A Case Against Trophy Hunting Through a Utilitarianism Lens: Evidence from the Selous Game Reserve, Tanzania

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Abstract

The paper delves into the debate on trophy hunting as a conservation tool, examining it from a utilitarian perspective. It conducts a financial analyses of the costs and benefits of trophy hunting using a simplified cost-benefit analysis. The study employs a mixed methods design, incorporating both quantitative and qualitative methods by gathering data from Selous Game Reserve (SGR) and its adjacent villages through interviews with 108 respondents. The findings indicate that trophy hunting in SGR generates positive net benefits of 310,438 USD, making it financially viable. However, the study also reveals that conservation and local community development are not prioritized in its expenditures. Moreover, the negative social and ecological impacts of trophy hunting mean that it does not provide the greatest benefit to the greatest number, as Utilitarian theory requires. Therefore, the study concludes that trophy hunting is unethical and recommends against it. More focus may be on other forms of ecotourism for sustainable wildlife conservation and income generation, while subsistence hunting that benefits local communities may be considered as a culling tool to balance animal population.

Key Words: Trophy Hunting, Cost-Benefit Analysis, Conservation, Local Communities, Selous Game Reserve.

JEL Classifications: N50, Q27, Q57

1. Introduction

The contentious argument on the impact of trophy hunting on development and conservation has been emphasized in a number of studies (Ahmad, 2016; Angula et al., 2018; Ghasemi, 2021; Parker et al., 2023). Several studies have concluded that trophy hunting is a significant contributor to economic development because of its potential for foreign currency infusion and

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provision of employment opportunities (Adhikari et al. 2021; Ali et al. 2015; Sheikh & Bermejo, 2019). Trophy hunting is also considered a tool for wildlife conservation because it provides funds for wildlife protection programs and a culling tool to control animal populations (Ali et al., 2015; Cooney et al., 2017), and most importantly, it yields economic and nutritional benefits that empower local people (Naidoo et al., 2016; Thomsen et al., 2022).

On the contrary, some argue that trophy hunting contributes to declining wildlife populations. This is due to various factors, such as the Allee Effect, where the rareness of species encourages exploitation, which can lead to extinction (Harris et al., 2013; Palazy et al., 2012). Scholars revealed more decline in the population of lions and leopards in trophy hunting sites than in other non-trophy hunting sites of Tanzania (Packer et al., 2011). Trophy hunting is also seen as a danger to wildlife genetics, social structures, and population demographics because it targets specific phenotypic traits and distracts the natural ecosystem functioning (Coulson et al., 2018; Mysterud & Bischof 2010; Wilfred & Maccoll 2016), in addition to overharvesting and selective breeding, driven by market demands (Ripple et al., 2016). These irreversible ecological consequences question the sustainability of trophy hunting as a wildlife conservation tool.

Furthermore, revenue distribution from trophy hunting is viewed as unjust since local communities receive an insignificant share (Booth, 2010; Koot, 2019; Murray, 2017), and their needs are ignored (Dube, 2019). Similarly, the local residents employed by trophy-hunting outfitters report tendencies of social injustice and colonial-like practices of oppression (Koot, 2019; Mkono, 2019). Particularly, the ethical implications of trophy hunting are widely criticized (Ghasemi, 2021; Morris, 2021) and its public image is negative in both the importing and exporting countries. Trophy hunting faces opposition from 76% of Americans, who are the leading importers of trophy imports (Humane Society United States et al., 2023), as well as 80% of Europeans, who are the next largest importers of trophy imports (HSI Europe et al., 2022). It is perceived as distasteful by the African public, where half of the continent's countries export trophies (Dellinger, 2016; Mkono, 2019).

Such polarity of claims and conclusions over trophy hunting raises controversy (Ghasemi, 2021; Di Minin et al., 2016). This debate is not only eminent empirically but also theoretically (Batavia et al., 2019; Ghasemi, 2021; Morris, 2021), particularly on the ethics of trophy hunting, which are at the heart of the debate (Ghasemi, 2021). Applying ethical frameworks to trophy hunting conservation raises conflicting viewpoints. Trophy hunting supports the sport of killing sentient animals with intrinsic value for human

pleasure and pride instead of protecting them, which deontological theories condemn as immoral (Ahmad, 2016; Ghasemi, 2021; Morris, 2021). Similarly, to virtue theory, which judges an action based on the actor's character and motivation, killing Cecil, the famous lion in Zimbabwe, was seen as utter evil by the public (Batavia et al. 2019; Yeomans et al. 2022). Animal rights theory, biocentrism, and speciesism have also condemned trophy hunting as unethical and immoral (Morris, 2021; Batavia et al., 2019)

On the other hand, some researchers who have approached trophy hunting from a teleological perspective, such as utilitarian theory, which explains the morality of an action from its consequences, have not reached a consensus on the ethical judgement of trophy hunting. Some argue that trophy hunting benefits to local communities and conservation outweigh its costs and therefore justify it as ethical (Adhikari et al., 2021; Angula et al., 2018; Naidoo et al., 2016; Saayman et al., 2018). On the contrary, other studies argue the very opposite (Drake et al., 2021; Ghasemi, 2021; Mcnamara et al., 2016; Murray, 2020; THS-USA, 2016).

What is not adequately captured in this debate is a financial analysis of trophy hunting that shows the sources and distribution of its revenue. This would certainly show whether or not trophy hunting provides the greatest good for the greatest number, as the utilitarian principle of ethics demands. Crucially, the International Union for Conservation of Nature (IUCN) recommends that any decision on trophy hunting be based on a careful analysis of its contribution to conservation and local livelihoods (Roe and Cremona, 2019). This study fills that gap by conducting a financial analysis of trophy hunting in SGR, which is commended by the IUCN conservation outlook assessment as a rare scientific reference to study large landscapes with a high degree of naturalness (UNESCO, 2020).

