

Appendix 3. Supporting material providing more detailed and/or quantitative information from the results presented in the manuscript.

Table A1.3. Categories of top threats to the Serengeti ecosystem mentioned by the study participants and the number of respondents (out of 19) reporting each specific threat.

Threats	Frequency
Human population growth	12
Land-use conflicts and encroachment (e.g. overstocking of livestock, grazing inside protected areas)	10
Poaching (bushmeat and ivory)	10
Climate change and environmental stress	8
Development, infrastructures and tourism (e.g. roads, railways)	6
Poor management and governance (e.g. dependence on unstable funding; institutional complexity; instability in policies)	6
Poverty and lack of opportunities	3
Diseases (human/wildlife/livestock)	3
Habitat degradation and water scarcity (e.g. Mara river)	3
Invasive species	3
Human-wildlife conflict (e.g. crop-raiding and retaliatory killing)	2
Mining	1

Table A2.3. Example quotes illustrating the main types of issues affecting conservation implementation in the Serengeti, as described by the study participants.

Type of issue	Challenges described	Quotes from the interviews
Multiple goals and lack of integrated approaches	trade-offs between tourism, development and conservation	<p><i>“Tourists in the Serengeti come for wildlife... in their natural habitat. If we put up infrastructures, we’re obviously jeopardising the resources that we accrue from tourism”</i></p> <p><i>“if we don’t get money, we can’t put up anti-poaching activities. Tourism is the main source of revenue”</i></p> <p><i>“the spiritual and traditional ideas of having them [wildlife] as their heritage is much better than one based on making money from tourism because that can go up and down”</i></p>
	coordination between actors	<i>“The management of the system itself...should sit together...because we have just a common overall goal but each one taking a different route”</i>
	balance of objectives	<i>“we are concentrating so much inside the park... and we are forgetting about the surrounding communities”</i>
Adaptive responses to change under uncertainty	unexpected threats and outcomes	<i>“this road issue came out of the blue...we have to be prepared that things like this might happen”</i>
Poor governance	participation	<i>“local people should be central...not just being told what to do”</i>
	performance	<i>“levels of bureaucracy that are completely unnecessary”</i>
	transparency	<i>“there should be more transparency... revenues increasing but also being spent ... more invested back into conservation”</i>
	equity	<i>“the way people are benefiting</i>

	rule of law	<i>from conservation... is not really evenly distributed</i> <i>“livestock in protected areas... that is prohibited by law but the enforcers are getting blockages”</i>
Institutional barriers	lack of a common and long-term vision in the regulations and interventions	<i>“this ecosystem is too big and managed by different guidelines...one regulation might affect the others”</i>
	difficulty in data access	<i>“Accessing data not easy... all seems confidential to an organization”</i>
	difficulty in bringing together and reaching consensus with many stakeholders	<i>“by the time you gathered everyone together and agreed on something, the budget is gone”</i>
	mistrust between institutional actors	<i>“during a presentation, there’s sometimes doubt of the things they’re presenting”</i>
Individual characteristics	diverse personalities	<i>“conflicts between different types of personality...this can be disastrous if we fail to understand each other”</i>
	commitment	<i>“People usually come for 2-3 years, they get sick of it, they get disillusioned, they leave”</i>
	reluctance to learn and adapt	<i>“even if they don’t have the knowledge to do it, they prefer to do it alone instead of integrating with others that know”</i>
Perceived value and use of scientific information	researchers not sharing their findings widely	<i>“we failed in sharing information with other audiences and so impact has been minimal”</i>
	researchers not addressing questions of management interest	<i>“not many researchers go into management-oriented kind of research”</i>
	data quality not being adequate for management decisions	<i>“estimates with wide confidence limits... they are not a very good thing to set your hunting quotas”</i>
	information not being perceived as valuable or trustworthy	<i>“monitoring...it’s just an academic exercise”</i>
Lack of proper incentives	economic drivers in quota-setting	<i>“they were just halved because people wanted to make more money”</i>

