resource Management (CBNRM) programmes, the community-land or wildlife management areas are managed as a source of resources, harvested in the peripheral sink areas, which would also play a buffer role, reducing human/wildlife conflicts in adjacent agricultural areas (Metcalfe, 1993). The CBNRM programmes marked a significant global shift from 'fortress conservation' towards more inclusive approaches including 'nature for people' and 'people and Nature'. This move further paved the way for a broader recognition of the interdependencies between protected and unprotected areas (Guerbois & Fritz, 2017). This called to increased participation from all relevant stakeholders and led the way to the emergence of transdisciplinary approaches for protected area management (DeFries & Nagendra, 2017; Lang et al., 2012). CBNRM programmes initially attempted to address environmental justice mainly through its distribution (e.g. benefits) and procedure (e.g. rights) components. In addition, this interdependence called for more systemic or holistic visions and a better recognition of the plurality of points of view expressed by actors with different weights within society and different representations (Guerbois et al., 2013).

A sustained lobbying by conservation organisations triggered the establishment of Transfrontier Conservation Areas (TFCAs) at the beginning of the 21st century (Ferreira, 2006; Hanks, 2003). TFCAs,

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which represent networks of protected areas and their surroundings, were largely preconceived by the organisations that originally funded them, together with central governments that operate them (Baghai et al., 2018). The concept of TFCAs seeks achieving balanced attention and actions on two complementary pillars, nature conservation and socio-economic development of local or neighbouring communities, as enshrined by the Southern African Development Community—SADC (Hanks, 2003). Therefore, by design, the TFCA initiative takes into account the concept of environmental justice by positioning local residents of TFCAs as central actors. However, for the past 20 years, the focus on conservation has largely overshadowed the efforts to support TFCA residents (e.g. Lunstrum & Givá, 2020; Van Amerom & Büscher, 2005). A net imbalance or disparity persists between the levels of investment in conservation (and tourism) and those in local development (e.g. Hübschle, 2017; Otsuki et al., 2017; Spierenburg et al., 2006). Marginalisation of Indigenous people currently riddles TFCAs, leading to poverty, poor development, social injustice and inequity (Chatty & Colchester, 2002; Dzingirai et al., 2014). The three pillars of environmental justice have been violated, intentionally or not, in a context of persistent neocolonial behaviour of some of the dominant actors of TFCAs.

First, local residents barely participate in the planning and design of TFCAs and actually know little about with their objectives (Ferreira, 2006). Since the CBNRM experiences, external stakeholders such as conservation organisations, states and private sectors have increasingly recentralised the control of conservation in communal areas (Cassidy, 2021; Kicheleri et al., 2021) and local communities, due to lack of appropriate decision-making rights, have behaved up to now, as reactive stakeholders, adapting to grasp what benefits are accessible to them. Second, private sectors and states capture most of the created wealth in an environment characterised by rent-seeking behaviours (DeMotts & Hoon, 2012; Green et al., 2018; Kalvelage et al., 2022). Benefits rarely reach local communities, who have to bear most of the conservation costs (Mbaiwa, 2005; Norton-Griffiths & Said, 2010). This situation paves the way to hegemonic practices, exclusion, manipulation and limited benefits to local citizens (Bruna, 2019; Fairhead et al., 2012; Lunstrum, 2016; Witter, 2013). Often the operation of protected areas has come in direct conflict with the basic needs of human development (Anderies et al., 2007; Cumming et al., 2014). Finally, TFCAs entail an almost complete lack of recognition justice towards TFCA residents. The TFCA paradigm for conservation, imposed by the dominant Western worldview, has reduced the window for local communities to express their voice in what primarily deals with their future (Dressler & Büscher, 2008; Igoe et al., 2010; Wolmer, 2003). The so-called 'participatory approaches' and programmes within TFCAs focus on the problems encountered by local communities as the result of situations that emerged due to inadequate initial consultations and recognition of interdependencies, knowledge systems and values. This reinforces gaps and mismatches (Büscher & Dressler, 2012; Dressler et al., 2010).

This neocolonial approach has promoted a management based on developing wildlife tourism with little consideration for the potential of other services to the 'Other' people, especially neighbouring indigenous communities (Barrett, 2013; Ceausu et al., 2019; DeGeorges & Reilly, 2009; Dressler & Büscher, 2008). This approach fuelled conservation-related conflicts, which include human–human conflicts around conservation, land use and human activities, wildlife poaching (Peterson et al., 2010; Redpath et al., 2015; Salerno et al., 2020), human–wildlife conflicts, in particular their social dimensions (Dickman, 2010) and the conflicting recognition of indigenous knowledge and value systems in protected area management (Lee, 2016). For example, in the Hwange district of Zimbabwe, farmers living on the edge of protected areas have to sleep in their fields during the cropping season to protect their crops from elephant raids, each of them depending on a strong social cohesion at community level as they risk to lose their whole potential harvest in one single night (Guerbois et al., 2012). These persisting mismatches derive from top-down initiatives forced upon local stakeholders to deal with the merely symptoms of their marginalisation instead of their root causes (Bechstedt, 2005; Rahnema, 1992). This reduces not only the capacity of local stakeholders to have a chance to imagine their own future, but it also impedes them from participating proactively in present actions as they do not see room for manoeuvre beyond adapting to, or rejecting, the imposed future (i.e. being preactive at best if not merely reactive or passive).

Central to the notions of decolonising conservation and environmental justice is the need to promote a more balanced participation of the different stakeholders in TFCA, meaning greater participation of local communities in planning and management activities (Gatiso et al., 2022). This also includes the aspect of public participation in research, determined by its degree and its quality (Shirk et al., 2012). Public participation as the expression of a 'just participation' connects directly with the procedural dimension of environmental justice in conservation as the expression of a recognition process leading to redistribution of power (Ruano-Chamorro et al., 2022). Participation aims to make visible the excluded local perspectives and knowledge (Hall & Tandon, 2017). TFCAs should therefore look beyond a distributive model of justice to incorporate concerns for social recognition, including careful attention to ways to pursue equality of status for local TFCA stakeholders. This will require reflection on working practices and looking at forms of intercultural engagement that, for example, respect alternative ways of relating to nature and biodiversity.

Sustainability transformations in conservation are bound to irreducible complexity, deep uncertainties, a plurality of legitimate perspectives, value dissent, high stakes and sometimes decision urgency characteristic of a postnormal world (Funtowicz & Ravetz, 1993). The ideals of scientific expertise or professional consultancy no longer fit in such a process, as it would lead to knowledge production processes prone to the risk of colonisation and the resurgence of environmental injustice. Irreducible complexity is associated with interconnected uncertainties that are inherent to complex social–ecological systems (Anderies et al., 2007). The uncertainties stem not only from the known unknowns, but also the unknown unknowns that arise from human–nature interactions (human–nature

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connections), human–human interactions (institutional arrangements) and from the interaction of these interactions and their perception by different types of actors. The diversity of meanings and interpretations inevitably brings ambiguity, which requires a reformulation of the knowledge production processes employed, in terms of the types of knowledge used, how and by whom it is created, what values are incorporated, and how values are weighted (Brugnach & Ingram, 2012; Colloff et al., 2017). Along those lines, Abson et al. (2017) identify three realms of deep leverages for sustainability transformation: restructure (i.e. change, stability and learning in institutions), reconnect (foster interactions between people and nature) and rethink (the way knowledge is produced and used).

To date, there is very limited published information about how local communities perceive their own futures in TFCAs (but see Chirozva et al., 2013; Chitakira et al., 2012). There is an urgent need to repair and improve environmental justice and deconstruct the persistent neo-colonialism in TFCAs (Chan et al., 2020; Ferreira, 2006; Martin et al., 2016). In this article, we argue that when facing a colonised past, a decolonisation of the present is required to prevent further colonisation of the future. For this reason, we posit our work as a participatory anticipatory action research for unveiling local visions and seeking recognition justice in the governance of interconnected conservation purposes and livelihoods promotion purposes. It is a means to promote a decolonial way of engaging with local stakeholders in the production of alternative futures (Bourgeois et al., 2022). Through anticipatory participatory action research as a decolonial practice connected to justice, the exploration of possible futures is a citizen-centred approach that acknowledges the relevance of a plurality of perspectives leading to the acceptance of alternative futures. In this case, it renders justice by unveiling and honouring the perspectives of the communities whose futures are alienated by the implicit perceptions of the future the dominant stakeholders impose on them. Four principles, which are as many operational challenges, guided the way the research was conducted within the framework of the project (Bourgeois et al., 2022). These are (i) negotiate the use of the future with local communities, (ii) recontextualise our practices, (iii) place local actors at the centre of the knowledge generation process so as to create a form of indigenous-led transformative knowledge and (iv) embrace the concept of 'servant leadership' (Eva et al., 2019). These principles were intended to apply in the practice of producing alternative futures a decoloniality of power as defined by Quijano (2000) and a decoloniality of knowledge (Hall & Tandon, 2017). They will structure the discussion of the results of using an anticipatory participatory action research approach applied to complex social–ecological system, TFCAs in this case.