2. Historical and Policy Contexts of Trophy Hunting in Tanzania

Before the emergence of trophy hunting in Tanzania, hunting was based on ancient customs and rituals that ensured peaceful coexistence between residents and wild animals. The governance was overseen by chiefs and local leaders, with compliance based on traditional beliefs (Majamba, 2001). However, colonialists introduced capitalism, limiting community access to wildlife and benefiting settlers who killed wildlife for enjoyment. In 1905, the German rule established first-game reserves, now known as Selous Game Reserve (URT, 2007). The British government established a game department in 1921. Trophy hunting began in 1946 after the establishment of game-controlled areas and hunting blocks. The current structure of wildlife-protected areas, including national parks, game reserves, and game-

controlled areas, was established after World War II (URT, 2007). The government continued to exploit wildlife resources to satisfy the worldwide trophy market, leading to resentment among the local population (Majamba, 2001).

Tanzania's trophy hunting is now regulated by certain organizations, norms, laws, and regulations. The Tanzania Wildlife Policy of 2007 is the main policy for the industry, while the Wildlife Conservation Act of 2022 contains the major rules for trophy hunting activity, it provides comprehensive information on trophies, including registration, transfer, import, export, and illegal trophy transactions, along with the corresponding fines and sentencing for such offences (URT, 2022). Specifically, the Tourist Hunting Regulations of 2019 control the general procedure and requirements for trophy hunting practice. The Tanzania Wildlife Management Authority (TAWA), a division of the Ministry of Natural Resources and Tourism, is responsible for managing trophy hunting. TAWA Management, divided into six zones, focuses on rural economic development, wildlife access, sustainable tourism, and conservation. It enforces laws, develops financing mechanisms, and supervises staff. SGR, the study area, is located in the Southern Eastern Zone.

3. Literature Review

3.1 Theoretical Review

The parlance of trophy hunting has been fuelled by contrasting standpoints emanating from an array of theories across multiple disciplines, especially ethics and welfare economics. Trophy hunting opponents like Hall et al. (2008) used bioeconomic theory to study how rarity-fuelled demand for animal trophies exploits wildlife and drives them to extinction, and others like Naevdal et al. (2012) developed a bioeconomic model of trophy hunting that explains how trophy hunting alters the age-sex ratio of animals in a population. Other opponents have also criticised trophy hunting after applying the anthropogenic Allee Effect Model to trophy hunting as a conservation technique and finding that it might extinct wildlife species (Palazy et al. 2011, 2012). Though, Harris et al. (2013), using the same model, came up with opposite results. Similarly, using cost signalling theory to explain why men trophy hunt, researchers discovered that species' rarity raises their costs, fuelling their desire, and warn that trophy hunting would certainly drive rare species to extinction (Darimont et al., 2017). Also, studies in view of animal right theory, biocentrism and speciesism have condemned trophy hunting (Morris, 2021; Batavia et al., 2019).

On the contrary, proponents like Chinopfukutwa et al. (2017) used Veblen's theory of conspicuous consumption, also known as the leisure class, to understand hunting wildlife trophies as a sport for wealthy people willing to spend money for leisure. Legalizing it raises cash for animal conservation and promotes socioeconomic advancement (Di Minin et al., 2016; Cooney et al., 2017). Trophy hunting's quota system is supported by ecological theory and sustainable use principles; hence Mahoney, (2013) and Milner-Gulland et al. (2008) endorse it as a conservation tool. This research used Bentham's utilitarianism, as did Naidoo et al. (2016), who promoted trophy hunting practice for local communities, conservation bodies, and governments due to its high utility.

Applying ethical theories to trophy hunting yields opposing views. Deontological theories criticise it because killing animals for fun lacks a sense of duty for conservation (Ahmad, 2016; Ghasemi, 2021). Virtue theory has also opposed trophy hunting based on displayed public vices from Cecil the lion's killing (Batavia et al., 2019; Yeomans et al., 2022). Teleological theories, on the other hand, depict divergent views. Some researchers criticize it (Ahmad, 2016; Batavia et al., 2019), while others still question it (Ghasemi, 2021) and others support it (Angula et al., 2018; Naidoo et al., 2016). Those who support trophy hunting from a teleological lens, however, have been criticised for missing social values in their consideration (Jacquet & Delon, 2016). Therefore, this study adopts a teleological perspective of utilitarianism to financially analyse trophy hunting revenue sources and distribution, along with considering social values to inform the debate.

3.2 Empirical Review

Trophy hunting generates millions of dollars worldwide, making it more than simply an environmental conservation tool but a driver of economic progress (Sheikh & Bermejo, 2019). It has pumped foreign capital into all endowed economies, developed and emerging (Roe & Cremona, 2019). IUCN acknowledges that when a wild living resource is given an economic value, negative incentives can be eliminated, and costs and benefits can be internalized. This can create an environment conducive to conservation and sustainable resource use, lowering the risk of habitat conversion, resource degradation, and depletion (IUCN, 2012).

Another economic advantage of trophy hunting is the creation of job opportunities, including both permanent and seasonal jobs (Adhikari et al., 2021; Ali et al., 2015). Particularly in disadvantaged rural areas of developing nations, it serves as a substantial source of revenue and plays a crucial role in fostering community development (Sheikh & Bermejo, 2019). A study

conducted in Pakistan revealed that 62.4% of the population obtained employment via trophy hunting activities (Ali et al., 2015). Additionally, almost 5,000 of the most economically disadvantaged individuals living in Bwabwata National Park in Namibia collectively earned N 2.4 million, equal to US$155,000 annually (Cooney et al., 2017; Roe & Cremona, 2019).

