Selous Game Reserve

2020 Conservation Outlook Assessment

SITE INFORMATION

Country: Tanzania (United Republic of)
Inscribed in: 1982
Criteria: (ix) (x)

Large numbers of elephants, black rhinoceroses, cheetahs, giraffes, hippopotamuses and crocodiles live in this immense sanctuary, which measures 50,000 km2and is relatively undisturbed by human impact. The park has a variety of vegetation zones, ranging from dense thickets to open wooded grasslands. © UNESCO

SUMMARY

2020 Conservation Outlook

Finalised on 01 Dec 2020

CRITICAL

As in the previous assessment, it is important to emphasize that the Selous Game Reserve continues to be a globally important protected area with an enormous surface area of largely intact habitat free of major infrastructure. There are still reasons for cautious optimism, as this privileged situation continues to offer the possibility of the recovery of the once globally significant elephant population after two major poaching crises over the last decades. The situation is less promising for black rhino, the population of which has collapsed or disappeared altogether. Unfortunately and despite laudable efforts to respond to poaching, the current situation remains critical. The fact that the results of a 2018 survey - aiming at shedding light on the effectiveness of anti-poaching efforts among other objectives - have so far not been made public can only be interpreted as an indication of sobering results. Some 40,000 ha were excised from the property to permit the Mkuju River uranium mine in an “exceptional and unique manner”. Fundamental questions remain in terms of project status, extraction method, unclear or missing baselines and impact monitoring. Furthermore, the legal option to explore and extract oil, gas and uranium since 2009, the lack of clarity in terms of industry access to other minerals within the property in contradiction with the Tanzania Wildlife Act cast shadows on the future of the Selous Game Reserve. While controversial, trophy hunting has been playing a key role as a conservation funding mechanism for many decades. Its reported decline therefore raises additional concerns. It remains to be seen what the consequences of the apparent recent creation of a vast national park within the property will be. In principle, trophy hunting, non-consumptive tourism, the legal framework for exploring and extracting mineral resources and institutional responsibility all would appear to be affected. Pending clarification of the situation, it would seem helpful to update the General Management Plan, which expired in 2015. This would come with the opportunity to discuss, define and document the new set-up of the property comprised of two distinct management categories. While the ongoing State Party commitment to the Kidunda dam deserves full analysis of its impacts to inform decision-making as well, the overriding and acute concern today is the ongoing construction of the project the State

Party is now referring to as the Julius Nyerere Hydropower Project. The project is located in the heart of the property on its main watercourse, the Rufiji River. If completed, the massive infrastructure project would change the Rufiji River and thus the property forever well beyond the physical footprint of the dam and its reservoir. It cannot be overemphasized that the World Heritage Committee is on record for referring to the project as “incompatible with World Heritage status” and for adding the project to the poaching crisis as another justification for inscription on the List of World Heritage in Danger. Despite the World Heritage Committee’s repeated urging to ensure adequate assessments, the assessments actually conducted were found to fall “considerably short of acceptable standards”. The ongoing construction of a major dam and associated infrastructure within a property already on the List of World Heritage in Danger for multiple reasons, including the project under consideration, is alarming and implies that the property may not have a future as a World Heritage property as nominated and inscribed. The continued failure to invite a Reactive Monitoring mission repeatedly requested by the World Heritage Committee prevents exchange at the working level, while also depriving the Committee of a key basis for informed decision-making.

FULL ASSESSMENT

Description of values

Values

World Heritage values

▶ Globally significant populations of large mammals **Criterion:(x)**

The Selous ecosystem, at the time of World Heritage inscription, supported some of the most impressive remaining populations of Africa's iconic mega-fauna, including more than 100,000 elephants, 200,000 buffalo, 2,000 black rhino, 18,000 hippopotamus and a healthy population of wild dog (UNEP-WCMC, 2011; World Heritage Committee, 2010). Approximately 750,000 specimen of 57 large mammals species were recorded in 1986 (World Heritage Committee, 2010). It is important to understand that these huge numbers of large mammals, including many herbivores, have been shaping and continue to shape the landscape with which they have co-evolved at a scale and degree of naturalness that has disappeared across most of the planet.

▶ Rare, endemic and endangered species **Criterion:(x)**

There are globally significant populations of numerous rare and endangered mammals and birds. In all likelihood the same holds true for many other taxa, for which information is still scarce. Charismatic species include the African elephant (Loxodonta africana, VU), lion (Panthera leo, VU), hippopotamus (Hippopotamus amphibius, VU), African wild dog (Lycaon pictus, EN), Sanje crested mangabey (Cercocebus sanjei, EN), Udzungwa red colobus monkey (Piliocolobus gordonorum, VU), and probably a small number of black rhino (Diceros bicornis, CR). The birds include the vulnerable wattled crane (Bugeranus carunculatus, VU) and rufous-winged sunbird (Cinnyris rufipennis, VU), as well as the endemic Udzungwa forest-partridge (Xenoperdix udzungwensis, EN).

▶ Diversity of vegetation types **Criteria:(ix)(x)**

Far from being homogeneous, the property boasts a stunning diversity of vegetation types reflecting variations in altitude (80-1,300 m.a.s.l.), soils, rainfall, seasonal flooding patterns and other abiotic factors. The vegetation is predominantly comprised of deciduous miombo woodland, punctuated with seasonally flooded sand rivers, interspersed with rocky Acacia-clad hills, forests and swamps. The northern SGR is more open wooded grassland with floodplain swamps and tracts of borassus palms (Borassus aethiopium) and doum palms (Hyphaene thebaica) (World Heritage Committee, 2010).

