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Complex effects of natural disasters on protected areas: the case of Cyclone Idai in Mozambique

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Abstract

It is now broadly recognised that in order to be sustainable, protected areas (PAs) must bring concrete benefits to local populations who suffer from the restrictions imposed for conservation. Natural disasters, such as major floods, bring additional challenges to conservation efforts and related support activities, notably nature-based tourism. Disasters often intensify conflicts between conservation objectives and local community needs, but they may also bring some mutual benefits. Reduced income from decreased nature-based tourism can, for example, lead to expansion of agricultural fields to protected forests, and subsequent land-use conflicts. Yet, disasters can also strengthen feelings of solidarity and result in additional investment in the area for both income generating activities and production of services. This chapter is based on comparative analysis of the impact of Cyclone Idai in two contrasting PAs in Mozambique, the national parks of Chimanimani and Gorongosa. The former is a relatively little known PA, where local benefits derive mainly from nature-based tourism operated by a small community-based venture, and other activities are supported by a variegated set of externally funded microprojects. The latter is a renowned sanctuary operated as a public-private joint venture, which enjoys ample funding from various private and public donors. In addition to donor funding, Gorongosa partakes of substantial income from upmarket ecotourism ventures operated by private companies. The comparative set-up of the study therefore provides a good opportunity to examine the complex ways such unexpected challenges may change the prospects of different types of ecotourism ventures – and the situation of local populations.

Key words: Protected areas, natural disasters, ecotourism, Mozambique

Introduction

Community conservation paradigm, which has largely replaced fortress conservation paradigm in Southern Africa after the 1980s, consists of two main principles. The first asserts that people in and around protected areas (PAs) must be allowed to participate in the management of conservation resources. The second derives from the observation that PAs can have serious negative effects on local residents, who must be compensated. Imposing costs without equivalent benefits tends to create hostility to conservation activities among those affected (Adams & Hulme, 2001). In Mozambique, the second principle, in particular, has been adopted to the national wildlife policy. The overall goal of the 1996 wildlife policy is "to conserve, utilize and develop forest and wildlife resources to gain social, ecological and economic benefits for present and future generations of Mozambicans" (Soto, 2011, 90). More specifically, creating a situation whereby the benefits that wildlife brings to local communities are sufficient to offset the costs they incur for living with wildlife has been defined a focal

objective in key policy documents, such as Mozambique's national elephant strategy (MIT, 2010). Adoption of the first principle has, on the other hand, been less enthusiastic.

With respect to the second principle, critical studies soon noted that, in most cases, economic benefits from PAs tend to go mostly to national and international actors, including both public authorities and the private sector, while the costs fall mainly on local communities (Wells 1992). In Mozambique, 16% of the revenue generated within PAs should legally go to neighbouring communities, but in practice the revenue received by them is only a small part of this. In 2013, for example, only approximately 2% reached the communities (Rylance, 2017). At the same time, shrinking public funding has covered only a fraction of the conservation budget (UNDP, 2010), and the government's conservation strategy is based on giving a dominant role for the private sector and international donors (GoM, 2018).

An alternative source of sustainable funding has been sought from ecotourism, which is sometimes presented almost as a panacea (Krüger, 2005). The idea is that by maintaining attractive natural landscapes and a rich biodiversity, local communities can earn money from ecotourism, which provides both an incentive for conservation and an economic alternative to destructive activities. Ideally, tourism earnings should be so high that community members actively support conservation activities in order to protect their source of income (Kiss, 2004; Silva & Khatiwada, 2014). Over the last two decades, community-based tourism has received significant coverage in ecotourism oriented media. The term is, however, rather vague, and can refer to anything from ensuring that at least some community members participate in tourism-related activities, to ownership of ecotourism enterprises (Kiss, 2004). In this article, the term is used in a strong sense, which includes both main principles of the community conservation paradigm.