An economic analysis of trophy hunting in eight African countries, including Botswana, Ethiopia, Mozambique, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe, has revealed that trophy hunters spent an average of $USD 426 million during 18,815 visits from 2012 to 2014. Furthermore, the industry created 53,000 jobs (Murray, 2017). However, this research received criticism for its methodological flaws, which resulted in overestimations. According to Murray (2017), the accurate number of trophy hunting jobs was 7,500, not 53,000. Likewise, trophy hunting revenues in North America, Zimbabwe, and Pakistan have funded various community projects, such as clean water canals, scholarship schemes, and road and health improvements (Adhikari et al., 2021; Ali et al., 2015; Cooney et al., 2017). However, the opportunity costs and externalities of these benefits are often overlooked.

Trophy hunting, on the contrary, is blamed for animal depopulation and harming photographic wildlife tourism. After outlawing hunting, Kenya and Botswana saw tourist development. A study in Tanzania, Kenya, Botswana, Ethiopia, Mozambique, Namibia, South Africa, Zimbabwe, and Zambia found no correlation between tourist hunting size, tourism growth rate, GDP growth rate, or tourism share of GDP, and concluded that this industry has little economic impact (Murray, 2017). Trophy hunting is often reported to be less profitable than ecotourism. Bear watching generates more GDP and tourist spending in Canada's Great Bear Forest than bear hunting. It also boosts employment and government revenue (Center for Responsible Travel, 2014). Also, according to Murray (2020), wildlife watchers generate three times more revenue than hunters, and the trophy hunting licensing system administration costs alone outweigh trophy hunting revenue. Therefore, wildlife conservation paid for by others benefits hunters.

In addition, trophy hunting has expenses like any other business. Regulation, monitoring, and law enforcement are expensive but seldom absorbed, therefore gross benefit statistics are published, overstating the industry's economic worth (Murray, 2020). Lescuyer et al. (2016) used a simplified cost-benefit analysis (one-year data) to analyse the financial performance of trophy hunting as a conservation business model in Cameroon and found it unprofitable due to rising hunting zone management costs and falling hunting safari prices. In Tanzania also, the government has seized over 60%

of the old SGR's hunting grounds since they are unprofitable (UNESCO, 2020).

In the vista of utilitarian theory, financial cost-benefit analysis as a tool for project appraisal is backed up by act utilitarianism, where action is considered moral if its benefits outweigh its costs (Sinden et al., 2009). For trophy hunting to be considered a conservation tool, the IUCN, which gives the rule to be followed under rule utilitarianism (Ghasemi, 2021), demands that management costs be internalized within the management area and represented in the distribution of usage benefits (IUCN, 2012). However, the net benefit of this industry is rarely studied (Murray, 2017) and this endeavour, therefore, sought to unravel this matter. The study examines the financial viability of trophy hunting by conducting a simplified cost-benefit analysis in SGR, a prominent trophy hunting destination in Tanzania (Crosmary et al., 2018).

4. Methodology

4.1 Study Area

This study was conducted in Selous Game Reserve- SGR, which is situated in the central south-eastern region of Tanzania, approximately 130 to 500 km southwest of Dar-es-Salaam. Its coordinates range from 7˚20' to 10˚30'S, and 36˚00' to 38˚40'E (Mremi et al., 2023). It now covers 18,020.54 km square within Rufiji, Kilwa, and Liwale districts in Pwani and Lindi regions, following a declaration as indicated in a Government Notice Number 459 of 2021, "Alteration of the Boundaries of Selous Game Reserve". Figure 1 presents the map of Selous Game Reserve.

There exist numerous species of large mammals and birds. The charismatic mammals 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*) and Udzungwa red colobus monkey (*Piliocolobus gordonorum, VU*). Birds found in this area consist of the wattled crane (*Bugeranus carunculatus*, classified as vulnerable) and the rufous-winged sunbird (*Cinnyris rufipennis*, also classified as vulnerable) (UNESCO, 2020). This designation classifies the reserve as one of the globally recognized areas that are home to unique bird species found nowhere else in the world. On the other hand, wildlife populations in the reserve have experienced significant decline in recent decades, particularly elephants (UNESCO, 2020).