▶ Large and mostly undisturbed wilderness **Criteria:(ix)(x)**

Exceeding the size of Switzerland, the Selous Game Reserve (SGR) is one of the largest mostly undisturbed wilderness areas in Africa at more than 5 million hectares (World Heritage Committee, 2010). At the time of inscription SGR was free of human settlement, roads and other infrastructure, and legally no consumptive use other than trophy hunting. SGR is embedded in a much larger landscape sometimes referred to as the Wider Selous Ecosystem. Along with adjoining protected areas and community Wildlife Management Areas (WMAs) in southern Tanzania the Wider Selous Ecosystem forms a massive conservation landscape (UNESCO and IUCN, 2013). The Wider Selous Ecosystem permits on-going ecological and biological processes at a unusually large scale. The likewise vast Niassa Game Reserve (4.2 million hectares) in northern Mozambique is ecologically linked and there are on-going management and conservation efforts the across the international border, including specific projects and commitments dedicated to the Selous-Niassa Corridor as detailed in the three most recent reactive monitoring mission reports. Besides the intrinsic values, SGR can serve as a rare scientific reference area to understand large-scale landscapes with a high degree of naturalness.

▶ **Sand rivers and associated floodplains** **Criterion:(ix)**

The network of seasonally dry rivers that exist as dry sandy river beds for most of the year and become raging torrents during the seasonal rains, often flooding their banks, are a special feature of the Selous landscape (World Heritage Committee, 2010). They represent an outstanding example of this ever-changing ecological process, most prominently represented by the mighty and extremely dynamic Rufiji River.

Other important biodiversity values

▶ **Freshwater biodiversity**

The rivers, creeks, wetlands and lakes harbor a rich freshwater biodiversity, which has not attracted adequate attention or scientific work. Undoubtedly, many of the secrets of the freshwater systems remain to be discovered.

Assessment information

Threats

Current Threats **Very High Threat**

The threats to the property have been very severe for many years, resulting in the property's inscription on the List of World Heritage in Danger in 2014. A stunningly high proportion of elephants was poached for ivory as part of large-scale scheme which can only be described as international organized crime. The fate of black rhino is even bleaker with no conclusive evidence available confirming the ongoing presence of the critically endangered species in the property. The fact that the habitat remains largely intact continues to give reason for cautious optimism, fueled by the successful recovery after an earlier poaching crisis. However, the massive, coherent and permanent investment and management effort required to stem the tide remains to be seen. The Mkuju River uranium mining project was excised from the property and thereby formally accepted by the World Heritage Committee (2012) as an “exceptional and unique case”. Nevertheless, fundamental questions in terms of project status, extraction method, unclear or missing baselines and impact monitoring remain. Most importantly, the ongoing construction of what the State Party now refers to as the Julius Nyerere Hydropower Project is raising new and largely unanswered question due to its scale, location and inadequate assessment. The continued failure to invite a Reactive Monitoring mission repeatedly requested by the World Heritage Committee prevents exchange at the working level, while also depriving the Committee of a key basis for informed decision-making. The World Heritage Committee is on record for repeatedly deeming the project to be incompatible with World Heritage status, implying that the property may not have a future as a World Heritage property as nominated and inscribed.

▶ **Roads/ Railroads** **Low Threat**
(Railway corridor) Inside site, extent of threat not known

The TAZARA railway line, also known as the Uhuru or Tanzam line, has been linking Dar es Salaam with Lusaka in landlocked Zambia since the 1970s. On its route, the line passes through the northern part of SGR in the Morogoro Region. The exact extent of wildlife death as a result of the line is unknown but anecdotal information suggests it does occur (IUCN Consultation, 2020).

▶ **Tourism/ Recreation Areas** **Data Deficient**
(Unclear future of nature based tourism development) Inside site, extent of threat not known
Outside site

Hunting tourism is considered separately below, whereas this section has a focus on non-consumptive nature-based tourism, which occurs in a relatively small part of the northern sector of the property only. A small number of camps and lodges operate in the vast reserve (UNESCO and IUCN, 2013 and 2008).

Thereby, the impacts of tourism other than trophy hunting are negligible compared to most African protected areas offering comparable wildlife viewing opportunities. However, almost all of the tourism in the property is concentrated in a relatively small area with the number of lodges increasing and boat traffic on the Rufiji River can be high (IUCN Consultation, 2020). It can be argued that the potential benefits associated with non-consumptive tourism, such as contributions to conservation financing, generation of local jobs and income, as well as visitor education remain underutilized. However, one challenge to promoting tourism would be direct competition with the renowned wildlife viewing destinations elsewhere in Tanzania and East Africa (IUCN, 2017). It also needs to be considered that the zone allocated to non-consumptive tourism is being directly affected by major dam construction on the Rufiji River. According to publicly available media and private sector reports, as well as information provided by the State Party (State Party of the United Republic of Tanzania, 2020 and 2019) site clearance and dam construction is well underway. The implications for tourism are unknown but construction of infrastructure (roads, powerlines) and activities are already impacting on tourism (IUCN Consultation, 2020). It also deserves to be mentioned that a national park appears to have been created within SGR. While the State Party has not submitted conclusive information in this regard, numerous reports in the Tanzanian media suggesting the creation of the national park are in the public domain. The public website of Tanzania National Parks notes the creation of Nyerere National Park with a surface area exceeding 3 m ha in 2019 as "part of what is known as Selous Game Reserve" (TANAPA, 2020). The available information implies that the promotion of tourism is an explicit objective sought with the creation of the national park, and the reservoir from the dam is expected to be opened up for new tourism opportunities. Given the distinct institutional responsibility and distinct legal stipulations in terms of tourism development in game reserves (TAWA) and national parks (TANAPA), respectively, it is unclear what the exact implications of the apparent change of legal status of substantial parts of SGR will be and how coordination will be ensured. The impacts of Covid-19 on international tourism will undoubtedly be a factor in the equation for the foreseeable future, but could not be judged at the time of writing. The threat is probably low as tourism numbers are likely to remain modest due to ongoing construction of a major infrastructure project, major travel restrictions and anticipated global economic crisis. However, conclusive and confirmed data is missing.

▶ Invasive Non-Native/ Alien Species

Data Deficient

(Invasive alien species)

Inside site, extent of threat not known
Outside site

The spread of invasive alien plants is reported to be accelerating, including Giant Sensitive Plant (Mimosa pigra), the invasive weed Lantana camara and the floating aquatic plant, Pistia stratiotes (UNESCO, 2011). Red Water Fern (Azolla filiculoides) has ben reported in the Rufiji River and in several lakes (IUCN, 2017, UNESCO and IUCN, 2013). The most recent reactive monitoring report mentions efforts to reduce the risk of invasions posed by road access and vehicles in the Mkuju uranium mine and efforts to train rangers in the detection of invasive alien plants (IUCN, 2017). The ongoing construction of a major hydropower project and corresponding access infrastructure undoubtedly increases the risk of introducing additional non-native species, including potentially invasive ones. The same holds true for the proposed Kidunda dam project, should the project move from proposal stage to construction. While the scale of threat is not known, investment in better understanding the risks and options to enhance preparedness is strongly encouraged.