2 | CASE STUDY AND METHODOLOGY

2.1 | Context of the study

This article reflects on the first steps of the implementation of the ProSuLi (Promoting Sustainable Livelihoods) project, implemented in four sites in two TFCAs in southern Africa (Figure 1) (Caron et al., 2022). The primary objective of ProSuLi is to enhance adaptive comanagement of natural resources by local stakeholders (mainly local communities) through participatory processes. The selection of sites was based on a collaboration between research institutions under a regional research platform (www.rp-pcp.org). Each partner selected a site in a region where it already had some activities implemented or wanted to do so. The Great Limpopo TFCA (GLTFCA) spanning almost 100,000 km^2 resulted from an international treaty signed in 2002 by Mozambique, South Africa and Zimbabwe (Peace Parks Foundation, 2020a). The Kavango–Zambezi TFCA (KAZA TFCA), resulting from a treaty signed in 2011, covers 520,000 km^2 in five countries (Angola, Botswana, Namibia, Zambia and Zimbabwe) with an estimated population of over 2 million people living on both communal lands and urban centres (Peace Parks Foundation, 2020b). All sites have a semi-arid climate and harbour healthy wildlife populations, high large mammal densities in a mostly unfenced environment. Local livelihoods rely mainly on subsistence agriculture, including extensive small-scale farming and remittances from family members working in urban centres or mines in South Africa. Local project coordinators determined the spatial limits at each site in agreement with local authorities, considering the level of resources available for the project and spatial equity. In Zimbabwe, to scale dependencies in natural resource governance, they choose to work on relatively small scales (ward level), reaching out to populations ranging between 5000 and 10,000 people at each site (Table 1).

2.2 | The Futures workshops

We adapted and used a coelaborative scenario building approach called participatory prospective analysis (PPA) (Bourgeois, Liswanti, et al., 2017), as a human-centred forward-thinking activity rooted in participation and transdisciplinarity (Gudowsky & Peissl, 2016), to explore alternative futures for local livelihoods and associated issues at stake. This methodology is used to implement anticipatory processes in complex multistakeholder environments dealing with wicked problems world-wide (Bourgeois, Liswanti, et al., 2017; Bourgeois, Penunia, et al., 2017; Shantiko et al., 2021) and in Africa (Camara et al., 2019; Puskur et al., 2017; Sourisseau et al., 2017).

Considering that '*All efforts to 'know the future' in the sense of thinking about and 'using-the-future' are forms of anticipation*' (Miller, 2018, p. 52), it seeks to improve the conscious use of the future in the present (Rossel, 2010). It gives the possibility to use the future to make sense of, and to sense novelty in the present (Miller, 2015, 2018; Rhisiart et al., 2015; Slaughter, 2012). Using the future is thus a transitional step that allows participants to explore pathways beyond the current trends (see Johansson, 2021 for a critical review on scenario building). We implemented it through three decolonising postulates: (i) the future does not exist in the present, only representations of the future, (ii) there is no truth about the future since there are no facts about the future and (iii) the future is a mental and

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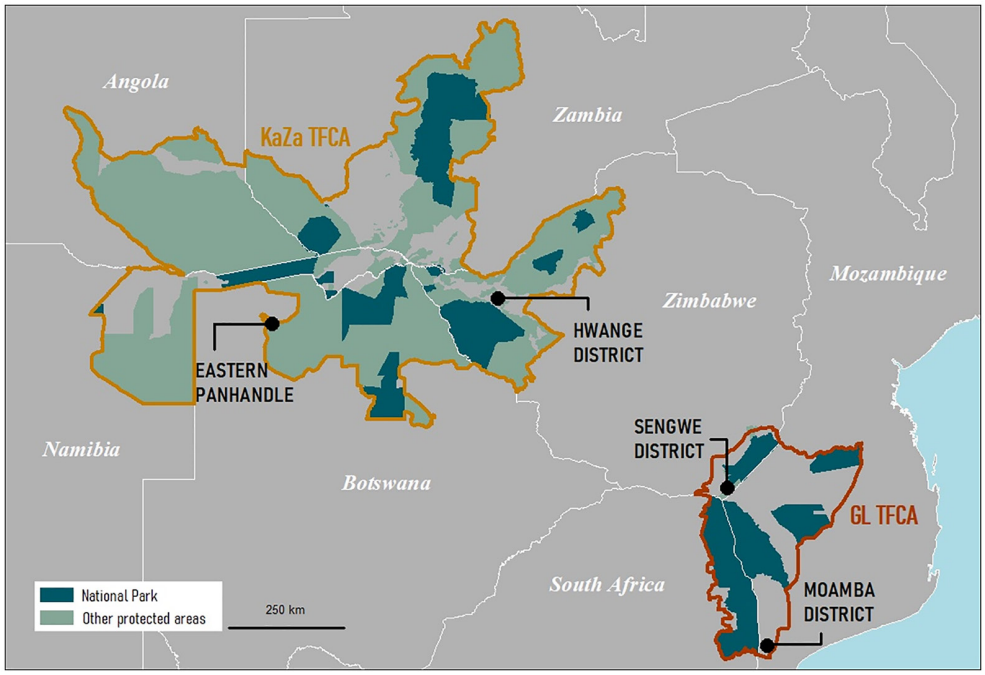

FIGURE 1 Location of the four study sites (black dots) in the Eastern Panhandle (Botswana), the Hwange and Chiredzi districts (Zimbabwe), and the Moamba district (Mozambique), covering three countries (white borders) and two TFCAs. The Kavango–Zambezi TFCA (left, orange border) and the Great Limpopo TFCA (right, red border). ©Laure Guerrini.

TABLE 1 Specific characteristics of the four study sites

Area	TFCA	Site location	Landscape	Population (pp), ethnicity
Eastern Panhandle (Botswana)	Kavango Zambezi TFCA (KAZA TFCA)	Botswana, Seronga area, Eastern Panhandle, on the shore of the Okavango Delta, delineated to the North by the Namibian border	Wetland dominant	HaMbukushu, WaYei, San and Gciriku
Hwange (Zimbabwe)		Zimbabwe, Ward 15 of the Hwange district, adjacent to the Hwange National Park, Sikumi Forest and private farms	Savanna woodlands dominant	Mostly Nambya, Tonga and Ndebele
Chiredzi (Zimbabwe)	Great Limpopo TFCA (GLTFCA)	Zimbabwe, Ward 15 of Chiredzi district, adjacent to the Gonarezhou National Park		Shangaan dominant
Moamba (Mozambique)		Mozambique, Moamba district, adjacent to the Sabie Game Park and the Kruger National Park		Shangaan dominant

social construct (Bourgeois et al., 2022). Here, it was implemented to create alternative local representations of the futures of local livelihoods, collecting and organising different perspectives through a sequence of interconnected steps.

In each site, we started with an agreement about the **issue at stake** and its related dimensions-geographic boundaries, time horizon and group of actors, (the where, when, who). A collective identification and definition of **factors of change** followed (including social, technical, environmental, economic and political dimensions). The factors of change are the constitutive elements of the evolution of the system, in the past, the present and the future. As such, a factor of change is *'both presently accessible and future relevant'*

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(Saritas & Smith, 2011). Participants identify internal and external factors, respectively, being factors that actors in the system control and those they cannot control or influence (Bruaset & Sægrov, 2018; Crawfords, 2019). Focusing on internal factors is crucial for enabling local agency (Bourgeois, Liswanti, et al., 2017). Then the participants collectively selected the most influential internal factors of change, also called **driving forces or drivers** (Saritas & Smith, 2011), through a structural analysis (Godet, 1986). These drivers play a structuring role in the system. Through collective brainstorming, contrasted and mutually exclusive hypotheses are made about alternative **future states** of each driver at the selected time horizon (steps 1–3 in Figure 2). For this step, we invited the participants to think about desirable and undesirable states, current trends (likely trajectory) or ruptures. In this paper, we focus on presenting the comparative results of steps 1–3 at our four study sites. Steps 4–8 are indicated here as a matter of interest but will be presented and discussed in another article.

2.3 | Participation, facilitation and decision rules

The Futures workshops took place between October 2018 and March 2019 and lasted each a total of 3 days. Preparatory work included the identification and invitation of 20–35 local resource people, including district officials. They were individuals selected for their knowledge and experience about local livelihoods, their ability to consider different perspectives, and tolerance of other opinions. The domains of expertise of the participants are displayed in Supp. Mat. 1. We seek balance in terms of age, gender and social categories. The identification of these resource persons took place after several months of preparation with local stakeholders and partners (Botswana, Mozambique) or through knowledge and experience gained from more than 10 years of local engagement in Zimbabwe. Local authorities granted authorisations to conduct workshops through prior meetings and/or official letters to their representatives and/or existing memorandum of understanding (e.g. in Zimbabwe between district authority and research bodies). All participants gave their prior oral consent to participate in the workshops. Oral consent was chosen because many of them could not read and this is the method usually used and suggested by local authorities. All activities took place in English or Portuguese (Mozambique) and vernacular languages, Setswana, Shangaan, Shona, Nambya or Ndebele, depending on the location. Participants were free to use their preferred language and we ensured that they had also access to informal translation.