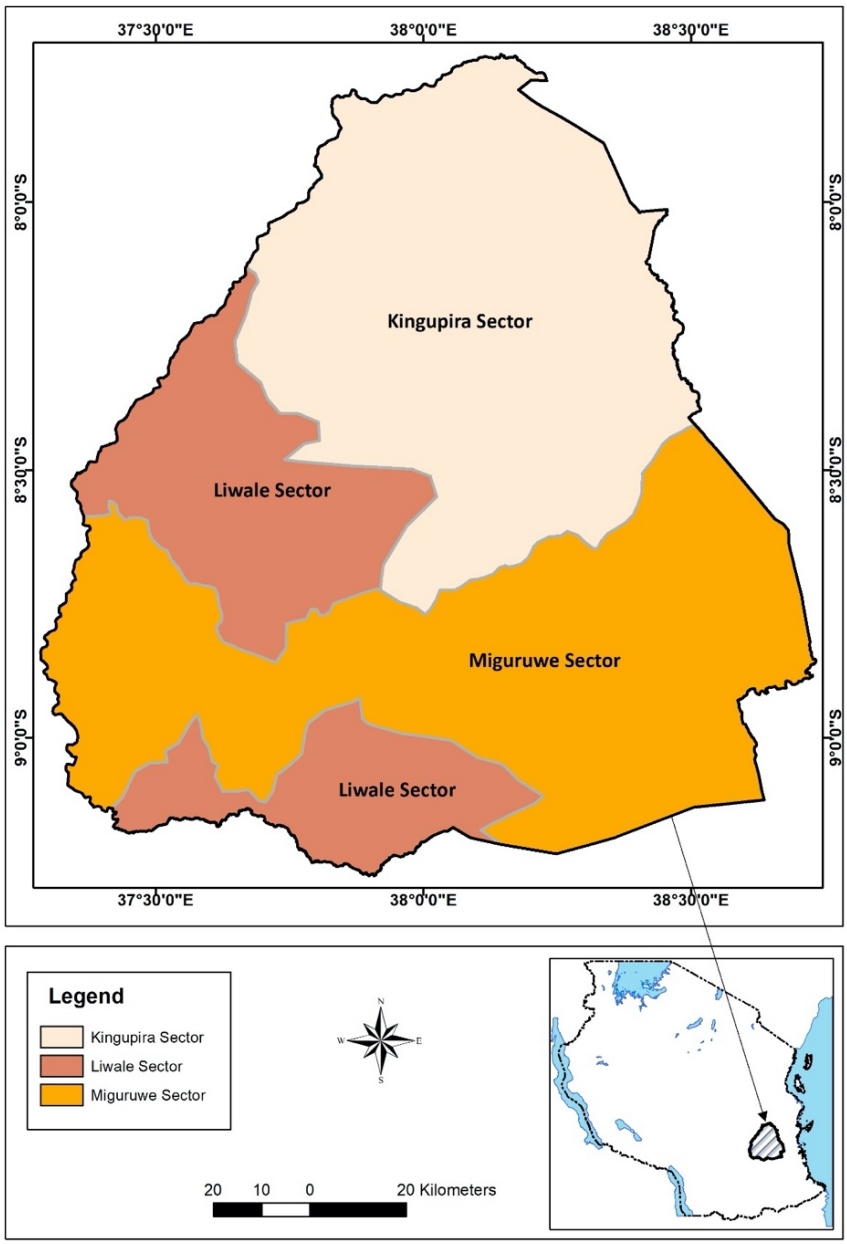

Figure 1: A map of Selous Game Reserve

4.2 Data, Sample, Sampling

SGR has been selected as the study area purposefully because of its profound popularity as the best trophy hunting destination in Tanzania and its long history of trophy hunting practice since the 1970s (Crosmary et al., 2018). The analysis used secondary data on income and spending obtained from SGR and all its zones for the year 2022. The research also used primary data obtained from four villages adjacent to the reserve: Barikiwa and Chimbuko in Liwale district, Lindi region, and Ngarambe and Tapika in Rufiji district, Pwani region. We used purposive sampling to choose communities/villages near the reserve that had been regularly exposed to trophy hunting operations for a minimum of five years. Emphasis was placed on village leaders and locals who worked in the trophy hunting business inside the reserve. The research conducted 12 focus group discussions including a sample size of 96 respondents. It also conducted 12 interviews with key informants such as ecologists, tourism officers, anti-poaching officers, and outreach officers from all SGR zones and the headquarters to supplement secondary data. Thus, the survey covered 108 participants or respondents.

4.3 Analytical framework

The financial analysis of trophy hunting is based on the principles of utilitarianism theory. The study used a simple cost-benefit analysis [1] approach that used a single year of data, similar to the one used by Lescuyer et al. (2016) in Cameroon, to directly examine the revenue and expenditures of trophy hunting. This method is derived from the utility principle, which evaluates projects based on the comparison of benefits and costs, to maximise utility. The utility principle is "that principle which approves or disapproves of every action whatsoever, according to the tendency it appears to have to augment or diminish the happiness of the party whose interest is in question" (Harsanyi, 1995, page number is required here for the direct quote). The research used thematic analysis to analyse primary qualitative data. The study used themes derived from the IUCN guidelines for trophy hunting, which serve as the utilitarian principle for trophy hunting (Ghasemi, 2021). The aim was to assess whether trophy hunting aligns with this principle, which seeks to maximise overall benefit for the largest number of individuals.

[1] Simple Cost benefit Analysis, which does not take into account discounting, is used in this paper, because of the limitation of data availability where only one year of data was obtained. In similar scenarios, previous researchers employed this analysis technique (see Lescuyer et al., 2016).

5. Results

5.1. Trophy Hunting Financial Management in SGR.

Trophy hunting is a major source of revenue in SGR, and the collection system has been improved over time. While the previous (before 2016) collection point was at the Wildlife Division, from July 1, 2016, TAWA became the main regulator and collector. Trophy hunting payments were made in cash. However, the trophy hunting payment system changed from cash to online payments. Key informant interviews disclosed that all cash inflows from trophy hunting in SGR are directly deposited into the central Treasury using a control number payment mechanism. TAWA works to assist this administration. Trophy hunting expenditures, on the other hand, are funded by requesting funds from the Treasury as deemed necessary.

Key informants reported that the transparency of trophy hunting cash inflows and outflows was improved, and corruption is highly cubed because of the online system. Additionally, it was disclosed that sources other than the government provided funding to cover the costs of trophy hunting. Conservation projects that are supported by donors play a crucial role in the preservation of the SGR. The Frankfurt Zoological Society implements the Selous Ecosystem Conservation Program, which includes numerous anti-poaching patrols, particularly in 2022. The organization acquired 18 field vehicles and covers the costs of their regular maintenance. It also provides training to its workers on prosecution topics, as well as on how to identify anatomical traits and detect incidents of poaching.