▶ Mining/ Quarrying

High Threat

(Uranium mining project in an area excised from the World Heritage property)

Inside site, extent of threat not known
Outside site

In 2012 the World Heritage Committee, in an "exceptional and unique manner", approved the excision of ca. 40,000 ha from the property to facilitate uranium mining (World Heritage Committee, 2012). In its decision, the Committee regretted "that the State Party did not submit the application as a significant but as a minor boundary modification (...) as stated in Decision 35 COM 8B.46" (see World Heritage Committee, 2011). At the national level, the boundaries of the game reserve remained unchanged. While preparation work and test drilling have been conducted, it appears that low uranium prices have since been rendering active mining uneconomical. While the latest State Party reporting does not make any reference to the status of uranium mining, the previous report noted that mining was "deferred until further notice" (State Party of the United Republic of Tanzania, 2019, see also State Party of the United

Republic of Tanzania, 2018). The reverse conclusion is that mining may be activated as a function of (increasing) uranium prices. The main concerns include the exact status of operations, limited in-country institutional and technical capacity considering that there is no previous experience with uranium mining in Tanzania, possibly inadequate baseline studies likely to compromise future monitoring, lack of clarity in terms of extraction methods to be applied and, consequently, a lack of clarity in terms of applicable impact assessments. According to the latest reactive monitoring mission report, operator Mantra-Tanzania Limited tested the feasibility and suitability of so-called in-situ leaching, which fundamentally differs from the originally envisaged open-pit approach (IUCN, 2017; see also UNESCO and IUCN, 2013). In case so-called in-situ leaching will be seriously considered, the State Party has committed to a "full new environmental and social impact assessment" (State Party of the United Republic of Tanzania, 2019). In light of “several uncertainties” (IUCN, 2017), the project will require the permanent attention of the authorities, including but not limited to the game reserve. The change of status of the mining area to a national park will have implications as mining is not permitted in national parks.

▶ **Tourism/ Recreation Areas**

Data Deficient

(Commercial sport / trophy hunting)

Inside site, extent of threat not known

For many decades, the majority of the SGR south of the Rufiji River has been managed for commercial sport hunting, with 44 of a total of 47 management blocks allocated as hunting concessions (Republic of Tanzania, 2005). While commercial trophy hunting is controversial, it is also a substantial contributor to financing the property’s management. The legally established retention scheme stipulates re-investment of 50 percent of the revenues from tourism and hunting in game reserves in conservation and management (United Republic of Tanzania, 2009). IUCN (2017) reported that more than 70 percent of the revenue of the Tanzania Wildlife Authority (TAWA) is derived from trophy hunting in game reserves and game controlled areas, while noting that corresponding revenues are used exclusively for operational expenses. Further benefits of trophy hunting in the property have been suggested, including but not limited to the development of management infrastructure, patrolling of hunting blocks, provision of information on wildlife and human activities (IUCN, 2017, UNESCO and IUCN, 2008). The three most recent reactive monitoring missions coincide in the conclusion that trophy hunting can have a legitimate role provided full transparency, re-investment of revenues in conservation, compliance with sustainable use principles and scientifically sound and independently set quotas and age limits. The authors express some doubts about the compliance with such principles, fueled for example by a temporary suspension of the retention scheme (IUCN, 2017; UNESCO and IUCN, 2013 and 2008). UNESCO (2018) noted "recent reports of legal hunting concessions being surrendered" raising critical questions in terms of sustainable conservation funding. IUCN (2017) referred to the future and current retention as “unclear” while also noting the risks related to the high degree of reliance on trophy hunting revenues, when the sector is coming under increasing societal scrutiny. Trophy hunting in Tanzania has declined in general in recent years, attributed to external factors (e.g. US ban of lion and elephant imports) and internal governance issues. Trophy hunting is not permitted in national parks in Tanzania so the legal consequences of the creation of a national parks requires clarification but even prior to the formation of the Nyerere National Park in 2019, at least 60% of the hunting areas in the former SGR had reportedly been returned to the government as uneconomic.

▶ **Hunting and trapping**

Very High Threat

(High levels of commercial poaching)

Inside site, throughout(>50%)
Outside site

Unlike in many parts of the world where habitat conversion and degradation drive species declines, the vast property continues to boast intact habitat for the complete array of large populations of mammals. However, commercial poaching for ivory and rhino horn has been strongly affecting target species in several waves (TEPS, 2013; UNEP et al., 2013). The numbers of the vulnerable African elephant and the critically endangered black rhino dramatically dropped in the 1980s (World Heritage Committee, 2010, Borner et al., 1986). The subsequent recovery of elephant numbers in response to massive management efforts demonstrated the resilience of a vast and still largely intact ecosystem (Baldus et al., 2000). However, this encouraging experience has since been overshadowed by a major poaching crisis which initially triggered the inscription of the property on the List of World Heritage in Danger (World Heritage Committee, 2014). Thouless et al. (2016) note that Tanzania accounted for the "major

share" of a surge in elephant poaching across Africa since 2006. The most recent reactive monitoring mission acknowledged “considerable progress” in terms of responding to the crisis, singling out the establishment of the Tanzania Wildlife Authority (TAWA), active and planned international cooperation, bilateral dialogue with Mozambique on the Selous-Niassa corridor and Wildlife Management Areas (WMAs) surrounding the property (IUCN, 2017). The report, however, also notes that “further progress is required until the property is at a point of recovery that it could be removed from the List of World Heritage in Danger”. While the 2018 aerial wildlife census results appear to be available to selected stakeholders, the State Party has not submitted it officially to UNESCO, promising to submit them "as soon as they are available" (State Party of the United Republic of Tanzania, 2020). Informed sources point to a marginal increase in elephant numbers that are less than should be expected, increases in zebra, hartebeest and wildebeest, but declines in buffalo numbers (IUCN Consultation, 2020).