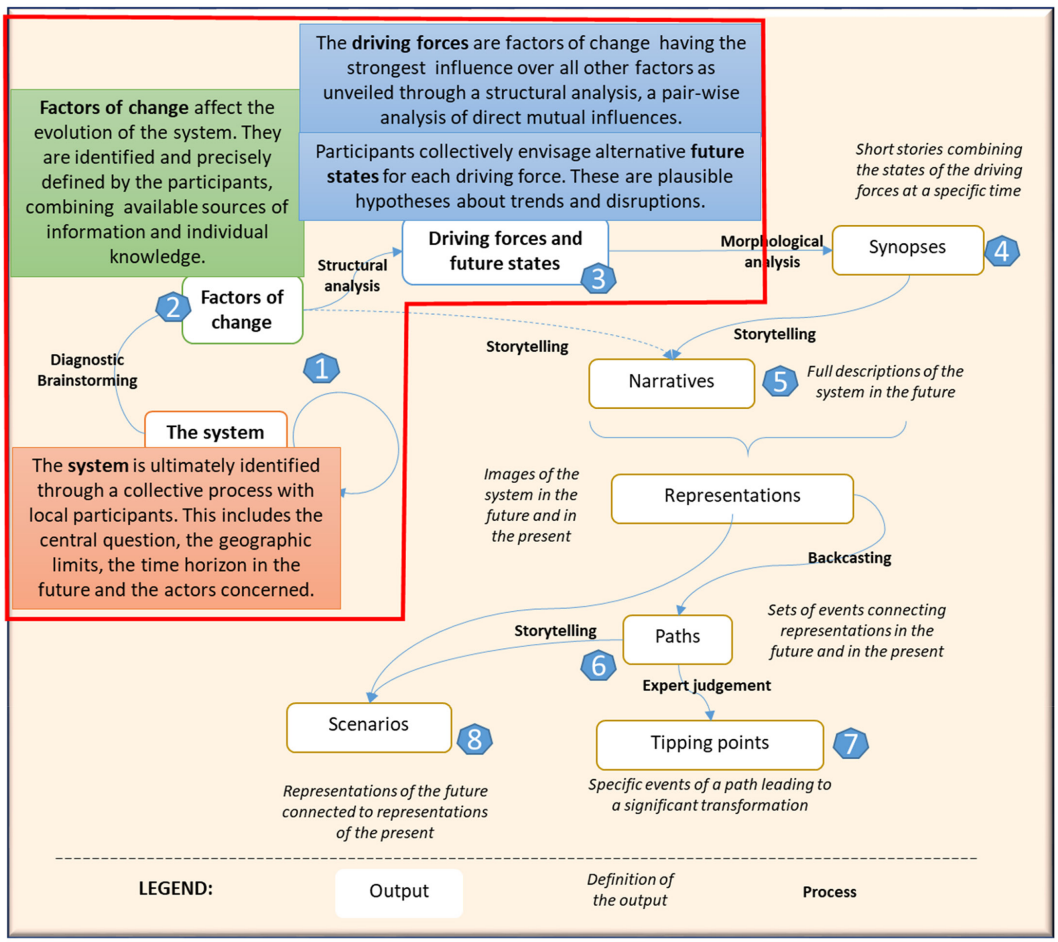

FIGURE 2 Applying participatory prospective analysis in the TFCA sites: steps, activities and outputs. Note that the left panel highlights the three steps at the core of this paper.

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In order to move forward through the different steps of the workshops, we started by asking the participants to establish the house and decision-making rules that they would use when there was no immediate agreement on a specific question. They generally opted for a process of (i) listening to different perspectives and discussing them, (ii) checking them whether this would make it possible to reach an agreement and (iii) if not, reframing the issue until people could 'live with it'. This processed proved sufficient for addressing potential dissent, since we made clear that in the construction of scenarios there was no absolute truth, no 'right' and no 'wrong'. In Hwange (Zimbabwe), when consensus was not reached, the participants decided to use vote and defined 66% voices as the majority. If 66% was not achieved, then 51% was the majority for the second vote. In order to grant space for true participation, the workshops alternated individual, group and plenary activities. We also adjusted according to local specificities such as in Mozambique, where using visuals, symbols, colours as well as 'personification' of concepts facilitated the participation of several nonliterate people. In Botswana, due to a large number of participants, the latter occasionally requested to work in groups organised per village.

All sites had a very similar agenda (Supp. Mat. 2), although the implementation of the Futures Workshops had to be adapted due to contrasted local contexts and history of engagement, which imposed some adjustments of the methodology. An adjustment needed to face time constraints was the preparation of a preliminary list of factors of change, collated through a review of previous research conducted in each location. Through in-depth group and plenary discussions, the participants systematically revised and amended the list. Another adjustment was transforming the structural analysis into more intuitive, yet structured, locally adapted approaches, so as to balance trade-offs between the quality of the results and time constraints (Supp. Mat. 3). In all sites, participants performed a collective mapping process to determine the influence between factors of a given category. After displaying the collective results, they voted for the five most influential drivers ensuring the representation of at least three of the five dimensions (social, technical, economic, environmental and political). Then the participants collectively selected five drivers from a minimum of four of these dimensions to ensure the possibility to create alternative scenarios that encompass several dimensions. For this article, the outputs of the workshops were screened for conceptual content analysis to uncover salient and recurrent elements resulting from the participatory processes.

3 | RESULTS

3.1 | The issue at stake

The orientation of the ProSuLi project predetermined the issue at stake—Promoting sustainable livelihoods in TFCAs—inspired by several years of engagement in three of the sites. The question at the core of the Futures workshop was labelled as follows: 'What could be the futures of livelihoods in [the selected sites, respectively]?' The time horizon selected by the participants was 2036 in Botswana corresponding to the Botswana *Vision* 2036 (Vision 2036 Coordinating Agency, 2019). For Zimbabwe, they selected 2038 in Chiredzi and 2040 in Hwange. In Mozambique, the selected time horizon was 2040. They are consistent with usual recommendations and empirical practice (Börjeson et al., 2006; Boschetti et al., 2016), which suggests that participants had a good grasp of the purpose of the whole process.

3.2 | Factors of change

In total 105 factors of change were identified: 36 in the Eastern Panhandle, 34 in Hwange, 36 in Chiredzi and 30 in Moamba. Most factors related to social and environmental dimensions (respectively, accounting for 39% and 21% of the enumerated factors), followed by economic (16%), politics, governance (13%) and technical (10%) (Figure 3a). Table 2 provides a summary of the factors of change per category, as provided by the participants in different areas. The full list of factors and their definitions can be found in Supp. Mat. 4.

3.3 | Drivers of change

In each site, the participants collectively identified five drivers of change from the set of 30 to 40 factors previously defined (Figure 3b,c). We witnessed evidence of growing ownership of the process during

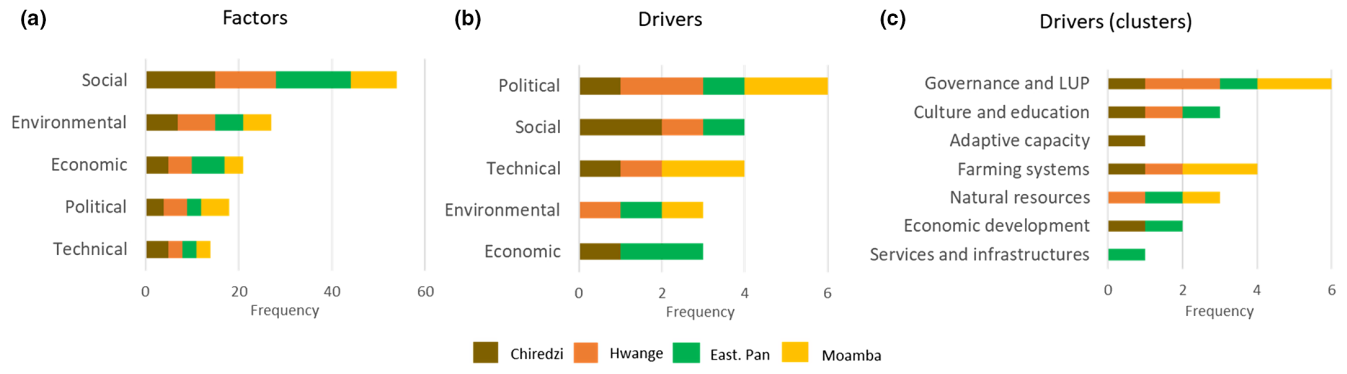

FIGURE 3 Results of the structural analysis in the three sites. (a) The frequency of factors by dimensions in each site, (b) the frequency of drivers by dimensions after the structural analysis and (c) the frequency of drivers by clusters (LUP, land use planning).

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TABLE 2 An overview of the factors of change selected in the four sites (full lists in Supp. Mat. 4)

Factor categories	Examples of factors
Social	Access to and level of Education, Health, Housing, Information, Transport, Recreation; Social capital; Gender balance; Local capacity (innovation, adaptation to climate change); Demographics; State and level of recognition of indigenous knowledge systems and local culture; Attitudes and Behaviours
Technical	Type of farming systems; Crop and livestock production; Animal health
Economic	Economic opportunities; Level of food security; Type of incomes; Wealth; Value chains
Environmental	State and access to water (domestic use and farming) and energy; State of natural resources; Soil and air quality; Human-Wildlife Conflicts; Resource management; Conflict management
Political/Governance	Decision-making processes; Power distribution; Land use allocation and regulation; Demographic policy; Community governance; Leadership

TABLE 3 Drivers identified in each of the four sites and clusters identified above coloured in grey shade (LUP, land use planning)

Eastern panhandle, *Botswana*	Hwange, *Zimbabwe*	Chiredzi, *Zimbabwe*	Moamba, *Mozambique*
Governance and LUP Land use regulation and allocation	**Governance and LUP** Governance and Community	**Governance and LUP** Governance capacity of community and land allocation	**Governance and LUP** Community Governance
Economic development Local job opportunities	**Governance and LUP** Land use regulation and allocation	**Economic development** State of poverty	**Governance and LUP** Local government functioning
Natural resources Human/wildlife interaction management	**Natural resources** State of natural resources	**Adaptive capacity** Capacity to adapt to climate change	**Natural resources** Access to water
Culture and education Education	**Farming systems** Farming systems and livestock management	**Farming systems** Type of cropping and livestock systems	**Farming systems** Livestock production
Services and infrastructures Transport connectivity	**Culture and education** Local culture	**Culture and education** State of local culture and tradition	**Farming systems** Family farming and food security

discussions about the relative influence between factors in the structural analysis. This collective process allowed participants to sense and share the plurality of understanding of the systems dynamics. The discussions sometimes led to the reformulation or combination of certain factors, but in all cases, the participants collectively reformulated the definition of each of these drivers (see Supp. Mat. 4 and 5 for more details). In Eastern Panhandle, the participants merged the *state of land use regulation* and the related *land use allocation* factors as one. Similarly, they defined the driver *Human/wildlife interaction management* as the management of risk related to the elephant population in relation to human injury and crop damage, combined with the management of risk with respect to predator/livestock conflicts and other human–wildlife interactions. In Hwange, participants requested a restructuration of some drivers: they created *Governance and community* combining *Local governance* and *Community organisation*; *Land use regulation and allocation* combining *Land use regulation* and *Land use allocation*; and *Farming systems* and *Livestock management* combining *Farming systems* and *Livestock management*. In Chiredzi, after seeing the results, participants preferred to select *Governance capacity of the local community* rather than *land use allocation*, as a driving force and decided to include a specific land use allocation dimension in the description of the future states of this driver. They also merged *types of farming* and *livestock systems*. In Moamba, because votes and opinions pointed to equally influential factors, participants decided to group *food security* with *family farming* as a single selected driver.