5.2 Trophy Hunting Cash Inflows

Cash inflows at SGR are derived from various fees that are regulated by the government. There are primarily eight fees, specifically: game fees, block fees, permit fees, observer fees, professional hunting license fees, intercompany fees, aircraft landing fees, and trophy ownership certificate fees. Conservation fees are not explicitly stated, as they are already included in the permit payments. Game fees accounted for the largest share (42.95%) of income generated in 2022, followed by block fees (38.43%) and permit fees (16.41%). The remainder made insignificant contributions (see Figure 2). All monetary receipts were priced in United States dollars (USD).

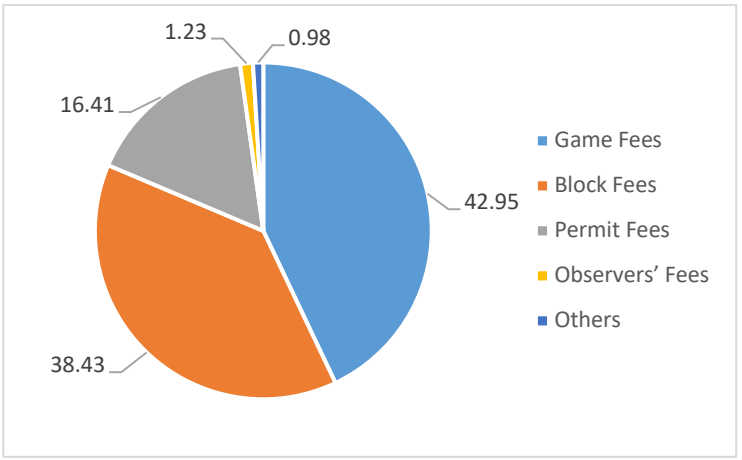

Figure 2: Percentage of Trophy Hunting Cash Inflows at SGR in 2022

5.2.1. Game Fees

Game fees are paid based on the predetermined prices assigned to each animal within the hunting quotas. This refers to the income generated from animals killed and injured during the act of tourist hunting. Regardless of whether the animal was killed or wounded, the same fee is applied to the animal. In 2022, a total of 521 animals were killed, and their respective prices were calculated, resulting in a cumulative cost of $704,580. A total of 14 animals incurred injuries and were billed at the same rate, resulting in a cumulative cost of $21,900. The total amount of gaming fees collected in 2022 was $726,480 as indicated in Table 1, which is the most significant portion of trophy hunting revenue accounting for 42.95% of cash inflows (refer to Figure 2).

Table 1: List of Hunted and Wounded Animals at SGR in 2022

Animals	Number	Price (USD)	Game Fees (USD)
List of Hunted Animals at SGR in 2022			
African Cape Buffalo	125	2,500	312,500
Southern Impala	47	200	9,400
Hartebest	55	650	35,750
Hippotamus	22	1,500	33,000
Crocodile	11	1,700	18,700
Warthog	34	300	10,200

Animals	Number	Price (USD)	Game Fees (USD)
Sable Antelope	15	3,500	52,500
Burchell's Zebra	33	1,000	33,000
Wildebeest Nyasa	55	650	35,750
Leopard	17	4,500	76,500
Lion	3	7,000	21,000
Waterbuck	10	800	8,000
Southern Reedbuck	10	400	4,000
Yellow Baboon	6	100	600
Spotted Hyena	15	400	6,000
Bushpig	14	350	4,900
Greater Kudu	7	2,000	14,000
Civet cat	4	200	800
Eland	11	1,700	18,700
Porcupine	1	150	150
Common Duiker	9	250	2,250
Bushbuck	6	600	3,600
Pygmy Antelope	3	300	900
Harvey's red Duiker	4	300	1,200
Common Genet	1	250	250
White fared whistling duck	1	30	30
Serval Cat	1	200	200
Klipspringer	1	700	700
Sub-Total	**521**		**704,580**
List of Wounded Animal Species at SGR in 2022			
Waterbuck	1	800	800
Wildebeest	2	650	1,300
Hippotamus	1	1,500	1,500
African Cape Buffalo	6	2,500	15,000
Hartebeest	2	650	1,300
Burchell's Zebra	2	1,000	2,000
Sub-Total	**14**		**21,900**
Grand-Total of Game Fees at SGR in 2022			**726,480**

Source: TAWA, (2023).

5.2.2. Block Fees

Block fees are the total fees paid according to each hunting block. These fees include the application/renewal cost, block transfer request fees, block transfer charges, and the annual block charge. The application or renewal fee for a hunting block is determined by its category. Category I blocks have a fee of $5000, category II blocks have a fee of $2000, and category III blocks have a fee of $1000. On the other hand, the annual fee for a hunting block depends on the amount determined through auctioning that block based on its category. The block transfer request fee is $1000 per block, and the block transfer charge amounts to 20% of the annual block fee. In 2022, there was neither the transfer of block ownership nor the application for hunting blocks; therefore, the collection of block transfer request fees, block transfer charges, and application fees was not carried out. The total aggregate of block fees for 2022 was $650,000, as indicated in Table 2.

Table 2: Hunting Blocks and Their Fees

S/N	OUTFITTER	BLOCK	CATEGORY	BLOCK FEES (USD)	TIME OF LEASE
1	MKWAWA HUNTING SAFARIS (T) LTD	LL1	I	150,000	2022 - 2052
2	TRADITIONAL AFRICA SAFARIS (TZ) 2011 LTD	LL2	I	175,000	2020 - 2030
3	LUKE SAMARAS SAFARIS LTD	LR1	II	30,000	2017 - 2022
4	LUKE SAMARAS SAFARIS LTD	LR2	II	30,000	2017 - 2022
5	LUKE SAMARAS SAFARIS LTD	MS1	II	30,000	2017 - 2022
6	LUKE SAMARAS SAFARIS LTD	U4	II	30,000	2017 - 2022
7	PORI TRACKERS OF AFRICA LTD	LR3	II	30,000	2017 - 2022
8	TAWICO	U3	II	30,000	2017 - 2022
9	TAWICO	MA1	II	30,000	2017 - 2022
10	NOTHERN HUNTING COMPANY	MT1	II	85,000	2021 - 2031
11	BUSHMAN HUNTING SAFARIS	MHJ3	II	30,000	2017 - 2022
	TOTAL			**650,000.0**	

Source: TAWA, (2023).