▶ Renewable Energy

Very High Threat

(Construction of a major hydropower project inside the property)

Inside site, extent of threat not known
Outside site

The Julius Nyerere Hydropower project (previously called the Stiegler's Gorge project and subsequently the Rufiji River Hydropower project) has been discussed for many decades. For many years, it has attracted major attention by the World Heritage Committee. Besides, complex downstream impacts in Tanzania’s largest watershed all the way to the important delta raise profound, largely unanswered questions beyond the World Heritage arena (WWF, 2017; Bernacsek, 1980). Due to the project’s enormous scale, location in the heart of the property and the absence of adequate assessment, the World Heritage Committee has consistently been expressing its utmost concern. Decision 41 COM 7A.17 (World Heritage Committee, 2017), for example, noted the project’s “high likelihood of serious and irreversible damage to the Outstanding Universal Value (OUV)” and requested the consideration of alternative options. In the following year, Decision 42 COM 7A.56 (World Heritage Committee, 2018), the Committee recalled its position that “the construction of dams with large reservoirs within the boundaries of World Heritage properties is incompatible with their World Heritage status” and added the project to the justification for the continued inclusion of the property on the List of World Heritage in Danger. The Committee further urged the State Party refrain from proceeding with any activities prior to the completion of a Strategic Environmental Assessment (SEA), while also requesting the State Party to invite a Reactive Monitoring mission to the property to review the status of the project among other tasks. In its latest decision on the property (Decision 43 COM 7A.16), the World Heritage Committee (2019) reiterated its “utmost concern”, recalling the incompatibility of the project with World Heritage status. The Committee also took note of an independent expert review of the Environmental Impact Assessment (EIA) for the project, which concluded that the EIA fell considerably short of acceptable standards (see Anonymous, 2019a). Noting that logging had started to clear the construction site, the State Party was strongly urged to “immediately halt all activities” due to the likelihood of to “irreversible damage to its OUV”, thereby fulfilling the “conditions for deletion of the property from the World Heritage List” (World Heritage Committee, 2019. The Committee further expressed “utmost concern” that the State Party has started the works on the dam project prior to the completion of an SEA. While the latter was subsequently submitted by the State Party, an independent review (Anonymous, 2019b) of the SEA concluded that the quality of the SEA was likewise inadequate for a project of such scale and complexity. Once more, the Committee strongly urged the State Party to invite a Reactive Monitoring mission. The State Party of the United Republic of Tanzania (2020) recently confirmed its intention to continue construction of what it now refers to as the Julius Nyerere Hydropower Project, while requesting the postponement of the Reactive Monitoring mission “until when all necessary logistics are in place”. The State Party argues that the footprint of the project was very small in relation to the vast size of the property. Such line of reasoning fails to acknowledge that the impacts of the far-reaching modifications of a major river cannot be measured by the surface area of the dam and reservoir. In summary, in a property that has been on the List of World Heritage in Danger for years, construction of a project deemed incompatible with World Heritage status by the Committee is ongoing without adequate assessment of its impacts, while a repeatedly requested mission to the site is not being invited. While the property continues to be a vast and important protected area, it is unclear whether it can have a future as a World Heritage property as nominated and in its current configuration.

Potential Threats

Very High Threat

The potential threat raising most concern in the previous assessment, major dam construction on the Rufiji River, has since become an acute threat and is therefore described above. Following revision of the Wildlife Act in 2009, there is a legal option to explore and extract oil, gas and minerals, which raises important concerns, as epitomized by the existing Mkuju River uranium mining project. However, with the splitting of the property into two, including a national park, it remains to be seen how extractive use issues are dealt with. Moreover, despite the restriction to the above exceptions, publicly available mining cadastres suggest the ongoing existence of an option to grant exploration licenses for a wide range of minerals. While not located within the property, the Kito-1 gas and oil project continues to require clarification of possible impacts on the property. In principle, the apparent creation of a large national park within SGR might change this legal framework across vast parts of the property, but this remains to be clarified by the State Party. Similarly, the proposed Kidunda dam remains to be adequately analysed.

▶ Oil/ Gas exploration/development

High Threat

(Oil and mineral exploration)

Inside site, extent of threat not known
Outside site

Transects were cut through parts of the property, including after World Heritage inscription, as part of a Shell oil exploration programme in the first half of the 1980s. The exploration provided access to three quarters of the reserve, subsequently used by poachers, mining prospectors and cultivators (UNEP-WCMC, 2011). Further examples of licensing incompatible with World Heritage status occurred in 2005 and 2006 when Dominion Oil & Gas and Heritage Oil were awarded concession blocks covering most of the property (UNESCO and IUCN, 2008), although they had not yet received permission from the wildlife authorities at the time. The Kito-1 oil and gas project has resulted in concerns over the last years. The World Heritage Committee (2017) noted the project with concern due to possible impacts on OUV, urging the State Party to not permit drilling prior to comprehensive analysis. The Committee has since repeatedly requested the State Party to submit relevant information (World Heritage Committee, 2019, 2018). In its latest reporting, the State Party of the United Republic of Tanzania (2020) notes that “consultations for conducting studies” were underway. To this day, there appears to be a lack of clarity in terms of mineral exploration and exploitation in the property and a major overlap between the game reserve and exploration and extraction licenses becomes obvious from publicly accessible cadasters (IUCN, 2017; UNESCO and IUCN, 2013). Even though Tanzania’s Wildlife Conservation Act (WCA) generally prohibits prospecting and mining in game reserves (United Republic of Tanzania, 2009), an amendment includes an important modification explicitly permitting of prospecting for and mining of oil, gas or uranium in game reserves under defined conditions. This raises important questions as to what those conditions are and why prospecting licenses of resources other than oil, gas and uranium are still under discussion at all. The apparent creation of a national park within the SGR is an additional factor in the equation, as it would appear to imply a major change in the legal framework in a substantial part of the property, including as regards the exploration and extraction of natural resources. At the time of writing, the State Party had not notified the World Heritage Centre of the creation of the national park.