The structural analysis made the political dimensions the main drivers, while the economic dimensions were cited as drivers only in two sites (Figure 3b). As shown in Table 3, we identified some striking convergences and a few disparities in the drivers at the different sites. Local governance and land use regulation, grouped in a Governance and Land Use Planning cluster, were perceived across the four sites as two of the main drivers of sustainable livelihoods in TFCA (6/20 drivers). The third cluster (4/20) referred to Farming systems cited as drivers at all sites except the Eastern Panhandle. Natural resources (state and management) (3/20) and Culture and education (3/20) clusters came next and almost similarly at the four study sites. Economic development (2/40) and Services and Infrastructures (1/40) were perceived as a key driver in two communities, in the Eastern Panhandle and in Chiredzi, respectively, in relation to job opportunities and the state of poverty.

3.4 | Future states of drivers

In each site, the participants reflected in small groups on potential future states of the different drivers also known as the morphological analysis (Table 4 and Supp. Mat. 6). The facilitation process opens

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TABLE 4 Synthesis of the results of the morphological analysis on the most common drivers of sustainable livelihoods in the four study areas

Clusters	Negative trends	Positive trends	Ruptures
Governance and land	Corruption, nepotism, autocracy, centralised power Laisser-faire, disembodied communities, no law enforcement Centralised land allocation, fight over land Disregarding community issues, lack of infrastructures Rural land sold at expansive price, auctioned	Community governance systems, democratic, decentralised, transparent, trustable Gender inclusiveness, youth involved, participatory, proactive Exemplary culture-based leadership, decentralised administrative services Priority to locals (no red tape), well-informed and just decisions Planning based on sustainable uses, values, professionalism and efficiency	Computerised governance No more freedom Chaotic fights for power and land
Farming systems	Monoculture, intensive farming, large companies Subsistence farmers struggling, pest disease, low productivity Lack of resources (grazing, water), conflicts, robbery, insecurity Lack of veterinary assistance and treatments	Diversified, holistic, environmentally friendly, integration with tourism Adapted breeds, improved grazing pastures, granaries Mechanised plough, irrigation, inputs, veterinary treatments Slaughterhouse, market, insurance mechanisms Food security	No more grazing, nor livestock Only small livestock (rabbits, chicken) Commercial monopoly (banana, milk) operating outside the community
Culture and education	Disappearance of local cultures, commodification, individualism Hybridisation, reduced understanding of the 'original' values Low school attendance, teachers not caring Costly functional private schools and affordable poorly equipped public schools	Local cultures and values are respected, utilised and transmitted (at school) Unified in diversity. University and vocational training, Mixed primary and secondary schools in each village, well-trained and paid staff, well-equipped schools	
Natural resources	Degraded lands, loss of biodiversity, contaminations, extinctions Depletion of wildlife outside protected area, no efficient management Conflicts over resources (water, grazing), Dependence on external providers	Increasing resources, diversity and healthy populations. Abundant wildlife in parks and conservancies, regional corridors Technology-assisted human–wildlife coexistence, sustainable use areas Quality water for all uses managed by traditions, drinkable piped water	Genetically modified species incl. wildlife

room for creative thinking and helps them go beyond conventional thoughts based on the extrapolation of trends (desirable or undesirable, and ruptures).

4 | DISCUSSION

Futures workshops were organised at four sites in three countries in two TFCAs as a first step of a development project to enable local stakeholders to use the future to codesign activities focusing on promoting their livelihoods (Caron et al., 2022). Capturing the views local stakeholders expressed through the Futures workshops allowed us to test an anticipatory participatory action research methodology as a process contributing to promote a decolonial approach to the future of local communities. We observed mismatches between worldviews of local and external stakeholders, including a lack of recognition of local cultures and knowledge, preventing local stakeholders to play an active role in the framing of their own livelihoods. The views expressed by local stakeholders call for more engagement towards environmental justice in the implementation of TCFAs. After these points of discussion, we then explore the few convergences and many discrepancies between global and local TFCA framing and discuss the implications of this mismatch of expectations. Finally, we discuss the possible coloniality associated with this study and clarify to what extent the results, that is, factors of changes, drivers and their future states come from a rather decolonial process.

4.1 | Mismatches between worldviews

We observed substantial consistency and similarity in the drivers of change and their different states across the four study sites. Therefore, we infer that these are robust constitutive elements of the perception that local people have of the future of their livelihoods

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in TFCAs. This consistency encourages us to expose how local people consider the future of their livelihoods in the context of TFCAs. Most drivers are absent from the discourses and practices applied to TFCAs. This is particularly true for local and broad-scale governance, land use and corruption, the integrity of natural resources that are not wildlife (soil and minerals, energy, water, woodland, grassland), public infrastructures (education, health, transport), social changes including valuing local cultures.

Dominant external stakeholders have crafted TFCAs as large African landscapes, where nature conservation and local development and well-being are expected to coexist and interact positively with each other (Hanks, 2003). The assumption is that more conservation areas, themselves more connected through wildlife corridors enabling wildlife mobility across countries, could boost a wildlife-based economy. As a result, through a trickle-down process, the livelihoods of people in TFCAs would be linked to conservation through employment and multiple revenues, so that people would become the first custodians of protected areas and TFCAs, protecting them against harmful external behaviours such as poaching activities (Stoldt et al., 2020). The participation of local communities in conservation programmes is supported to improve the legitimacy and appropriation of conservation areas, as well as the engagement of the community in conservation. Many of these models now acknowledge the importance of incorporating some benefit redistribution in an explicit manner, such as sharing tourism revenue, compensation for wildlife damages or alternative livelihoods to minimise income activities conflicting with conservation objectives (Mannigel, 2008). However, the distributive component of environmental justice, if necessary, is not sufficient. Framing local livelihoods only through the prism of conservation and imposing livelihood activities bound to conservation (e.g. tourism, antipoaching) without attempting to understand the will of the people violates the procedural and recognition components of environmental justice (Martin et al., 2016).

Local worldviews are anchored in African cultures, value systems, and livelihood logics where small-scale agriculture, including rainfed and irrigated crops and extensive livestock production, is the main pillar. These worldviews are similar to those of societies of semi-arid areas of western Africa, not included in TFCAs nor close to a protected area, and are not integrated into the TFCA design. In theory, a future where both the conservation and agricultural sectors coexist sustainably is possible but an alternative one without agriculture or without conservation would compromise the well-being of stakeholders (e.g. Keesing et al., 2018; Tyrrell et al., 2017). Guerbois and Fritz (2017) show in Hwange the critical role protected areas play in buffering natural resource crises in communal areas. The impact of the COVID-19 pandemic on the finance of the conservation sector in southern Africa has also shown the limitation of a conservation model funded exclusively through tourism (e.g. Smith et al., 2021). More balanced or integrated investments in conservation and local livelihoods with processes rooted in the current reality of the TFCAs would help overcome the gap in these different perceptions and decolonise the initial process of the TFCAs.

The worldviews about governance systems diverged fundamentally. External stakeholders from the conservation sector draw lines on maps, (re)connecting protected areas to promote wildlife mobility and ecological function, only later engaging local stakeholders to deal with the consequences of these desktop decisions. The precedence of the conservation dimension over the social dimension creates a major mismatch between local and external actors. Local stakeholders during Futures workshops expressed the feeling of being left behind in decision-making about their life, a feeling of being powerless to take charge of their own livelihoods. They did not mention TFCA conservation stakeholders in their discourse, but the local governance system, which is largely top-down with little participation and inclusivity. The centralised governance issue was pregnant in local livelihood discourses with important impacts on land use and access, especially in terms of land allocation, but also on natural resource access (e.g. water, soil for agriculture, pasture). The willingness of local communities to take charge of their destiny and to assume their own internal and external governance contrasted with the absence of their role in decision-making in the conservation worldview. Beyond the issue of environmental justice, this is a major violation of key principles in sustainability theories such as inclusivity, equity and conflict resolution mechanisms (Chan et al., 2020; Ostrom, 2009).