To be successful, the benefits from ecotourism should be substantial and widely distributed, while it should not threaten the local population's main sources of livelihood. In reality, however, many ecotourism projects produce only modest economic gains, which often benefit only a few members of the community (Kiss, 2004; Silva & Khatiwada, 2014). The hyped "win-win" outcome requires that certain natural and man-made conditions considered favourable for upmarket ecotourism, the prime source of income for PAs, are fulfilled. These include adequate infrastructure, relatively easy access to and mobility within the PA, high probability of seeing charismatic wildlife, such as lions and elephants, political stability, as well as favourable legal and policy framework (Krüger, 2005; Silva & Khatiwada, 2014; Wells, 1992).

Many PAs are vulnerable to natural disasters and epidemics, which can reveal the fragility of local support to conservation (Lendelvo et al., 2020; Zhang et al., 2018). The frequency and severity of natural disasters have been projected to increase in the future because of climate change and other anthropogenic disturbances (Walters et al., 2015; Zhang et al., 2018). Disasters often cause widespread damage to local population, such as human casualties, destruction of housing, social and transport infrastructure, loss of livelihoods, food shortages, epidemics, and impaired security situation. Such effects tend to affect negatively the tourism industry, thereby increasing the economic plight of the population (Genç, 2018). Destruction of livelihoods, including the income from tourism due to a disaster, may prompt community

members to pursue alternative livelihoods and labour migration, but they may also expand traditional activities, for example by clearing more forest to open fields. Therefore, even if a disaster does not seriously affect biodiversity, changed economic activities may do so (Zhang et al., 2018).

Natural disasters may, however, also foster feelings of solidarity and draw national and international attention to the affected region (Matos & Ndapassoa, 2020). In addition to emergency aid and basic reconstruction activities, a disaster may have more long-term effects in the form of increased national and international investment for new economic or conservation projects (Genç, 2018). This is especially likely in the case of an internationally renowned PA, which is likely to draw intensive media coverage to the disaster (Zhang et al., 2018). Aside from material consequences, disasters can also strengthen or undermine existing power relations at different levels (Arnall, 2014; Matos & Ndapassoa, 2020).

The focus of this chapter is on the impact of natural disasters on PAs that differ in relation to attractiveness for tourists and access to external funding. It is based on comparative analysis of the impact of Tropical Cyclone (TC) Idai in two contrasting PAs and their buffer zones in Mozambique, the national parks of Chimanimani (CNP) and Gorongosa (GNP). The former is a relatively little known PA where local benefits derive mainly from a community eco-lodge, and other activities are supported by a set of externally funded microprojects. The latter is a world-famous wildlife park operated as a public-private joint venture, which enjoys generous external funding from international donors. TC Idai, which hit Mozambique in 2019, was one of the worst weather-related disasters in Africa. The storm affected nearly 3 million people and left over 1 000 people dead. The total economic loss was estimated to be at least 2 billion USD, which makes it the costliest tropical cyclone in the South-West Indian Ocean basin (Yu et al., 2019).

The study is based on interviews with 55 individuals (including 3 government representatives) conducted in March 2021 in four communities of the CNP buffer zone (BZ). This data set was complemented with earlier interviews done in May 2018 (both sites) and May 2019 (CNP), relevant public documents and research literature. Due to previous studies and training activities the researchers were already familiar with the study sites, in particular with CNP, the primary case.

Context of the comparative study: the National Parks of Gorongosa and Chimanimani

In Mozambique the management of PAs is based on a national 10-year strategic plan, and its implementation is coordinated by a central body. Individual PAs can be managed by the state alone, as in the case of CNP, or together with a private operator, as in the case of GNP. Other alternatives include management by communities or by NGOs (ANAC, 2015). One of the plan's strategic objectives is community development. The aim is to organise populations living inside and adjacent to PAs to support implementation of the strategy and the PA management plan in such activities as conservation and sustainable use of natural resources. This includes resettlement of scattered populations affected by the activities of the PAs to reduce human-wildlife conflict. Organising also refers to creating community management committees and formal associations, which can receive the 16% share of PA revenue and act as contractual parties in relation to private sector operators (Ibid).