▶ Dams/ Water Management or Use

Very High Threat

(Proposed Kidunda dam project)

Inside site, extent of threat not known
Outside site

According to the 2020 state of conservation report from the State Party of Tanzania, the proposed Kidunda Dam will flood 400-600 ha of the northern part of the property (State Party of the United Republic of Tanzania, 2020). This is an increase since the 2008 ESIA which reported that 200ha of the property will be inundate, and equivalent to the 2014 and 2017 versions of the ESIAs, which reported 630ha. The dam proposes to provide water for Dar es Salaam, however, its location in relatively flat plain can be assumed to not be well suited for a hydropower dam. Concerns about the project have been documented by IUCN (2017) and UNESCO and IUCN (2017 and 2013). Rustagi (2005) documented impressive ecological and socio-economic values in the area proposed for dam construction and flooding. Stakeholder consultations have also pointed to the project area being an important grassland area for ungulates, which move from northern Selous in the dry season (IUCN Consultation, 2020). In response to repeated requests by the World Heritage Committee (2019), the State Party has since

submitted a more recent environmental and social impact assessment and a hydrological model. In its latest state of conservation report, the State Party notes its readiness to further discuss (State Party of the United Republic of Tanzania, 2020).

Overall assessment of threats

Very High Threat

The Selous Game Reserve has been on the List of World Heritage in Danger since 2014. This leaves no room for interpretation in terms of the severity and acuteness of multiple challenges. Initially, the poaching crisis was the main trigger for the inscription on the List of World Heritage in Danger (World Heritage Committee, 2014). Despite laudable efforts and international support, a coherent and effective long term response is pending. While the Mkuju River uranium mining was formally accepted by the World Heritage Committee (2012) as an “exceptional and unique" case, the main question marks in terms of status, extraction method, baselines and impact monitoring remain unanswered. While no active mining is taking place, according to the State Party due to low uranium prices, the threat continues to exist. There is specific concern about the possible use of in-situ leaching, the impacts of which have not been assessed. Moreover, it is concerning that changes to conservation legislation in principle permit the exploration for and extraction of oil, gas and uranium elsewhere in the property. Despite the tight restriction to selected resources, publicly available cadastres suggest that the possibility of exploration for and extraction of other minerals is not off the table either. Whether the conversion of over 60% of the property to a national park may have changed the legal possibility of mineral exploration and extraction in large parts of the property remains unclear. If constructed, the large Kidunda dam project known, would affect the property in many direct and indirect ways. Both in terms of scale and location, however, what the State Party now refers to as the Julius Nyerere Hydropower Project has undoubtedly become the most significant overall concern for the integrity of the property. The Committee has since added the project as a justification for inscription on the List of World Heritage in Danger. Put simply, the scale and location of the project, combined with inadequate assessment and the failure to invite a repeatedly requested Reactive Monitoring mission raise fundamental questions in terms of the project status, its impacts and compatibility with World Heritage status. The World Heritage Committee is on record for repeatedly deeming the project to be incompatible with World Heritage status, implying that the property may not have a future as a World Heritage property as nominated and inscribed.

Protection and management

Assessing Protection and Management

▶ Management system

Serious Concern

Since becoming operational in mid 2016, the Tanzania Wildlife Authority (TAWA) has been responsible for the management of Tanzania’s game reserves, including the property (IUCN, 2017). A General Management Plan (GMP) was in place between 2005 and 2015 (Republic of Tanzania, 2005). As pointed out by the most recent reactive monitoring mission, the GMP is therefore outdated implying that an updated GMP based on the evaluation of the previous version is a matter of utmost priority (IUCN, 2017). In the meantime, the creation of the vast Nyerere National Park within the property has changed the set-up and added complexity. The creation of the national park would appear to imply management responsibility by Tanzania National Parks (TANAPA) in large parts of the property, which in turn would imply that both TAWA and TANAPA would have shared management responsibility in the property. It is unknown what the exact situation is and how the two institutions can best ensure coherent management in the absence of an updated GMP. The apparent parallel existence of a game reserve and a national park would also appear to have complex consequences in terms of the legal status of different parts of the property, e.g. in terms of tourism development, trophy hunting, mineral exploration and extraction and conservation financing.

▶ Effectiveness of management system — Serious Concern

In 2012, a management specific assessment concluded that few of the provisions of the then General Management Plan were not being implemented due to resource constraints (Niskanen, 2012). The assessment stated that the only 340 staff at the time were insufficient for the enormous area of exceeding 5 million, hectares; equipment and vehicles were poorly maintained; management tasks seemed to be carried out on an ad hoc basis, without any work plans (Niskanen, 2012). The situation became most apparent during the peak of the poaching crisis, which management was unable to adequately respond to (IUCN, 2017; UNESCO and IUCN, 2013). While resourcing was eventually increased, also benefiting from external support, management effectiveness continues to be limited. The creation of Neyerere National Park within the property raises additional questions as noted above.

▶ Boundaries — Some Concern

The boundaries follow natural features such as rivers and ridges for much of their length; other parts of the boundary have been demarcated since 1991 with concrete/stone cairns at one kilometer intervals and a 15 meter-wide cut-line, which is also used as a management road (Republic of Tanzania, 2005). While the vast size of the property has long been helping its protection, the excision of an area for uranium mining and construction of a major hydropower project within the boundaries show that the boundaries have been watered down over time. There are also reports of sections of the boundary that are contested (IUCN Consultation, 2020).

▶ Integration into regional and national planning systems — Some Concern

Compared to many other protected areas, the property is privileged by its sheer scale, which makes it less vulnerable to edge effects for example, than smaller protected areas. There are promising efforts to link the protected area with its surroundings by establishing Wildlife Management Areas (WMAs; some of them dating back to the early 1990s). The most recent reactive monitoring mission notes "significant challenges including inadequate financial support, poaching of wildlife, insufficient equipment and weak governance" (IUCN, 2017). The same source makes reference to a “need to strengthen efforts to effectively protect the Selous-Niassa corridor”. Overall, there appears to be a clear need to strengthen the coordination of the planning and management of the property and adjacent lands, including the promising yet poorly functioning Wildlife Management Areas (WMAs).