	commitment to actual implementation	<i>“if you have a plan but it’s just a piece of paper and no one is holding it to it, there’s absolutely no incentive to follow it”</i>
	time scale	<i>“ the interventions are frequently short-term and very dependent on grants and specific people... and this lack of continuity results in loss of trust in these interventions”</i>
	perceptions of conservation by local communities	<i>“strategies should focus on showing benefits of conservation to local communities...we have failed to show them these benefits”</i>
	expectations about the interventions	<i>“local communities have high expectations most of the time ... that affects the intervention. They expect instant money”</i>
	effectiveness	<i>“community-based conservation is simply not working! And one of the reasons why it doesn’t work is because it’s naive.”</i>
Relationships with local communities	insufficient participation of local communities	<i>“maybe there’s a better way... if people sit together with the villagers and talk about it and how to go about it”</i>
	engagement of “elites”	<i>“if we engage, it’s only the political figures from the local communities”</i>
	scale of the decisions	<i>“we should keep them [local communities] out of making a local decision on a national issue”</i>
	lack of organizational and intellectual skills	<i>“they have not participated in the decisions because they were not able to understand”</i>

Table A3.3. Main institutions operating in the bushmeat hunting system and their perceived proportional importance for decision-making and intervention implementation when controlling bushmeat hunting, according to the study participants.

Institution	Importance for decision-making	Importance for implementation
Tanzania National Parks (TANAPA)	21.8 (1 st)	20.8 (1 st)
Frankfurt Zoological Society (FZS)	17.9 (2 nd)	20.2 (2 nd)
Tanzania Wildlife Research Institute (TAWIRI)	13.5 (3 rd)	12.5 (3 rd)
Wildlife Division (WD)	11.5 (4 th)	10.1 (5 th)
Grumeti Fund	8.3 (5 th)	10.7 (4 th)
Wildlife Management Areas (WMAs; Ikona and Makao)	5.1 (6 th)	5.4 (6 th)
District Council (e.g. District Game Office)	4.5 (7 th)	4.8 (8 th)
Ngorongoro Conservation Area Authority (NCAA)	4.5 (7 th)	3.6 (9 th)
Other NGOs (e.g. WWF, Friedkin Conservation Fund, AWF, Jane Goodall Institute)	3.8 (9 th)	2.4 (10 th)
Villages + local governments	3.2 (10 th)	5.4 (6 th)
Game Reserves (Ikorongo-Grumeti and Maswa)	3.2 (10 th)	1.2 (12 th)
Hunting company (TGT)	1.3 (12 th)	1.8 (11 th)
Universities	1.3 (12 th)	1.2 (12 th)

Table A4.3. Characteristics of social networks in Serengeti projects of study respondents.

Measures	Network-type			
	General (73 ppl)	Advice and support (44 ppl)	Policy (36 ppl)	Implementation (56 ppl)
Number of links	110	52	35	85
Proportion of intra- institutional links	18%	23%	6%	20%
Edge connectivity	1	0	0	1
Density	0.04	0.05	0.06	0.06
Mean geodesic distance	3.2	16.4	16.1	3.1
Actors with highest degree	14[FZS], 4[FZS], 12[FZS]	14[FZS], 10[FZS], 11[Univ.], 4[FZS]	14[FZS], 10[FZS], 4[FZS]	14[FZS], 12[FZS], 4[FZS]
Actors with highest eigenvector centrality	14[FZS], 13[FZS], 4[FZS]	14[FZS], 13[FZS], 11[Univ.]	9[NGOs], 10[FZS], 14[FZS], 27[WMAAs]	14[FZS], 13[FZS], 12[FZS]
Actors with highest betweenness centrality	14[FZS], 2[FZS], 12[FZS]	14[FZS], 11[Univ.], 10[FZS]	14[FZS], 4[FZS], 32[Gov.], 10[FZS]	14[FZS], 2[FZS], 12[FZS]