The place of local culture and value systems in local livelihoods was expressed as another pillar of local worldviews that deserved to be protected from outside influence. Indeed, they do not reject what outside influence could bring, for example, education, health, roads and communication, but are concerned with their capacity to ensure that these will not continue to destroy ultimately what they value most in their culture. This position contrasts with the highly technical worldview of conservation, which attempts to import economically oriented innovations without considering the effects on local culture. It is a remnant of colonial times, when a completely exogenous worldview was forced on African cultures across the continent that persists today and still ignores local worldviews and their relevance and importance for local livelihoods. Local stakeholders fear that whenever an external innovation is imposed on them, it will erode their culture. Therefore, there is no easy permeability of local livelihoods to innovations, in addition, when these innovations target an entirely new sector such as tourism. This aspect is never taken into account when external projects bring technical innovations (e.g. in agriculture). This is not to say that local culture should be protected at all costs. Modern social concepts, such as gender equity, can challenge aspects of local culture. This means that it is a crucial dimension that must be seriously included for the effective design of more integrated investments in local livelihoods and conservation mentioned above. This includes processes that make it possible to anticipate possible positive and negative impacts in a systemic way that external and local stakeholders must discuss in order to negotiate the conditions and context of these investments. This point is clearly a call for more recognition of local culture and knowledge systems (i.e. the third component of environmental justice).

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4.2 | A call for environmental justice in TFCAs

The presence of a protected area in the local landscape did not play a significant role in the expressed futures, with the exception of the relationship between humans and wildlife that was mentioned at a single site (Eastern Panhandle, Botswana) and strictly concerned the management of negative interactions such as human/elephant and /lion conflicts. This is a noteworthy point for sites belonging to TFCAs. Contrary to our expectations, local communities do not see wildlife primarily as a natural resource on which they would depend but as part of the nature they also belong to. Similarly, but for Eastern Panhandle, wildlife-related activities are not considered the pillar of economic and social structure at all. However, the regulation of natural resource use (which traditionally existed in the forms of taboos and sacred areas before colonialism but have been replaced by state rules and centralised power) appeared critical to achieve sustainable livelihoods and to maintain indigenous culture, knowledge and value systems. This means that in order to connect nature conservation with sustainable local livelihoods there is a need for a kind of inside-out conservation process (Western et al., 2020) based on local communities practices and visions as a way to foster recognition through appropriate procedural arrangements.

Farming systems, both crop and livestock, which remain the pillars of the economic and social structure of these communities and rely on indigenous knowledge systems, face the risk of change and disappearance through external and global forces and changes. A continuous heavy dependence on the state of natural resources provides the basis for agricultural and livestock activities, namely water, soil, energy, material and forage, as well as nontimber products for food and medicine. These local knowledge and practices are rooted in culture and traditions, which used to define the relationships and solidarity between all elements of the system (human and nonhuman). However, degraded lands and a lack of infrastructure characterise the landscapes of the so-called 'marginalised' communities. If ecological research at the interface of protected areas and communal land has shown that manipulating resources, land use and practices can improve human–wildlife coexistence (Guerbois et al., 2012; Valls-Fox et al., 2018), this seems to remain highly contentious from a private operator perspective, as 'tourists don't travel to southern Africa to see people and cattle'. This vision reflects Eurocentric individualist value systems where lands and cultures are commodified instead of being treated as Commons (Büscher & Dressler, 2012). The marginalisation process, which started centuries ago, has led local communities into poverty traps due to the loss of opportunities to nurture the 'original' value system, discredit brought to systems of indigenous beliefs through religion and the decomposition of traditional leadership suffocated by administrative centralised institutions (Guerbois et al., 2013).

Governance structures and relationships within the community and between the community and the local government and other stakeholders are critical in this changing environment to frame the future, especially regarding land use and regulation. This convergence of local governance and land use regulation in all four sites indicates that our results support the social–ecological system framework principles of decision-making rights and ownership as a key general principle determining sustainable management of natural resources (Dawson et al., 2021; Ostrom, 2009). Indeed, all the groups expressed the idea of more decentralised and transparent decision-making processes that focus on local needs. This is not only about past colonial practices, but also about the lack of trust in the way decisions regarding land and resource allocation are being made today in these areas, including at the local government level. The participants talked about proactive, participatory and inclusive (in gender and age) community governance systems, where leaders would lead by example, based on local cultures and 'original' value systems. The idea of living 'unified in diversity' echoes the philosophy of *Ubuntu* anchored in the ethical principle of promoting life through mutual care and sharing between and among humans and nonhumans (Mabele et al., 2022). It advocates for diversification and holism, the integration of multiple land uses, including tourism and farming. Abundance is the goal and translates in the management of domesticated and nondomesticated resources, including wildlife, water, farmed and natural resources, based on well-informed land use planning for the sustainability of a plurality of values and multiple uses, and allocated through professionalism and efficiency. This local vision captures the three fundamental components of environmental justice: procedural, distributive and recognition (Martin et al., 2016).

Whereas our findings point to the needs of considering environmental justice as a prerequisite for decision-making in protected areas centred socio-ecosystems, it also broadly resonates with the recent proposed concept of convivial conservation, that is, a post-capitalist approach to conservation that promotes radical equity, structural transformation and environmental justice and so contributes to an overarching movement to create a more equal and sustainable world (Büscher & Fletcher, 2019).

4.3 | External perspectives, local realities: Mind the gap

If external perspectives continue shaping the future of TFCAs, these will colonise the perspectives hold by local actors whose voices will remain barely heard or taken into consideration, and TFCAs will not achieve their genuine purpose (Chan et al., 2020; Ostrom, 2009). We argue that imposing these visions reduces not only the capacity of local stakeholders to imagine their own future in that coexistence process, but it also impedes them to engage proactively in present actions as they do not see rooms of manoeuvre beyond adapting to, or rejecting, the imposed future (i.e. being reactive at best if not merely passive).

We believe that engaging all stakeholders (i.e. external and local) in anticipation processes such as the Futures workshops presented here has potential to start addressing the mismatch of expectations created by previous externally imposed and top-down approaches in conservation. The current way of doing local development is not

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particular to the stakeholders of TFCA and applies to many sectors of development in developing countries and is anchored in the historical relationship between societies of dominant empires and colonised territories (Bourgeois et al., 2022; Dressler & Büscher, 2008). This type of behaviour that reproduces past relationships between dominant and dominated stakeholders (e.g. colonial power—African black populations, dominant state—ethnic minorities) means that local stakeholders have developed response strategies such as passive acceptance of whatever comes in terms of infrastructure, training and innovation from a project even if it has no chance of surviving the project's lifetime. When presenting the ProSuLi project to local stakeholders at the Mangalane site in Mozambique, local stakeholders asked, 'What do you bring to us?'. We answered this question by 'you will decide what the project will bring to you'. This created a misunderstanding of the project objectives and it took time for the project team to get the trust and collaboration of local stakeholders into such a not-business-as-usual approach. Therefore, an approach that encompasses anticipation and other participatory approaches will need to trigger behavioural changes not only in external but also in local stakeholders.

Using the Futures to impact the present therefore requires changes in mindsets and behaviours of all stakeholders, not only dominant and local stakeholders but also researchers, local governmental services, local NGOs and donors, and turn the whole process into a type of participatory anticipatory action research that is truly decolonial (Bourgeois et al., 2022). Concretely, this means that the way projects are framed, designed and implemented both financially and in time needs to change. Using Futures to codesign the present means that projects cannot have activities starting in the first months of the project and that a certain amount of time and means need to be directed in implementing these approaches, ideally during an inception phase whose length needs to be carefully negotiated with stakeholders and the donor. Of course, such approaches require specific skills such as facilitation, and capability such as futures literacy (Miller, 2007) and experience (e.g. local knowledge) without which they could miss their objectives and even be counterproductive. This mixture of skills ensures that local level of perceptions and decision is from the beginning embarked into the project design, bridging the governance gap highlighted here.

The capacity acquired by local people through the process of reflecting on their present situation and acting accordingly as opposed to getting people to react to imposed visions of the future, is probably the main output of this process. It promotes the creation of a space and time for multistakeholder thinking about the future of the area and the condition of its local stakeholders. This process may seem as a luxury not only when the realities of poverty keep on diverting oneself from any form of projection beyond a few days horizon, but also forbidden by standard conservation and development strategies. Yet, this is a necessity, as while one cannot predict the future, it will happen anyway, and depriving anyone from the possibility to use it only ends up in being unable to make the difference that will count for themselves or the next generations.

4.4 | Testing the approach as a Decolonial practice

We use here the four principles proposed by Bourgeois et al. (2022) to discuss to what extent this methodology contributed to a decolonial practice of anticipation.

4.4.1 | A negotiated process of cooperative design involving all actors

The implementation of Futures workshops was based fundamentally on the participation of local resource persons. However, the remoteness of the study sites made it difficult to develop intensive and iterative interactions prior to the Futures Workshops. Local understanding that participants were resource people, in the sense of knowledge bearers, and not mandated representatives of different groups of interest was of particular importance. We were able to ensure such a distinction, thanks to the local coordinators from the local communities supporting the project, who helped identify participants to ensure a diversity of perspectives based on experience, origin, gender, age and social status.

We had to take into consideration the question of influence and power relations during the implementation of the workshops. The selection of participants as knowledge bearers and the facilitation process, which relied on techniques enabling everyone to express their views and their ideas without knowing who suggested them, partially addressed this. We ensured that all had the opportunity to speak or intervene in the process, working simultaneously in different languages and/or using symbolic 'language' (e.g. drawings of items such as people, animals, houses on signs to represent some factors) to increase understanding and participation of less literate people.

The availability of the participants who could not all allocate 5 days for a full Futures Workshop led us to negotiate the reduction of the whole process from 5 to 3 days. In response, we prepared a preliminary list of factors of change that helped also preventing a common caveat, which is the weight of the past and the urgency of the present determining the way people think about the future.