▶ Relationships with local people — Serious Concern

Relationships between the management authority and local people are reported to be "characterised by conflicts over access to resources, poaching and human-wildlife conflict incidents" (Niskanen, 2012). UNESCO and IUCN (2013) argued that the property illustrates the conceptual dilemma of exclusive conservation approaches by excluding resource use by local communities, who bear the costs of human - wildlife conflicts and only marginally benefit from tourism revenues. An earlier Selous Conservation Programme (SCP) supported the establishment of Wildlife Management Areas (WMAs) around the property, awarding sustainable hunting quotas and facilitating various rural development projects. There is a need for TANAPA and TAWA to improve benefit sharing mechanisms with adjacent communities and to support and encourage community based conservation initiatives (e.g. WMAs)

▶ Legal framework — Serious Concern

Since 2009 the Wildlife Act of Tanzania (Republic of Tanzania, 2009) explicitly permits prospecting and mining of oil, gas or uranium in all game reserves, including the property. This permitted the controversial Mkuju River mining project, while raising much broader questions. Unlike at the time of inscription, the legal protection status since 2002 has been incompatible with the clear World Heritage Committee position on extractive industries and World Heritage. The creation of the Nyerere National Park in 2019 within the property implies a changed legal status of the corresponding surface area. The national park status would imply changes to the area's management objectives and permitted activities, including trophy hunting and extractive industries. However, no conclusive information has been brought forward by the State Party in this regard.

▶ Law enforcement

Serious Concern

The ongoing poaching crisis which had resulted in the inscription of the property in the List of World Heritage in Danger in 2014 boils down to a law enforcement issue. In light of the scale and complexity of the organized crime structures involved in the illegal ivory and rhino horn trade, it is clear that the management response must go far beyond protected area management and in fact include trading routes and the demand side. Despite encouraging and partially effective efforts to step up enforcement in response to the poaching crisis, law enforcement remains insufficient.

▶ Implementation of Committee decisions and recommendations

Serious Concern

Overall, implementation of requests and recommendations expressed in Committee decisions has been slow and incomplete, as illustrated by the following past and current examples: (i) Over several years, the critically important revenue retention scheme was not re-instated, directly and severely affecting management (Niskanen, 2012); (ii) despite the Committee repeatedly urging the State Party to halt any prospecting or other mining developments within the property, the situation remains less than clear even when ignoring the Mkuju River uranium mine; (iii) repeated requests to clarify the status of planning of hydropower projects often remained unanswered; (iv) dam construction has since started despite the Committee referring to the project as "incompatible with World Heritage status"; and (v) a repeatedly requested Reactive Monitoring mission had not been invited. The decision approving the controversial excision of an area within the property to permit uranium mining (World Heritage Committee, 2012) came with several requests, such as the inclusion of “additional valuable wildlife forest area to compensate for the excised area” and to ensure “enhanced and effective protection of the Selous-Niassa corridor”. Follow-up remains to be seen 8 years later.

▶ Sustainable use

Serious Concern

The management of the game reserve is in principle based on sustainable use, albeit with a narrow and almost exclusive focus on commercial trophy hunting. The narrow focus comes with important challenges in terms of (i) relying on just principal source of income and (ii) very limited benefits for local communities which are excluded from direct use and at best only marginally benefit from the trophy hunting. The returning of trophy hunting concessions raises important questions in this regard, as does the conversion of >60% of the property to national park. This change of status would imply major legal consequences in terms of sustainable use for the corresponding parts of the property as trophy hunting is excluded from national parks.

▶ Sustainable finance

Serious Concern

Given the scale of the property financing is "grossly inadequate" (Niskanen, 2012), which became particularly obvious during the two major poaching crises when staff was unable to respond to the challenges in a meaningful way. Another concern is the strong reliance on a single source of income from trophy hunting. The risks associated with this such a narrow financing strategy became apparent during a temporary suspension of the retention scheme designed for the re-investment of commercial hunting revenues in conservation. In addition, hunting revenues have decreased considerably in recent years as areas have been returned to the government as they were deemed uneconomic to run as a business. In the previous assessment, it was stated that pressure on trophy hunting would make the importance of more diversified financing strategies obvious. It appears that this has since materialized as many concessions appear to have been returned to the Government.

▶ Staff capacity, training, and development

Data Deficient

Staff training and development seems to mostly rely on support at the level of projects. Baldus (2006) reports investment in capacity development during a major and concluded bilateral cooperation programme. Another major project launched in mid-2017 is likewise aiming at capacity development among other objectives. Other than that systematic staff development appears to be limited. it is unknown how this will change with the creation of Nyerere National Park.

▶ Education and interpretation programs

Data Deficient

Besides guiding offered by the limited number of camps and lodges operating in the tourism zone, no specific information appears to available in the World Heritage documentation. According to third party sources, TAWA is upgrading its outreach department to adddress this need but no official information was available at the time of writing (IUCN Consultation, 2020).

▶ Tourism and visitation management

Some Concern

Trophy hunting is a major activity as detailed in the above threats section. Only three of the 47 blocks of the property have been allocated to non-consumptive forms of tourism, some 5 percent of the total surface area. While it can be argued that this implies a heavily underutilized potential, it is also true that the Selous Game Reserve therefore does not suffer from the impacts of excessive tourism. The construction of a major hydropower project affects both the reputation and attractiveness of the property as a destination. This may limit the promotion of non-consumptive tourism despite recent creation of a national park due to this very objective.

▶ Monitoring

Serious Concern

Comprehensive aerial censuses of the entire property have repeatedly been conducted between 1976 and 2002 (United Republic of Tanzania, 2005), and more recently in 2013, 2014 and 2018. Overall, such efforts enabled management to quantify the scale of elephant poaching. Despite some methodological debates surrounding the compatibility of the various data sets and interpretation of census data, there is a reasonable foundation to understand the order of magnitude of population trends of elephants. Otherwise, systematic ecological monitoring suffers from general resourcing and capacity constraints (Niskanen, 2012). The Mkuju River uranium mining project poses new challenges in terms of monitoring, compromised by a lack of adequate baseline information. The inadequate assessments of the hydropower projects similarly imply a lack of basic baseline data. A detailed monitoring programme for the hydropower project needs to be devised but will be hampered by the paucity of the baseline data.