5.2.3. Permit Fees

The charges for permits are based on safari packages, which are categorised into three types: a regular permit costs $1,500 for 10 days, a deluxe permit costs $3,000 for 14 days, and a premium package costs $4,500 for 21 days. The cost for bird shooting is billed individually, at a rate of $250 per hunter daily. In addition, permits incorporate the obligatory conservation fees of

$100 per day that tourists must pay. In 2022, the aggregate amount of permit fees collected from 91 hunting visitors was $277,600, a 16.41% contribution to the overall revenue (Table 3).

5.2.4. Observer's Fee

When a tourist hunter is participating in a hunting experience, this fee is imposed on any present observer. It is paid at a rate of $50 per observer every day. According to Table 3, there were 41 observers in 2022, and the total fees paid by observers was $20,800. This was only a 1.23% contribution to total revenue (Table 3).

5.2.5. Professional Hunter Fee

The fees for professional hunters are split into two categories: those for citizens and those for non-citizens. It costs $600 to obtain a professional hunter license for a citizen, whereas a non-citizen professional hunter license costs $2000. The total fees received from this item in the year 2022 was $10,000, accounting for only 0.59% of trophy hunting revenue (Table 3).

5.2.6. Intercompany Hunting Permit Fees

Whenever a hunting tourist from one hunting block fails to find an animal to hunt in that block and, as a result, goes to hunt in another, the hunting permit fees for intercompany hunting are imposed. The total cost of this fee is $500. The intercompany hunting permit charge in 2022 was $5,000, which is only 0.3% of overall revenue (Table 3).

5.2.7. Aircraft Landing Fees

A fee known as the Aircraft Landing Fee is levied whenever an aircraft lands on an SGR airfield. It is charged according to aircraft capacity. For 1 to 4 seaters, 5 to 12 seaters, and 13 seaters or more, Tanzanians are charged 50,000 Tshs., 60,000 Tshs., and 80,000 Tshs. per landing, respectively. Meanwhile, foreigners are charged 100 USD, 150 USD, and 300 USD per landing, respectively. The aggregate amount of aircraft landing fees in 2022 was $1292, which accounts for a meagre share (0.08%) of trophy hunting revenue (Table 3).

5.2.8. Trophy Ownership Certificate Fee

A certificate is mandatory for a tourist hunter to possess any trophy. Hunters remunerate a small fee for such credentials. The total fees for Trophy Ownership Certificates in 2022 was $102, an almost insignificant portion (0.01%) of total revenue (Table 3).

5.3. Trophy Hunting Cash Outflows

SGR incurs many expenses in its game reserve operations, including conservation and trophy hunting operations. The trophy hunting expenditure

has been classified into ten groups: anti-poaching efforts, worker salaries, law enforcement, conservation awareness, ecological monitoring, problematic animal control, trophy hunting supervision and monitoring, participation in tourism exhibitions, administrative and statutory services, and working facilities, utilities, and equipment. Salaries and law enforcement constituted the most significant expense in 2022, followed by working facilities, utilities and equipment, administrative and statutory services, and anti-poaching efforts. Expenditure on conservation awareness raising and ecological monitoring was little compared to the rest of the expenditures, as seen in Figure 3. All expenses were conducted using the local currency, Tanzanian shillings (Tshs.).