The PA of Gorongosa was created in the colonial period, initially as a hunting reserve in 1921, but upgraded to NP status in 1960 (Table 1). Due to abundance of charismatic wildlife and easy access it became one of the best known sites for upmarket safari tourism in Southern Africa (Morley and Convery, 2014). Its geographical boundaries were expanded gradually from the initial 1 000 km^2 to 5 300 km^2 in 1960 (Walker, 2015). The expansion, together with the increasingly strict level of conservation led to the eviction of several thousand local African inhabitants – albeit not all – from the PA. This caused strong opposition from the target communities, and in the context of the incipient struggle for national independence the authorities decided to reduce the PA to 3 770 km^2. More densely inhabited lands were therefore excised from the park in order to ensure the separation of people from nature following the then dominant conservation paradigm (Walker, 2015).

In Chimanimani, the initiative for a PA in the border zone came from Rhodesia (now Zimbabwe), where a NP was created along the national border to protect the unique mountain biome in 1949 (Ghiurghi et al., 2010). On the Mozambican side, three forest reserves were created at the foot of the Chimanimani massif in the 1950s, but the restrictions placed on the local inhabitants were relatively loose, and – different from the Rhodesian NP – no evictions took place. In the early 1970s, there was a plan to create a large PA covering the Mozambican side of the mountains adjacent to the Rhodesian NP, which would benefit from Rhodesian tourists arriving through a newly opened border post and road connection to Beira, a popular beach resort. However, Mozambican independence in 1975 and subsequent international boycott of the minority rule regime in Rhodesia made the plan obsolete and it was shelved for 20 years (Virtanen, 2020).

Table 1. Gorongosa and Chimanimani in brief

		Gorongosa NP	**Chimanimani NP**
Established	Earlier status	Hunting Reserve 1921	Forest Reserve (3) 1953 National Reserve 2003
	Current status	National Park 1960	National Park 2020
Land area	Protected area/PA	4 067 km^2	634 km^2
	Buffer zone/BZ	5 333 km^2	1 723 km^2
Landscape type	Elevation	c. 15-1 863 m	c. 200-2 436 m
	Eco-region	Situated in the Rift Valley, the park consists of savanna, woodlands, grasslands, and rainforests at Mount Gorongosa.	Tropical mountain biome consisting of a forest-grassland mosaic. It is part of the Afromontane centre of endemism.
Population inside BZ (2017 est.)		177 000	37 000
Number of visitors/year		4 219*	67**

*average/year, 2011-2020; **average/year, 2017-2020

The wildlife in both Gorongosa and Chimanimani suffered heavily during the civil war (1976-1992), which started soon after independence. The rebel movement Renamo established important military bases in both areas, which became major scenes of military operations. The opposition has enjoyed strong support in these areas even after the peace agreement in 1992 and the first democratic elections two years later, and part of the population has continued to be hostile toward any projects initiated by Frelimo, which has maintained its position as the

ruling party. The political situation complicated the efforts started in the late 1990s to rehabilitate GNP and to create a new PA in Chimanimani (Morley and Convery, 2014; Virtanen, 2005).

The new community conservation paradigm was promoted by international donors, such as the World Bank and the African Development Bank, through broad nation-wide projects in which support to individual conservation areas was incorporated. Despite the participatory ethos, most of the resources went to strengthening government authorities with largely unsustainable results. Though the numbers of both wildlife and visiting tourists started to grow in GNP, according to a senior staff member the facilities were in decay by 2006 (interview, May 2018). In Chimanimani, the situation was even worse: in 2000 a cyclone largely destroyed the simple improvised infrastructure built by then, and in the mid 2000's artisanal gold miners, numbering approximately 10 000 at the peak phase, invaded the PA. From 2005 to 2008 the average number of tourists entering the recently declared reserve was approximately 80 per year, which was not sufficient for maintaining even the few rustic services, such as campsites and tourist guides (Virtanen, 2020).