▶ Research

Serious Concern

Systematic long-term research is limited and no research programmes aimed at addressing management needs were reported by Niskanen (2012).

Overall assessment of protection and management

Serious Concern

Management is severely constrained by limited funding and staffing, but also legal changes which permit activities which are in direct contradiction to basic conservation objectives. The poaching crises showed a limited capacity to respond to increasing pressures. The limited and slow response to important World Heritage Committee requests and recommendations is another indication of the very limited overall effectiveness of protection and management.

▶ Assessment of the effectiveness of protection and management in addressing threats outside the site

Serious Concern

Due to its enormous size the property is less susceptible and vulnerable to external threats and edge effects. Despite this privileged position, management was not in a position to adequately respond to the most recent and ongoing poaching crisis even though a similar crisis happened earlier. In light of the growing, poor and resource-dependent population near a vast resource-rich reserve from which local communities are excluded, the limited interactions between management and neighboring communities amounts to a major external threat which could strongly compromise the management effectiveness. The Mkuju uranium mine, while still within the boundaries of the game reserve, is technically outside of he boundaries of the property following excision from it in 2012. The management of the property is not in a position to address the possible consequences of future mining, as there is not even clarity in terms of baseline data, let alone an effective

monitoring system.

▶ **Best practice examples**

Retrospectively, it is important to remember that the on-going poaching crisis is not unprecedented. An earlier crisis was responded to by a massive multi-year effort which demonstrated the possibility of effectively countering even most severe challenges.

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ **Globally significant populations of large mammals**

High Concern
Trend:Data Deficient

The dramatic decline of the globally renowned elephant population of the Selous Game Reserve following recovery from an earlier poaching crisis illustrates that the large mammal populations are vulnerable despite the vast areas of largely intact habitat. Black rhino may have disappeared from the property altogether. The fact that 2018 wildlife census data remains to be unpublished is likely to indicate unfavorable results. It also means that the current situation is difficult to assesss.

▶ **Rare, endemic and endangered species**

Critical
Trend:Deteriorating

The most dramatic example epitomizing that even a vast protected area is no guarantee for species conservation is the black rhino. With 2,135 recorded at the time of inscription, the population was estimated at just between 45 and 60 by 2010 (UNEP-WCMC, 2011). No conclusive information confirming the continued presence of the critically endangered species in the property is known.

▶ **Diversity of vegetation types**

High Concern
Trend:Deteriorating

In the absence of any major developments affecting the game reserve, the diversity of vegetation types remained high over many decades. However, unless the dramatic decrease of the elephant population can be halted and eventually be reversed, complex vegetation impacts are inevitable as elephants are prime examples of large herbivores shaping their natural environments. The construction of a major hydropower project will alter the entire Rufiji River system and, consequently, many vegetation types.

▶ **Large and mostly undisturbed wilderness**

High Concern
Trend:Data Deficient

Besides the railway line crossing the the excision of a part of the property to allow uranium mining and the still visible scars in the landscape from oil exploration in the 1980s most of the property remained in a wild state until recently. The ongoing construction of a major hydropower project and associated infrastructure is transforming an important, centrally located part of the property, depriving it of its remoteness and wilderness character. The limited information made available by the State Party and the failure to invite a Reactive Monitoring mission to the property make it difficult to assess the exact current situation.

▶ **Sand rivers and associated floodplains**

Critical
Trend:Deteriorating

The sand rivers and associated floodplains are affected by increasing pressure on the upper reaches of several tributaries of the Rufiji River, most notably from rice production and dam construction, such as on the Great Ruaha River (WREM, 2012). The more recent starting of major dam construction in the property, if completed, would have major consequences for the flow of the Rufiji River system and

therefore on its dynamics and morphology.

Summary of the Values

▶ **Assessment of the current state and trend of World Heritage values** — **Critical** / **Trend: Deteriorating**

Into the recent past, the vast wilderness area remained largely unchanged as such besides a quantitatively negligible excision in 2012. Nevertheless, important conservation values of the property are being eroded through extreme levels of poaching of keystone wildlife species, and mounting pressures for exploitation of water and mineral resources. The limited animal census data available suggest a significant decline in elephant populations and a possible loss of black rhino since World Heritage inscription. This constitutes a critical concern even though the ongoing availability of vast tracts of intact habitat gives reason for cautious optimism provided the political willingness and the provision of conditions enabling the effective management of the property. The ongoing construction of a major dam and associated infrastructure within the property without adequate assessment of the consequences is alarming and could even call the World Heritage status into question.

▶ **Assessment of the current state and trend of other important biodiversity values** — **Data Deficient** / **Trend: Data Deficient**

The impacts of ongoing dam construction on freshwater diversity have not been seriously assessed. It can be argued that some of the documented invasive species are likely to locally affect freshwater biodiversity and that the dam and reservoir are likely to considerably increase such risks. Likewise, the increasing modification of natural flows through upriver agricultural irrigation projects certainly has some effects on freshwater biodiversity. However, in the absence of data, no specific assessment can be offered.

Additional information

Benefits

Understanding Benefits

▶ **Fishing areas and conservation of fish stocks**

Direct consumptive use of wild biodiversity for human food consumption is essentially excluded by law and can only occur illegally within the property. Nevertheless, it can reasonably be argued that the natural river system and associated processed like flooding and sedimentation considerably contribute to sustaining important downriver fisheries all the way to the Rufiji delta, which in turn contributes to sustaining important coastal fisheries. These ecological relationships constitute an indirect use value and tangible benefit of the conservation of the free-flowing Rufiji (WWF, 2017; Hoag, 2013; Calas et al., 2013). Water provision and nutrient supply from river sediments are a major ecosystem service for agriculture and thus for income generation, employment and food security.

Factors negatively affecting provision of this benefit :
- Climate change : Impact level - Low, Trend - Continuing
- Pollution : Impact level - Low, Trend - Continuing
- Overexploitation : Impact level - Low, Trend - Continuing
- Invasive species : Impact level - Low, Trend - Continuing
- Habitat change : Impact level - Very High, Trend - Increasing

The main change since the previous assessment is the ongoing construction of a major hydropower project likely to affect the productivity of downstream fisheries, including in the Rufiji delta. In terms of habitats associated with the Rufiji River, the level of impact is expected to be very high.