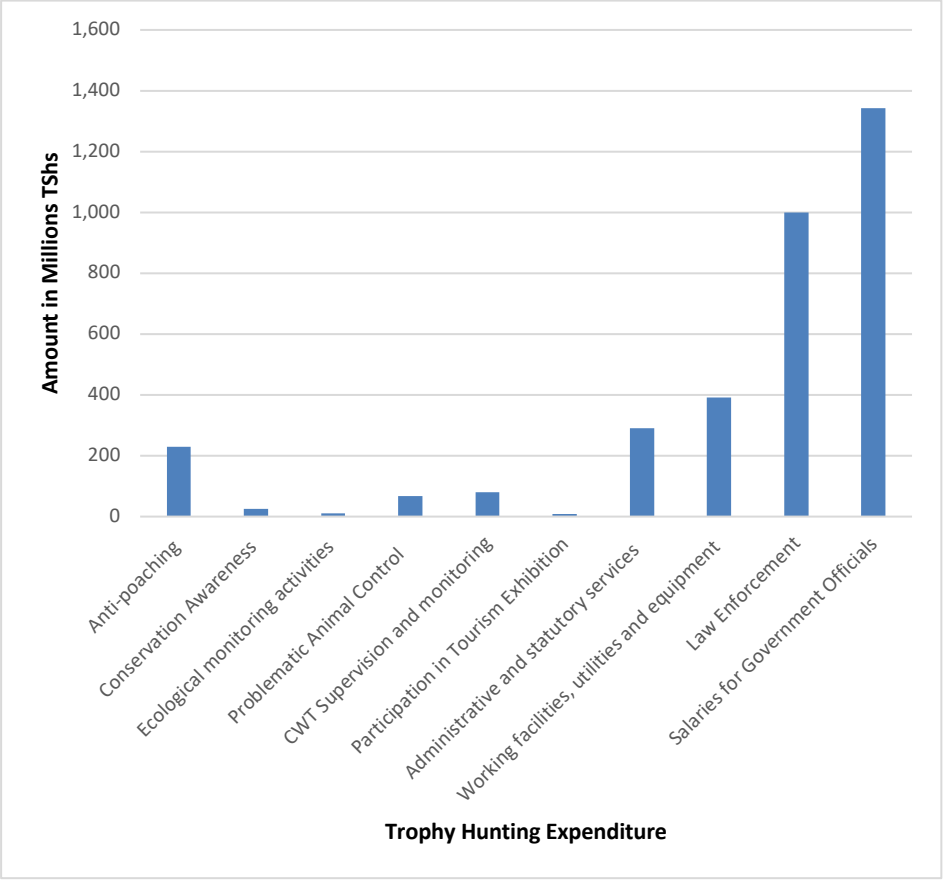

Figure 3: Trophy Hunting Cash Outflows at SGR in 2022

5.4 A Simplified Cost-Benefit Analysis for Trophy Hunting in 2022

5.4.1 Summary of Trophy Hunting Benefits

The quantitative benefits were identified and summarised. The figures were not estimated but acquired as secondary data from SGR Headquarters. Market values were used in this scenario. Trophy hunting benefits are presented in Table 3.

Table 3: Summary of Trophy Hunting Revenue at SGR in 2022

Revenue Item	Amount (USD)	Percent
Permit Fees	277,600	16.41
Observers' Fees	20,800	1.23
Game Fees	726,480	42.95
Block Fees	650,000	38.43
Inter Company Fees	5,000	0.30
Trophy Ownership Certificate Fee	102	0.01
Professional Hunter Fees	10,000	0.59
Aircraft Landing Fees	1,292	0.08
Total (USD)	**1,691,274**	**100**

Source: TAWA, (2023).

5.4.2 Summary of Trophy Hunting Costs

Secondary data was gathered and analysed, and the identification of monetary outflows was carried out. Trophy hunting costs are presented in Table 4.

Table 4: Summary of Trophy Hunting Expenditure at SGR in 2022

Activity Description	Amount (Tshs.)	Percent
Anti-poaching	229,771,400	6.66
Conservation Awareness	25,230,000	0.73
Ecological monitoring activities	11,463,000	0.33
Problematic Animal Control	68,236,300	1.98
Trophy hunting Supervision and monitoring	79,556,000	2.31
Participation in the Tourism Exhibition	7,600,000	0.22
Administrative and statutory services	290,250,000	8.42
Working facilities, utilities and equipment	392,437,143	11.38
Law Enforcement	999,603,800	28.99
Salaries for Government Officials	1,343,400,000	38.97
Total	**3,447,547,643**	**100**

Source: TAWA, (2023).

5.4.3. Trophy Hunting Net Benefit at SGR in 2022

In order to determine the net benefits of trophy hunting, the costs originally expressed in local currency were converted into US dollars using the current exchange rate of 1 USD to 2500 Tshs. Thus, 3,447,547,643 Tshs were equivalent to 1,379,019 USD. Because the available data only spanned a single year, the analysis did not consider the prospect of discounting the benefits and costs as explained in the methodology.

Trophy Hunting (TH) Net Benefits = Sum of TH Revenue – Sum of TH Costs
= 1,689,457 USD -1,379,019 USD
= 310,438 USD

Since the net benefit is above zero, the cost-benefit analysis decision criterion indicates that trophy hunting is financially viable.

5.5. Trophy Hunting Externalities

Externalities from trophy hunting arise mainly in two ways: social and environmental (ecological) costs. With regard to environmental and ecological externalities, key informants' interviews disclosed that trophy hunting generates heightened stress levels in animals, thus altering their behaviour, diminishing their reproduction, and prompting migration. This situation may worsen due to the elimination of a restricted hunting season that does not provide for a time of undisturbed and stress-free existence for animals targeted by trophy hunting. Trophy hunting has substantially impacted the size and quality of trophies, especially for buffaloes. It has also increased the vulnerability of herbivores and their offspring to become prey for carnivores. Additionally, it has expedited the mortality rate of animals with infanticide behaviour , such as lions. Lastly, trophy hunting activities have contributed to environmental pollution, the rapid spread of invasive species, and the disruption of the natural integrity of the environment. These results indicate that trophy hunting may result in permanent adverse impacts on wildlife, perhaps leading to substantial and lasting repercussions for the tourism industry.

Considering social costs on the other hand, focus group discussion with local workers for trophy hunting outfitters revealed that there is discrimination in the treatment of labourers when it comes to food and shelter provision. The only meal that labourers from local villages consume is a cup of black tea for breakfast, a little portion of ugali and beans for lunch, and a small portion of rice and the same beans for dinner. Their drinking water comes from the big river Rufiji, which is also consumed by animals; they are not given bottled water. Other workers, on the other hand, eat real cuisine and drink sealed water.

They spend a minimum of three days in remote places while they do road clearing. They sleep on the ground outdoors, while permanent staff sleep under tents. In addition to dealing with the rain and the night-time chill, they also worry about being attacked by wild creatures. Upon returning to the camps, they are provided with a single room for all to sleep on the floor. In the event of illness, they receive no health insurance. Workers also bemoaned the lack of uniforms despite their necessity, as it is dangerous to be seen in civilian clothes in the reserve without an escort by law enforcement officers. They endure all difficulties without complaining because they are afraid of losing the work opportunity if they do. They receive extremely little payment for the extensive and difficult work they perform. The daily wage in Chimbuko and Barikiwa is about 2.5 dollars (6000 Tshs.); however, in Ngarambe and Tapika, it is about 3 dollarsm(8000 Tshs.). They labour under the sun all day long and get very little sleep in exchange for their meagre wage.