4.4.2 | Recontextualising our research

The implementation of the methodology in different contexts led us to contextualise it accordingly as its purpose was not to produce knowledge per se as the result of a standard approach but to engender a reflexive process in our own practice based on moral discernment. Transforming the full structural analysis resulted from the realisation that it involved a way of thinking and tools that could have excluded many of the participants. In each site, the process of selecting the drivers from the factors of change, as detailed in Supp. Mat. 4, was the result of an ad hoc discussion with the participants once they understood what the purpose was. The process of selecting the drivers was ultimately less rigorous than what we had planned, but the interaction between participants during this

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process indicated that it was an important phase of appropriation of the methodology and the objectives. The consistency of the results (Table 3) tends to advocate for their robustness, given that we developed different adaptive measures at each site.

4.4.3 | Creating indigenous-led transformative knowledge with local actors at the forefront of the inquiry

Being aware that in action research any activity with an exogenous component, such as the preliminary lists of factors of change, can limit the expression of indigenous-led knowledge, we took special care ensuring deep and careful discussions of these lists and modification through group works, collective discussion and transparent changes. Creating spaces of intercultural interpretation helped to negotiate and adapt meanings. The participation of different perspectives also changed individual perspectives, including ours, and reduced the gaps between them. The factors of change, drivers, and most of all the future states constitute thus an indigenous-led knowledge based on their own perceptions of the future, which the Futures Workshop helped to unveil. Actually, neither the workshop facilitators nor the local coordinators had any idea of the content that would come out of the Futures workshops. Furthermore, the focus on internal factors produced not only indigenous-led knowledge, but also potentially transformative knowledge. The members of the ProSuLi project reported that this knowledge coproduction opportunity legitimised new ways of engaging in the subsequent phases of the project, providing an entry point for marginalised voices. The latter was witnessed by further actions following the Futures Workshop, which are not discussed here, but can be found elsewhere (Caron et al., 2022).

4.4.4 | Embracing the framework of servant leadership

As facilitators, we had to take leadership in the implementation of the workshops. The framework of servant leadership (Greenleaf, 1998) guided us, so that our engagement in, and the design of the Futures workshop was based on our belief that the future is a public good (Bourgeois et al., 2022). As such, it is a resource that everyone has the right to use in their own ways, provided that they are aware of the different ways of using it. However, this research faced an inescapable tension between the exogeneity of the project as an external initiative mostly implemented by external researchers and the willingness to support endogenous transformative changes. Therefore, we had to approach local actors at the different sites with an honest posture regarding what we offered to do, even if the concepts themselves were rather exogenous. Still, the fundamental orientation of the project itself provided a much-needed opportunity to engage local actors in framing their own futures, if not by codesigning the whole process but at least through their direct involvement in the production of the results.

5 | CONCLUSIONS

TFCAs provide a unique opportunity to produce healthy landscapes with a sustainable coexistence between people and nature but seriously need approaches that are designed and implemented along the lines of a decolonial process to address the environmental injustice prevalent in the residents of TFCA.

Through a comparative and people-centred anticipatory approach focusing on the perceptions of local communities and other stakeholders in four different sites, we unveiled the drivers of change for the futures of local livelihoods alongside conservation areas. We highlighted a significant gap between the global discourses on improved livelihoods and poverty reduction through tourism-based income-generating activities and local aspirations. The drivers of local livelihoods were largely shared between the four sites, identifying governance issues at various levels, the reliance of local communities on natural resources for small-scale agriculture, and subtle trade-offs between local traditions and cultures and external innovations. We advocate for the three tenets of environmental justice (procedure, distribution and recognition) to become the cement that will allow the connection between the two pillars of the TFCA, namely nature conservation and sustainable livelihoods in a way that will help TFCAs move towards a more convivial approach to conservation.

AUTHOR CONTRIBUTIONS

Robin Bourgeois, Chloé Guerbois and Alexandre Caron designed the article focus and structure. All authors contributed to between one and three Futures workshop in one of the four sites of the project and collected the data. Robin Bourgeois, Chloé Guerbois, Alexandre Caron and Christophe Le Page provided the first draft of the manuscript, including data processing and presentation. All the remaining authors commented the initial and subsequent drafts (several times before submission, then after each revision). Robin Bourgeois, Chloé Guerbois and Alexandre Caron revised the manuscript several times and responded to reviewer's comments.

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CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

All data produced during this study are available in Dryad Digital Repository https://doi.org/10.5061/dryad.47d7wm3j7 (Bourgeois et al., 2022).

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REFERENCES

Abson, D. J., Fischer, J., Leventon, J., Newig, J., Schomerus, T., Vilsmaier, U., von Wehrden, H., Abernethy, P., Ives, C. D., Jager, N. W., & Lang, D. J. (2017). Leverage points for sustainability transformation. *Ambio*, *46*, 30–39.

Adams, W., & Mulligan, M. (2002). *Decolonizing nature: Strategies for conservation in a post-colonial era* (1st ed.). Routledge.

Adams, W. M., & Hulme, D. (2001). Conservation & community: Changing narratives, policies & practices in African conservation. In D. Hulme & M. Murphree (Eds.), *African wildlife and livelihoods: The promise and performance of community conservation* (pp. 9–23). James Currey.

Adams, W. M., & Hutton, J. (2007). People, parks and poverty: Political ecology and biodiversity conservation. *Conservation and Society*, *5*, 147–183.

Anderies, J. M., Rodriguez, A. A., Janssen, M. A., & Cifdaloz, O. (2007). Panaceas, uncertainty, and the robust control framework in sustainability science. *Proceedings of the National Academy of Sciences of the United States of America*, *104*, 15194–15199.

Andersson, J. A., Dzingirai, V., & Cumming, D. H. M. (2014). TFCAs and the invisible peoples. In J. A. Andersson, M. de Garine-Wichatitsky, D. H. M. Cumming, V. Dzingirai, & K. E. Giller (Eds.), *Transfrontier conservation areas: People living on the edge* (pp. 12–24). Earthscan.

Baghai, M., Miller, J. R. B., Blanken, L. J., Dublin, H. T., Fitzgerald, K. H., Gandiwa, P., Laurenson, K., Milanzi, J., Nelson, A., & Lindsey, P. (2018). Models for the collaborative management of Africa's protected areas. *Biological Conservation*, *218*, 73–82.

Barrett, G. (2013). Markets of exceptionalism: Peace parks in southern Africa. *Journal of Contemporary African Studies*, *31*, 457–480.

Bechstedt, H.-D. (2005). Participatory approaches for sustainable land use in Southeast Asia. In A. Neef (Ed.), *Participatory development: Potentials, limitations and conceptual deficiencies* (pp. 55–72). White Lotus.

Börjeson, L., Höjer, M., Dreborg, K.-H., Ekvall, T., & Finnveden, G. (2006). Scenario types and techniques: Towards a user's guide. *Futures*, *38*, 723–739.

Boschetti, F., Walker, I., & Price, J. (2016). Modelling and attitudes towards the future. *Ecological Modelling*, *322*, 71–81.

Bourgeois, R., Guerbois, C., Giva, N., Mugabe, P., Mukamuri, B., Fynn, R., Daré, W., Motsholapheko, M., Nare, L., Delay, E., Ducrot, R., Bucuane, J., Mercandalli, S., Le Page, C., & Caron, A. (2022). Data from: Supplementary Material: Using anticipation to unveil drivers of local livelihoods in Transfrontier Conservation Areas: A call for more environmental justice. *Dryad Digital Repository*. https://doi.org/10.5061/dryad.47d7wm3j7

Bourgeois, R., Karuri-Sebina, G., & Feukeu, K. E. (2022). The future as a public good: Decolonising the future through anticipatory participatory action research. *Foresight*. https://doi.org/10.1108/FS-11-2021-0225

Bourgeois, R., Liswanti, N., Mukasa, C., Zamora, A., Herawati, T., Monterroso, I., Mshale, B., Banjade, M. R., Mwangi, E., & Larson, A. (2017). *Guide for co-elaboration of scenarios: Building shared understanding and joint action for reform and security of forest tenure*. CIFOR.

Bourgeois, R., Penunia, E., Bisht, S., & Boruk, D. (2017). Foresight for all: Co-elaborative scenario building and empowerment. *Technological Forecasting and Social Change*, *124*, 178–188.

Bruaset, S., & Sægrov, S. (2018). Using the multiple scenario approach for envisioning plausible futures in long-term planning and management of the urban water pipe systems. *European Journal of Futures Research*, *6*, 1–15.

Brugnach, M., & Ingram, H. (2012). Ambiguity: The challenge of knowing and deciding together. *Environmental Science & Policy*, *15*, 60–71.

Bruna, N. (2019). Land of plenty, land of misery: Synergetic resource grabbing in Mozambique. *Land*, *8*(8), 113.

Büscher, B., & Dressler, W. (2012). Commodity conservation: The restructuring of community conservation in South Africa and The Philippines. *Geoforum*, *43*, 367–376.

Büscher, B., & Fletcher, R. (2019). Towards convivial conservation. *Conservation and Society*, *17*, 283.

Camara, C., Bourgeois, R., & Jahel, C. (2019). Anticiper l'avenir des territoires agricoles en Afrique de l'Ouest : le cas des Niayes au Sénégal. *Cahiers Agricultures*, *28*, 12.

Caron, A., Mugabe, P., Bourgeois, R., Delay, E., Bitu, F., Ducrot, R., Fafetine, J., Fynn, R., Guerbois, C., Motsholapheko, M., Daré, W., Mukamuri, B., Nare, L., Figuié, M., Le Page, C., & Giva, N. (2022). Social-ecological system health in Transfrontier Conservation Areas to promote the coexistence between people and Nature. *One Health Cases*. https://doi.org/10.1079/onehealthcases.2022.0005

Cassidy, L. (2021). Power dynamics and new directions in the recent evolution of CBNRM in Botswana. *Conservation Science and Practice*, *3*(1), e205.