▶ Access to drinking water,
Commercial wells

The vast Rufiji River basin is the artery of life of a considerable part of Tanzania. While no direct use is occurring within the property, the provision of water is one important ecosystem service and benefit.

Factors negatively affecting provision of this benefit :
- Invasive species : Impact level - Moderate, Trend - Increasing
- Habitat change : Impact level - Very High, Trend - Increasing

The ongoing construction of a major hydropower project can be expected to result in a major transformation of the natural processes underpinning the provision of water of high quality. Possible contamination from uranium or other mining would undoubtedly also affect these important ecosystem services and benefits. While climate change is expected to limit the availability of water, specific analysis is missing. Invasive aquatic plant species are on the rise and will most likely benefit from the creation of a vast reservoir extending across more than 100 kilometres upstream of the dam along the Rufiji River.

▶ Wilderness and iconic features

Selous Game Reserve is a renowned and legendary place with a longstanding formal conservation history. There is a dilemma though in terms of the equally longstanding separation of the protected area from local communities, which undoubtedly had more intensive relationships with what is today the property, including at the cultural and spiritual level.

The establishment of Wildlife Management Areas (WMA) adjacent to SGR is a promising approach to re-introduce and promote sustainable use under contemporary conditions.

▶ Outdoor recreation and tourism,
Natural beauty and scenery

The tourism potential of the property appears to be underutilized, non-consumptive tourism is localized and modest in scale. Nevertheless, outdoor recreation and tourism is being offered and could increase with adequate investment and marketing. The trophy hunting niche used to be successfully occupied by specialized operators, permitting privileged access to wild and remote areas (UNESCO and IUCN, 2013). More recently, concessions appear to have been rendered and there is a lack of clarity how the apparent creation of a vast national park within the property relates to the legal option to engage in trophy hunting.

Factors negatively affecting provision of this benefit :
- Habitat change : Impact level - High, Trend - Increasing

Unfortunately, some of the most attractive areas for non-consumptive tourism, which are zoned as such in the last available General Management Plan, overlap with the areas which would be directly affected by the large hydropower project on the Rufiji River, construction of which has started.

▶ Importance for research

As large-scale wilderness areas are disappearing all over the world, the significance of the remaining areas like SGR becomes ever more important as the last reference areas to study and understand ecological and biological processes and phenomena occurring with a high degree of naturalness (World Heritage Committee, 2010).

▶ **Carbon sequestration,**
Coastal protection,
Flood prevention,
Water provision (importance for water quantity and quality)

The vast Miombo woodlands of the property harbor important carbon stocks, which are under increasing pressure from agriculture, ranching and charcoal production outside of protected areas across much of its natural distribution. Confirmed by logging tenders in the public domain and satellite images, logging of Miombo woodlands has started due to the hydropower project. Tender documents suggest that the entire area envisaged to become the reservoir for the dam will be logged. The free-flowing Rufiji River enables the ongoing formation of an important delta, while also being of critical importance to downstream users across a large part of southern Tanzania (WWF, 2017; Hoag, 2013; Calas et al., 2010).

Factors negatively affecting provision of this benefit :
- Habitat change : Impact level - Very High, Trend - Increasing

▶ **Direct employment,**
Tourism-related income,
Provision of jobs

Considering the surface area the direct income and job opportunities in management or tourism, including trophy hunting, are modest but not negligible.

Summary of benefits

A major benefit of the property is that its very existence has been contributing to maintaining the globally important conservation values one of the largest, mostly undisturbed place throughout many decades of economic, social and political change. As such places become ever rarer, the relative importance of this benefit constantly increases. Due to its vast size, the property provides significant ecosystem services in terms of carbon, water and downstream benefits along the mighty Rufiji River all the way to the delta. The tangible benefits for adjacent communities remain limited, which is a dilemma requiring management responses. The started construction of a major hydropower project on the Rufiji River fundamentally changes the equation. If completed, the project will fundamentally modify the main river crossing the property and the many services, ecosystems, habitats and species depending on it.

Projects

Compilation of active conservation projects

№	Organization	Project duration	Brief description of Active Projects
1	Frankfurt Zoological Society		Various projects since the 1980s in direct support of the Selous Game Reserve, currently under the name Selous Conservation Project.

№	Organization	Project duration	Brief description of Active Projects
2	KfW in cooperation with MNRT, TAWA, non-governmental organizations WWF and FZS and other partners	From: 2017 To: 2022	The Selous Ecosystem Conservation and Development Program (SECAD) was launched in June of 2017. SECAD is funded by KfW on behalf of the German Government and implemented by the Tanzanian Ministry of Natural Resources and Tourism (MNRT) and the Tanzania Wildlife Management Authority (TAWA) in cooperation with non-governmental organizations World Wide Fund for Nature (WWF), Frankfurt Zoological Society (FZS) and other national and international partners. The official press release on the occasion of the launch of SECAD stated a five-year project horizon with a EUR 18 m budget dedicated to the management of the property and selected parts of the buffer zone around the reserve and the Selous-Niassa Corridor. The ongoing construction of the hydropower project on the Rufiji River has sparked controversy in the German Parliament as to the adequacy of bilateral cooperation dedicated to nature conservation at a time of governmental decision-making profoundly affecting the very protected area being supported.
3	World Bank		The development objective of Resilient Natural Resource Management for Tourism and Growth Project for Tanzania (REGROW) is to improve management of natural resources and tourism assets in priority areas of Southern Tanzania and to increase access to alternative livelihood activities for targeted communities. This project has four components. 1) Strengthen management and improve infrastructure in priority Protected Areas, 2) Strengthen alternative livelihoods for targeted communities in proximity to the priority Protected Areas. 3) Strengthen landscape management and infrastructure investments in and upstream of the Ruaha National Park. 4)Project management, institutional strengthening, quality assurance and control, and monitoring and evaluation, aims to finance supplemental support for project management, to ensure coordinated and timely execution of infrastructure and other project activities.

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