In Gorongosa, the gradual return of wildlife combined with favourable conditions for upmarket safari tourism was reflected in increasing income from tourism. This evoked the interest of a wealthy American philanthropist, who set up the Gorongosa Restoration Project (a US-based foundation) to support rehabilitation of the park and in 2008 the project signed a 20-year contract for joint management of GNP. The large financial commitment by the foundation has enticed a number of other international donors and public institutions to join, and in 2018 the contract was extended for another 25 years (Gorongosa Project, 2018; Walker, 2015). Although the park enjoys relatively high income from upmarket safari tourism, it constitutes only approximately 3% of the total income. The substantial sums the project uses annually on tourism infrastructure and community development – in addition to basic operations, conservation and research – come from external sources (Gorongosa Project, 2017).

Since 2006, Chimanimani has benefited from two subsequent nation-wide projects to support trans-frontier conservation areas, funded again mainly by the World Bank. As the community participation and tourism promotion activities of the earlier project had largely failed, the new projects have placed considerable effort on these areas. The rugged landscape is not suitable for traditional safari tourism, and the existing potential for adventure or cultural tourism has failed to attract significant numbers of visitors (Virtanen, 2020). There is only one small lodge in the BZ of CNP[i], operated since 2010 as a joint venture between a local community association and MICAIA, a UK-based foundation (Kingman, 2010). Initially, the venture benefited from the World Bank funding, but has since struggled on its own. The only other self-sustained economic activity is a cooperative beekeeping project (Virtanen, 2020).

Although the development strategies of the two NPs appear quite similar – largely due to donor influence – except for differences in scale, they are actually dissimilar with respect to the first element of the community conservation paradigm, namely that people in and around PAs should be allowed to participate in the management of conservation resources. In GNP the conservation objectives are decisive, and – as affirmed by senior staff members – the objective is to remove people from the PA. While this is not pursued by force, the communities living inside are not entitled to the benefits offered to those living in the BZ (interviews, May 2018). They do not have any say in the park's management, and the community land delimitation

exercise[ii] – intended to recognise rights to natural resources – was not extended to the PA (Dondeyne et al., 2012). Even the social and economic benefits for the BZ populations are mainly decided top-down, either drawn from the government's sectoral plans or devised to address specific conservation issues defined by the experts (interviews, May 2018). Particularly in the early years the project showed little respect for traditional values of the people, which caused serious friction (Jacobs, 2010). Even today its continuing strive to expand protection (and related use restrictions) in different forms to an ever-widening area is a source of fear and resistance to many community members (Walker, 2015).

In Chimanimani, a similar land delimitation exercise was extended into the PA, which strengthened the communities' sense of ownership. Moreover, the new plan finalised in 2010 adjusted the boundaries of the PA to exclude two major settlements, and there are no plans to expand it (Dondeyne et al., 2012). Although most of the community development activities and development of conservation infrastructure depend on donor funding, both the community eco-lodge and the honey cooperative are joint enterprises with formal structures for community participation (Virtanen, 2020). Discussions with community members indicated, however, that active participation is limited to a rather small group within the community (interviews, May 2019).

The cause of disaster: Tropical Cyclone Idai

Cyclones are not exceptional in the southern Indian Ocean: on average, Mozambique experiences cyclones 1–2 times per year (Matyas & Silva, 2013). Usually, cyclones in the Mozambique Channel move southeast into the open ocean, but atypically Idai penetrated deep inland. According to statistics, the frequency of cyclone landfalls over Southeastern Africa has not increased since the 1940s (Fitchett & Grab, 2014). However, the warming of sea surface temperature and the increase in upper ocean heat caused by climate change is likely to intensify cyclones and increase their duration (Vidya et al., 2020). In 2019, TC Kenneth – the strongest ever to make landfall in Mozambique – caused havoc in the north of the country only one month after Idai (Mawren et al., 2020), and in 2021 tropical storm Chalane crossed deep into the continent following closely the track of Idai, albeit with considerably less damage (IOM, 2021).