Ceausu, S., Graves, R. A., Killion, A. K., Svenning, J. C., & Carter, N. H. (2019). Governing trade-offs in ecosystem services and disservices to achieve human-wildlife coexistence. *Conservation Biology: The Journal of the Society for Conservation Biology*, *33*, 543–553.

Chan, K. M. A., Boyd, D. R., Gould, R. K., Jetzkowitz, J., Liu, J., Muraca, B., Naidoo, R., Olmsted, P., Satterfield, T., Selomane, O., Singh, G. G., Sumaila, R., Ngo, H. T., Boedhihartono, A. K., Agard, J., Aguiar, A. P. D., Armenteras, D., Balint, L., Barrington-Leigh, C., … Bridgewater, P. (2020). Levers and leverage points for pathways to sustainability. *People and Nature*, *2*, 693–717.

Chatty, D., & Colchester, M. (2002). *Conservation and mobile indigenous peoples: Displacement, forced settlement, and sustainable development*. Berghahn Books.

Chirozva, C., Mukamuri, B. B., & Manjengwa, J. (2013). Using scenario planning for stakeholder engagement in livelihood futures in the great Limpopo Transfrontier conservation area. *Development Southern Africa*, *30*, 771–788.

Chitakira, M., Torquebiau, E., & Ferguson, W. (2012). Community visioning in a transfrontier conservation area in southern Africa paves the way towards landscapes combining agricultural production and biodiversity conservation. *Journal of Environmental Planning and Management*, *55*, 1228–1247.

Colloff, M. J., Lavorel, S., van Kerkhoff, L. E., Wyborn, C. A., Fazey, I., Gorddard, R., Mace, G. M., Foden, W. B., Dunlop, M., Prentice, I. C., Crowley, J., Leadley, P., & Degeorges, P. (2017). Transforming conservation science and practice for a postnormal world. *Conservation Biology: The Journal of the Society for Conservation Biology*, *31*, 1008–1017.

Crawfords, M. M. (2019). A comprehensive scenario intervention typology. *Technological Forecasting and Social Change*, *149*, 119748.

Cronon, W. (1996). The trouble with wilderness: Or, getting Back to the wrong nature. *Environmental History*, *1*, 7–28.

Cumming, D. H. M., Dzingirai, V., & de Garine-Wichatitksy, M. (2014). Land- and natural resource-based livelihood opportunities in TFCAs. In J. A. Andersson, M. de Garine-Wichatitsky, D. H. M. Cumming, V. Dzingirai, & K. E. Giller (Eds.), *Transfrontier conservation areas: People living on the edge* (pp. 163–191). Earthscan.

Dawson, N. M., Coolsaet, B., Sterling, E. J., Loveridge, R., Gross-Camp, N. D., Wongbusarakum, S., Sangha, K. K., Scherl, L. M., Phan, H. P., Zafra-Calvo, N., Lavey, W. G., Byakagaba, P., Idrobo, C. J., Chenet, A., Bennett, N. J., Mansourian, S., & Rosado-May, F. J. (2021). The role of Indigenous peoples and local communities in effective and equitable conservation. *Ecology and Society*, *26*(3). https://doi.org/10.5751/es-12625-260319

25758314, 0, Downloaded from https://besjournals.onlinelibrary.wiley.com/doi/10.1002/pan3.10446 by INASP - MOZAMBIQUE University Eduardo Mondlane, Wiley Online Library on [31/01/2023]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

DeFries, R., & Nagendra, H. (2017). Ecosystem management as a wicked problem. *Science*, *356*, 265–270.

DeGeorges, P., & Reilly, B. (2009). The realities of community based natural resource management and biodiversity conservation in sub-Saharan Africa. *Sustainability*, *1*, 734–788.

DeMotts, R., & Hoon, P. (2012). Whose elephants? Conserving, compensating, and competing in northern Botswana. *Society & Natural Resources*, *25*, 837–851.

Dickman, A. J. (2010). Complexities of conflict: The importance of considering social factors for effectively resolving human–wildlife conflict. *Animal Conservation*, *13*, 458–466.

Domínguez, L., & Luoma, C. (2020). Decolonising conservation policy: How colonial land and conservation ideologies persist and perpetuate indigenous injustices at the expense of the environment. *Land*, *9*(3), 65.

Dressler, W., & Büscher, B. (2008). Market triumphalism and the CBNRM 'crises' at the south African section of the great Limpopo Transfrontier Park. *Geoforum*, *39*, 452–465.

Dressler, W., Buscher, B., Schoon, M., Brockington, D., Hayes, T., Kull, C., McCarthy, J., & Strestha, K. (2010). From Hope to crisis and Back again? A critical history of the global CBNRM narrative. *Environmental Conservation*, *37*, 5–15.

Dzingirai, V., Andersson, J. A., Baudron, F., Milgroom, J., Murungweni, C., & Poshiwa, X. (2014). On the edge of state and economy. In J. A. Andersson, M. de Garine-Wichatitsky, D. H. M. Cumming, V. Dzingirai, & K. E. Giller (Eds.), *Transfrontier conservation areas: People living on the edge*. Earthscan.

Eva, N., Robin, M., Sendjaya, S., Van Dierendonck, D., & Liden, R. C. (2019). Servant leadership: A systematic review and call for future research. *The Leadership Quarterly*, *30*, 111–132.

Fairhead, J., Leach, M., & Scoones, I. (2012). Green grabbing: A new appropriation of nature? *Journal of Peasant Studies*, *39*, 237–261.

Ferreira, S. L. T. (2006). Communities and Transfrontier parks in the southern African development community: The case of Limpopo National Park, Mozambique. *South African Geographical Journal*, *88*, 166–176.

Funtowicz, S. O., & Ravetz, J. R. (1993). Science for the post-Normal age. *Futures*, *25*, 739–755.

Garland, E. (2008). The elephant in the room: Confronting the colonial character of wildlife conservation in Africa. *African Studies Review*, *51*, 51–74.

Gatiso, T. T., Kulik, L., Bachmann, M., Bonn, A., Bösch, L., Freytag, A., Heurich, M., Wesche, K., Winter, M., & Ordaz-Németh, I. (2022). Sustainable protected areas: Synergies between biodiversity conservation and socioeconomic development. *People and Nature*, *4*, 893–903.

Godet, M. (1986). Introduction to la prospective. *Futures*, *18*, 134–157.

Green, J. M., Fisher, B., Green, R. E., Makero, J., Platts, P. J., Robert, N., Schaafsma, M., Turner, R. K., & Balmford, A. (2018). Local costs of conservation exceed those borne by the global majority. *Global Ecology and Conservation*, *14*, e00385.

Greenleaf, R. K. (1998). *The power of servant-leadership: Essays*. Berrett-Koehler Publishers.

Gudowsky, N., & Peissl, W. (2016). Human centred science and technology—Transdisciplinary foresight and co-creation as tools for active needs-based innovation governance. *European Journal of Futures Research*, *4*, 1–10.

Guerbois, C., Chapanda, E., & Fritz, H. (2012). Combining multi-scale socio-ecological approaches to understand the susceptibility of subsistence farmers to elephant crop raiding on the edge of a protected area. *Journal of Applied Ecology*, *49*, 1149–1158.

Guerbois, C., Dufour, A. B., Mtare, G., & Fritz, H. (2013). Insights for integrated conservation from attitudes of people toward protected areas near Hwange National Park, Zimbabwe. *Conservation Biology: The Journal of the Society for Conservation Biology*, *27*, 844–855.

Guerbois, C., & Fritz, H. (2017). Patterns and perceived sustainability of provisioning ecosystem services on the edge of a protected area in times of crisis. *Ecosystem Services*, *28*, 196–206.

Hall, B. L., & Tandon, R. (2017). Decolonization of knowledge, epistemicide, participatory research and higher education. *Research for All*, *1*(1), 6–19.

Hanks, J. (2003). Transfrontier conservation areas (TFCAs) in southern Africa. *Journal of Sustainable Forestry*, *17*, 127–148.

Honneth, A. (2016). Recognition and justice. *Acta Sociologica*, *47*, 351–364.

Hübschle, A. (2017). The social economy of rhino poaching: Of economic freedom fighters, professional hunters and marginalized local people. *Current Sociology*, *65*, 427–447.

Igoe, J., Neves, K., & Brockington, D. (2010). A spectacular eco-tour around the historic bloc: Theorising the convergence of biodiversity conservation and capitalist expansion. *Antipode*, *42*, 486–512.

Johansson, E. L. (2021). Participatory futures thinking in the African context of sustainability challenges and socio-environmental change. *Ecology and Society*, *26*(4), 3.

Kalvelage, L., Revilla Diez, J., & Bollig, M. (2022). How much remains? Local value capture from tourism in Zambezi, Namibia. *Tourism Geographies*, *24*(4–5), 759–780.

Keesing, F., Ostfeld, R. S., Okanga, S., Huckett, S., Bayles, B. R., Chaplin-Kramer, R., Fredericks, L. P., Hedlund, T., Kowal, V., Tallis, H., Warui, C. M., Wood, S. A., & Allan, B. F. (2018). Consequences of integrating livestock and wildlife in an African savanna. *Nature Sustainability*, *1*, 566–573.

Kicheleri, R. P., Mangewa, L. J., Nielsen, M. R., Kajembe, G. C., & Treue, T. (2021). Designed for accumulation by dispossession: An analysis of Tanzania's wildlife management areas through the case of Burunge. *Conservation Science and Practice*, *3*, e360.

Lang, D. J., Wiek, A., Bergmann, M., Stauffacher, M., Martens, P., Moll, P., Swilling, M., & Thomas, C. J. (2012). Transdisciplinary research in sustainability science: Practice, principles, and challenges. *Sustainability Science*, *7*, 25–43.

Lee, E. (2016). Protected areas, country and value: The nature–culture tyranny of the IUCN's protected area guidelines for indigenous Australians. *Antipode*, *48*, 355–374.

Lunstrum, E. (2016). Green grabs, land grabs and the spatiality of displacement: Eviction from Mozambique's Limpopo National Park. *Area*, *48*, 142–152.

Lunstrum, E., & Givá, N. (2020). What drives commercial poaching? From poverty to economic inequality. *Biological Conservation*, *245*, 108505.

Mabele, M., Krauss, J., & Kiwango, W. (2022). Going Back to the roots: Ubuntu and just conservation in southern Africa. *Conservation and Society*, *20*, 92.

Mace, G. M. (2015). Whose conservation? Changes in the perception and goals of nature conservation require a solid scientific basis. *Science*, *345*, 1558–1560.

Manfredo, M. J., Teel, T. L., & Dietsch, A. M. (2016). Implications of human value shift and persistence for biodiversity conservation. *Conservation Biology: The Journal of the Society for Conservation Biology*, *30*, 287–296.

Mannigel, E. (2008). Integrating parks and people: How does participation work in protected area management? *Society and Natural Resources*, *21*, 498–511.

Martin, A., Coolsaet, B., Corbera, E., Dawson, N. M., Fraser, J. A., Lehmann, I., & Rodriguez, I. (2016). Justice and conservation: The need to incorporate recognition. *Biological Conservation*, *197*, 254–261.

Mbaiwa, J. E. (2005). Enclave tourism and its socio-economic impacts in the Okavango Delta, Botswana. *Tourism Management*, *26*, 157–172.

Metcalfe, S. (1993). *CAMPFIRE Zimbabwe's communal areas management Programme for indigenous resources*. (ed. Z.T.C.f.A.S. Sciences). University of Zimbabwe.

Miller, R. (2007). Futures literacy: A hybrid strategic scenario method. *Futures*, *39*, 341–362.

Miller, R. (2015). Learning, the future, and complexity. An essay on the emergence of futures literacy. *European Journal of Education*, *50*, 513–523.

25758314, 0, Downloaded from https://besjournals.onlinelibrary.wiley.com/doi/10.1002/pan3.10446 by INASP - MOZAMBIQUE University Eduardo Mondlane, Wiley Online Library on [31/01/2023]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

Miller, R. (2018). *Transforming the future: Anticipation in the 21st century*. Taylor & Francis Group.
Nelson, F., Muyamwa-Mupeta, P., Muyengwa, S., Sulle, E., & Kaelo, D. (2020). Progress or regression? Institutional evolutions of community-based conservation in eastern and southern Africa. *Conservation Science and Practice*, *3*, e302.
Norton-Griffiths, M., & Said, M. Y. (2010). Wild rangelands: Conserving wildlife while maintaining livestock in semi-arid ecosystems. In J. T. du Toit, R. Kock, & J. C. Deutsch (Eds.), *The future for wildlife on Kenya's rangelands: An economic perspective* (pp. 367–392). Wiley-Blackwell.
Ostrom, E. (2009). A general framework for analyzing sustainability of social-ecological systems. *Science*, *325*, 419–422.
Otsuki, K., Achá, D., & Wijnhoud, J. D. (2017). After the consent: Re-imagining participatory land governance in Massingir, Mozambique. *Geoforum*, *83*, 153–163.
Peace Parks Foundation. (2020a). *Great Limpopo*. PPF.
Peace Parks Foundation. (2020b). *Kavango Zambezi*. PPF.
Peterson, M. N., Birckhead, J. L., Leong, K., Peterson, M. J., & Peterson, T. R. (2010). Rearticulating the myth of human-wildlife conflict. *Conservation Letters*, *3*, 74–82.
Puskur, R., Park, S., Bourgeois, R., Hollows, E., Suri, S., & Phillips, M. (2017). Exploring futures of aquatic agricultural food Systems in Southern Africa: From drivers to future-smart research and policy options. In *Sustainable intensification in smallholder agriculture* (pp. 143–156). Routledge.
Quijano, A. (2000). *Colonialidad del poder, eurocentrismo y América Latina*. Clacso.
Rahnema, M. (1992). *Participation. The development dictionary: A guide to knowledge as power*. Zed Books.
Redpath, S. M., Gutiérrez, R. J., Wood, K. A., Sidaway, R., & Young, J. C. (2015). An introduction to conservation conflicts. In S. M. Redpath, R. J. Gutierrez, K. A. Wood, & J. C. Young (Eds.), *Conflicts in conservation: Navigation towards solutions* (pp. 3–18). Cambridge University Press.
Rhisiart, M., Miller, R., & Brooks, S. (2015). Learning to use the future: Developing foresight capabilities through scenario processes. *Technological Forecasting and Social Change*, *101*, 124–133.
Rossel, P. (2010). Making anticipatory systems more robust. *Foresight-the Journal of Future Studies, Strategic Thinking and Policy*, *12*, 72–85.
Ruano-Chamorro, C., Gurney, G. G., & Cinner, J. E. (2022). Advancing procedural justice in conservation. *Conservation Letters*, *15*, e12861.
Salerno, J., Bailey, K., Gaughan, A. E., Stevens, F. R., Hilton, T., Cassidy, L., Drake, M. D., Pricope, N. G., & Hartter, J. (2020). Wildlife impacts and vulnerable livelihoods in a transfrontier conservation landscape. *Conservation Biology: The Journal of the Society for Conservation Biology*, *34*, 891–902.
Saritas, O., & Smith, J. E. (2011). The big picture—Trends, drivers, wild cards, discontinuities and weak signals. *Futures*, *43*, 292–312.
Shantiko, B., Liswanti, N., Bourgeois, R., & Laumonier, Y. (2021). Land-use decisions in complex commons: Engaging multiple stakeholders through foresight and scenario building in Indonesia. *Environmental Management*, *68*, 642–664.
Shirk, J. L., Ballard, H. L., Wilderman, C. C., Phillips, T., Wiggins, A., Jordan, R., McCallie, E., Minarchek, M., Lewenstein, B. V., Krasny, M. E., & Bonney, R. (2012). Public participation in scientific research: A framework for deliberate design. *Ecology and Society*, *17*(2), 29.
Slaughter, R. A. (2012). Sense making, futures work and the global emergency. *Foresight*, *14*, 418–431.
Smith, M. K. S., Smit, I. P., Swemmer, L. K., Mokhatla, M. M., Freitag, S., Roux, D. J., & Dziba, L. (2021). Sustainability of protected areas: Vulnerabilities and opportunities as revealed by COVID-19 in a national park management agency. *Biological Conservation*, *255*, 108985.
Sourisseau, J.-M., Bélières, J.-F., Bourgeois, R., Soumare, M., Rasolofo, P., Guenguant, J.-P., & Bougnoux, N. (2017). *Penser ensemble l'avenir d'un territorie: Diagnostic et prospective territoriale au Mali et à Madagascar*. Etudes de l'AFD.
Spierenburg, M., Steenkamp, C., & Wels, H. (2006). Resistance of local communities against marginalization in the great Limpopo Transfrontier conservation area. *Focaal*, *2006*, 18–31.
Stoldt, M., Gottert, T., Mann, C., & Zeller, U. (2020). Transfrontier conservation areas and human-wildlife conflict: The case of the Namibian component of the Kavango-Zambezi (KAZA) TFCA. *Scientific Reports*, *10*, 7964.
Trisos, C. H., Auerbach, J., & Katti, M. (2021). Decoloniality and anti-oppressive practices for a more ethical ecology. *Nature Ecology & Evolution*, *5*, 1–8.
Tyrrell, P., Russell, S., & Western, D. (2017). Seasonal movements of wildlife and livestock in a heterogenous pastoral landscape: Implications for coexistence and community based conservation. *Global Ecology and Conservation*, *12*, 59–72.
Valls-Fox, H., Chamaillé-Jammes, S., de Garine-Wichatitsky, M., Perrotton, A., Courbin, N., Miguel, E., Guerbois, C., Caron, A., Loveridge, A., Stapelkamp, B., Muzamba, M., & Fritz, H. (2018). Water and cattle shape habitat selection by wild herbivores at the edge of a protected area. *Animal Conservation*, *21*, 365–375.
Van Amerom, M., & Büscher, B. (2005). Peace parks in southern Africa: Bringers of an African renaissance? *The Journal of Modern African Studies*, *43*, 159–182.
Vision 2036 Coordinating Agency. (2019). *Vision 2036*.
West, P., Igoe, J., & Brockington, D. (2006). Parks and peoples: The social impact of protected areas. *Annual Review of Anthropology*, *35*, 251–277.
Western, D., Tyrrell, P., Brehony, P., Russell, S., Western, G., & Kamanga, J. (2020). Conservation from the inside-out: Winning space and a place for wildlife in working landscapes. *People and Nature*, *2*, 279–291.
Witter, R. (2013). Elephant-induced displacement and the power of choice: Moral narratives about resettlement in Mozambique's Limpopo national park. *Conservation and Society*, *11*, 406.
Wolmer, W. (2003). Transboundary conservation: The politics of ecological integrity in the great Limpopo Transfrontier Park. In *Sustainable livelihoods in southern Africa research paper* (p. 30). Institute of Development Studies.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Supp. Mat. 1: Attendance list for each workshop.

Supp. Mat. 2: Future agenda.

Supp. Mat. 3: Structural Analysis conducted in each site.

Supp. Mat. 4: Factors of change.

Supp. Mat. 5: Panorama of the main issues at stake.

Supp. Mat. 6: Future states of drivers.

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