TC Idai originated from a tropical depression and made its first landfall in Quelimane on the coast of Mozambique on 4 March 2019 (Figure 1). It returned back into the Mozambique Channel where it remained for the next six days and developed into a TC before it made a second landfall near the city of Beira on 14 March (Yu et al., 2019). The cyclone brought strong winds (180 – 220 km/h) and heavy rain (more than 200 mm in 24 hours) across the provinces of Sofala and Manica, causing rivers to overflow and bringing a large storm surge in the coastal city of Beira and surrounding areas. It is estimated that more than 1,5 million people were affected, over 1 600 injured and more than 600 died in Mozambique (GoM, 2019). Six months after the disaster, an estimated one million people still experienced food shortages and nearly 100 000 remained displaced (Matos & Ndapassoa, 2020).

FIGURE 1. HERE

TC Idai caused severe damage in the PAs and related BZ situated on its path, including Gorongosa and Chimanimani (GoM, 2019). In Sofala Province, the worst impact of the cyclone

fell on those living in areas prone to flooding, such as the Gorongosa District where government sources reported almost 15 000 ha of cultivated land affected and over 2 100 dwellings damaged (INGC, 2019). Many of those affected were living in the southwestern BZ of GNP. Even though the park's extensive areas of intact vegetation and soils absorbed large amounts of water, flooding destroyed houses, fields and harvests particularly in the communities downstream of the Pungwe and Urema rivers. Many households were cut off from land access and help for weeks (Gorongosa Project, 2020). Inside the PA, extensive stretches of road and five small bridges worth 150 000 USD were destroyed, and two cars and an excavator (valued at 140 000 USD) were lost. Infrastructure damage to the hotel amounted to 600 000 USD, and forgone revenues were estimated at 270 000 USD (GoM, 2019). The park is normally closed to visitors during the rainy season (mid-December to the end of March), but in 2019 it was also closed for April as the damage caused by Idai was repaired (Gorongosa Project, 2020).

GNP staff had a crucial role not only in rehabilitating the park infrastructure, but in food distribution and medical support to assist the neighbouring communities even before international response got into motion. Park rangers waded through flooded land to reach those trapped on points of higher ground bringing emergency rations and assistance until helicopters, canoes and vehicles could be mobilised (Gorongosa Project, 2020). During the first month, they distributed 97 tons of food they had purchased at the local market (Meldrum, 2019). They also set up an emergency response unit to coordinate the relief effort, hired two helicopters and collaborated with a team of African Parks who also provided their helicopter and technical team to support the ground action (Gorongosa Project, 2020).

In the following months, the park worked with the World Food Programme (WFP) distributing more than 500 tons of food provided by the latter to approximately 80 000 people. They received substantial support for the relief effort from concerned individuals, business and organisations, including 400 000 USD from a web-based fundraising effort (Gorongosa Project, 2020), and a USAID grant to provide seeds to 10 000 households. The park also collaborated with WFP on a recovery project in which residents helped rebuild health posts, schools and roads in return for food (Meldrum, 2019), and was directly involved in planning and coordination of the post-flood assistance programme with national and international authorities (Gorongosa Project, 2020).

A natural disaster like TC Idai is likely to have a direct impact on the number of visitors to PAs that were affected by it. However, despite the shortened season the annual number of visitors to GNP remained stable as the park authorities had sufficient resources to fix the relatively light or replaceable damages quickly. Actually, the period of insecurity due to the resurgence of armed conflict between Renamo and the government (2013-2016), which was particularly acute in Gorongosa (Regalia, 2017), had a more drastic impact (Table 2). In 2020 the park was closed due to a new natural disaster, the Covid-19 pandemic (Gorongosa Project, 2020). In Chimanimani, the number of visitors has not increased beyond the annual average of 80 reached in the early years (Virtanen, 2020), remaining economically insignificant.

Table 2. Annual number of visitors to GNP and CNP

Year	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
GNP	7000	6311	1244	1247	2597	1992	5700	5446	6432	closed
CNP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	56	103	78	30

In the Sussundenga District, where CNP is located, approximately 13 500 households and over 40% of the cultivated area was affected by Idai (CISP, 2019). In Dombe, which covers part of the CNP BZ and was one of the most affected areas, local authorities reported several destroyed bridges and drifts, collapse of roads in some places, destruction of irrigation systems and other water infrastructure, damage to classrooms, and loss of forest resources. In addition to the government, the interviewed local authorities named 20 NGOs or international organisations that provided some form of emergency aid. Together they provided food and water, tents and other temporary dwellings, building materials, clothes, hygiene products, seeds and other agricultural inputs, household items, and school supplies (interviews, March 2021).

In Chimanimani, the damage caused by the cyclone to PA infrastructure was more serious than in GNP. Due to the mountainous terrain, flood waters burst river banks and swept away bridges, flooded houses and devastated wide areas of fields and forest. Key elements of the recently built transport infrastructure worth USD 1600 000, including roads, two bridges and one drift were damaged, along with some management and tourism infrastructure worth USD 29 000. In the joint venture lodge situated in the BZ solar panels worth USD 6 000 were damaged, but foregone accommodation revenue amounted only to USD 1 000. Over 300 beehives distributed by the honey project were destroyed, while flooding of crop areas severely reduced food production. Loss of forest resources also impacted negatively on immediate and long-term availability of timber, fuelwood and medicine for local communities (GoM, 2019).

In a rapid survey conducted in March 2021 in four traditional communities inside the BZ (Mpunga, Mukawaia, Goto-Goto, and Matsia), 52 individuals (54% female) from different households were interviewed. The average age of the interviewees was 42 years, ranging from 18 to 71 years. Agriculture was the main livelihood for most of the households, but approximately 20% had additional sources of income, such as small-scale commerce or temporary work. Only 15% had a permanent salaried job, which is typical for the study region. Maize is the main subsistence crop, and also an important source of cash income – along with sesame and bananas. Goats and chicken are relatively common, whereas only a few households own cattle.

Ten of the survey's 14 questions addressed the damage caused by TC Idai and subsequent emergency aid. All interviewees reported some damage, most often loss of crops and soil fertility (75% of respondents), damage to dwellings (67%), fruit trees (58%), and beehives (52%), or loss of small stock (goats and chicken, 33%). Similar – albeit somewhat higher – figures were recorded by another survey of 100 households who received emergency kits in the neighbouring community of Mucamba in 2019 (CISP, 2019). With regard to public infrastructure, 63% of our interviewees reported damage to roads and bridges, or schools (54%), whereas only five reported damage to irrigation systems or other water-related infrastructure. Almost 80% noted damage to cemeteries (fallen trees and flooding), but only seven mentioned damage to sacred forests or specific trees. Most respondents also mentioned damage to fish stocks in the rivers and loss of important tree resources (timber, wild fruits and sources of medicine). The most significant long-term impacts were expected from loss of crops and soil fertility (42%), damage to dwellings (31%), loss of domestic animals (19%), and destruction of fruit trees (13%).

Almost all interviewees said they had received emergency aid from the government, although six respondents named the actual source as the WFP. The aid consisted of basic groceries, and in a few cases also maize seeds. In addition to the government, emergency aid was also received

from institutions linked to the PA, either CNP management (21% of respondents), MICAIA (50%), or the World Bank project (21%). The aid consisted mainly of seeds (85%) and agricultural implements (67%), but a few respondents had also received beehives, school supplies, food, or hygiene products.

In terms of nature conservation, the main threat caused by the cyclone arises from deforestation to open up new agricultural fields mainly in the BZ, but in some cases inside the PA. Although 42% of the respondents said they continue cultivating the same fields, 27% planned to open new fields to compensate for the losses. Only 23% intended to resort to alternative livelihoods, such as commerce or temporary work outside. The strategies to cope with future risk of flooding were also conflicting. Whereas representatives of local government administration, following the objective to consolidate settlements, referred to plans to resettle those from the worst flooded areas (interviews, March 2021), some interviewees insisted on replanting in the fertile fields along the rivers, whereas others planned to intensify cultivation on the less flood-prone areas higher up on their current lands. Only one respondent intended to move to a safer area. Previous experience from flood resettlement projects has been controversial (see e.g. Arnall, 2014), and in the interviews we did prior to the disaster most respondents expressed strong reluctance to move from their current homesteads (interviews, May 2018). MICAIA, on the other hand, prepared a small project for re-planting forests destroyed by TC Idai, but managed to get only USD 660 in donations (MICAIA Foundation, no date).

Discussion and conclusions

The financial resources available to a PA are the key factor in its ability to overcome the impact of major natural disasters, such as cyclones or epidemics. Without a large and long-term secured source, even a PA with access to abundant upmarket tourism revenue is vulnerable to such disasters. GNP is a prime example of such a fortunate situation: with a strong resource base it was able to rapidly fix the damages caused by TC Idai, and has been able to withstand the disturbance caused by regional insecurity and even alleviate the recent pandemic by providing health equipment and training (Rego, 2020). CNP is, on the other hand, in a much more vulnerable position. It continues to be dependent on fixed-term external project funding for the conservation and development activities, and due to its natural conditions and geographical location it has not been able to attract large numbers of tourists. Whereas its long-term sources of income, the eco-lodge and the honey cooperative, are based on active community participation, they continue to struggle with financial sustainability (Virtanen, 2020). Tourism is a challenging entry-level business for rural communities with little previous experience (Kiss, 2004), and both activities are particularly vulnerable to natural disasters.

As noted above, aside from material consequences, disaster relief can also change existing power relations (Matos & Ndapassoa, 2020). Due to its strong resource base and international connections, GNP was able to take a leading role in provision of emergency aid and the subsequent reconstruction process. This is likely to have improved its stature among the local population, who already benefit from various development projects. While the Chimanimani area benefited from relief provided by the government and numerous NGOs, inside the BZ it was MICAIA that gained most credits – albeit on a more limited scale than the Gorongosa Project. The low level of sustainability of the activities that support conservation in CNP compels the population to depend on consumptive use of forest-based resources. In the post-

disaster context, many households have pursued recovery by felling timber for rebuilding and opening new fields in the forest, whereas seeking non-consumptive sources of income has been less common.

Investment for post-disaster reconstruction by the government (funded largely by international donors) has increased significantly in both areas. This has helped to restore transport connections to PAs, as well as created some job and business opportunities for local households. Some of the post-disaster rehabilitation initiatives in Chimanimani, such as MICAIA's reforestation project and the resettlement proposal aired by district authorities could facilitate ecological restoration directly or indirectly. Especially the latter is likely to be contested and can lead to long-lasting land conflicts in the resettlement sites (Arnall, 2014). As the local population often does not differentiate between different government authorities, unpopular initiatives, such as possible forced relocation, are likely to undermine the gains achieved by CNP administration through its participative approach.

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[i] The lodge is actually situated in one of three Forest Reserves inside the BZ. However, this category does not exist in the new conservation legislation (Ghiurghi et al., 2010), and in fact all three reserves have suffered extensive transformation to agricultural land (Müller et al., 2005).

[ii] Delimitation of community lands, a category of communal tenure established in the 1997 Land Law, is a process defined in a Technical Annex of the 1998 Land Law Regulations.