Box 1: CWT Labourers' Complaints (FGD with CWT workers, January 2023)

"Even though this job is hard but we do all we can to maintain it because alternative chances are hard. Depending on cultivation alone is a bad idea because you never know how much you will harvest if animals will prey on the farm"

"A trophy animal like an elephant is priced at thousands of dollars but a skinner is paid 2 dollars for skinning it"

"We stay hungry for many hours working laboriously under the sun, from 7am after we take a small cup of tea with nothing, we have to wait till lunch time at 2pm. We have to store half of the small portion of super in order to have something to eat the next morning"

"My son encountered a big snake when he was clearing the road in the reserve, it was only by God's grace that he is still alive and unharmed"

"We sleep outside on the ground when we are in the remote areas for work, mosquitoes bite us and it gets so hard at night when the rain falls on us. When we come back to the work station, we all sleep on the floor in a single hall."

6. Discussion

This study analysed the financial viability of trophy hunting by conducting a simplified cost-benefit analysis of trophy hunting using 2022 financial data at SGR. The findings reveal that trophy hunting in SGR has positive net

benefits amounting to 310,438 USD. This positive net benefit is an indication that trophy hunting could be financially viable and profitable. This finding contradicts the findings by Lescuyer et al. (2016), who used a simplified cost-benefit analysis for one-year data to analyse the profitability of trophy hunting in Cameroon and found it unprofitable. The difference is due to significant factors hindering trophy hunting's financial viability in Cameroon. These factors include the country's dwindling lion and elephant populations, a ban on the importation of certain trophies by the European Union, widespread poaching, rural residents' encroachment for agricultural purposes, and insecurity in the country's north (Lescuyer et al., 2016).

Much as trophy hunting yields positive net benefits, it is important to acknowledge the difficulty in accurately quantifying the associated costs and benefits (Lescuyer et al., 2016; Sinden et al., 2009). This study found that trophy hunting exhibits externalities. It causes not only significant environmental costs but also social costs to local communities. Though not all of these externalities have a monetary equivalent, they all impact total wellbeing. The social costs include the loss of human life due to animal attacks, as hunted animals become more aggressive towards humans (Angula et al., 2018), the increased damage to crops caused by changes in animal behaviour due to trophy hunting, and the social injustice experienced by workers in trophy hunting occupations, also noted by Koot, (2019) in Namibia.

Ecological externalities, in contrast, arise from the deterioration of trophy quality, which concurs with (Coulson et al., 2018; Crosmary et al., 2013; Gayo et al., 2020; Muposhi et al., 2016; Mysterud & Bischof, 2010; Singer & Zeigenfuss, 2002) alterations in animal behaviour, similar to previous studies (Cozzi et al., 2015; Kandel et al., 2022; Mremi et al., 2023), and the suffering caused by shooting or injuring animals as previously emphasized (Morris, 2021; Nelson et al., 2016). The study additionally discovered that trophy hunting generates favourable environmental externalities by reducing instances of poaching. Furthermore, trophy hunting has multiplier effects that have a beneficial economic impact (Saayman et al., 2018). Tourist hunters contribute to the economy by paying taxes, taking flights, incurring expenses for meals and accommodation, purchasing local products, and visiting other tourist destinations like Zanzibar.

According to the tenets of utilitarian theory, every pleasure and every suffering must be considered, and every sentient creature must be involved (Marks, 2004). This CBA, however, was limited to quantifying all the above indirect costs and benefits. Nevertheless, a simplified CBA was conducted despite the limitation, as done by Lescuyer et al. (2016), in order to provide a

financial analysis of trophy hunting activity. Aided by social and ecological reasoning, this financial analysis can complement overall judgement. Sinden et al. (2009) warn that cost-benefit analysis alone should not be used as the only basis for project appraisal, particularly for conservation projects. Furthermore, the study data utilised for this analysis was gathered in 2022, when SGR was experiencing a rebound from the tourism downturn triggered by the COVID-19 pandemic. Nevertheless, the tourism industry has been experiencing a gradual improvement. Several significant changes have occurred: the government has lifted the closed status of the hunting season, unsold blocks that were previously unavailable for auction have been sold, and there is a possibility of an increased number of visitors engaging in hunting activities.

Concerning trophy hunting expenditure, trophy hunting has been defended on the merits that it funds conservation (Adhikari et al., 2021; Angula et al., 2018; Cooney et al., 2017; IUCN, 2012; Naidoo et al., 2016; Roe & Cremona, 2019; Sheikh & Bermejo, 2019). On the contrary, this research revealed that conservation activities were the least funded by trophy hunting revenue; ecological monitoring (0.33%), anti-pouching (6.66%), problem animal control (1.98%), and conservation awareness training (0.73%). Most patrols in 2022 were donor-funded, even though trophy hunting yielded a positive net benefit. This implies that conservation is not a priority in trophy hunting expenditures and is possible even without trophy hunting. This finding is similar to Murray (2020), who found that trophy hunting contributes very little to conservation agencies in the United States of America.

Trophy hunting is also merited because some of its revenues support local communities (Ali et al., 2015; Angula et al., 2018; Cooney et al., 2017; Naidoo et al., 2016; K. Parker et al., 2020; Roe & Cremona, 2019). In contrast, findings from this study reveal that in 2022, no trophy hunting expenditure was directed for this cause. There was no contribution to local communities around SGR, but a little contribution was made in previous years. These inconsistent contributions of trophy hunting income to local communities imply that the local community's share is not a priority in trophy hunting income distribution. This observation is also similar to previous trophy hunting studies (Booth, 2010; Campbell, 2013; Dube, 2019).

Concerning trophy hunting revenues, on the other hand, the study finds that game fees provide the largest financial inflow (43%). This suggests that the main source of revenue is killing animals, which raises questions about conservation. A similar concern was raised by Rashid et al. (2020), that depending on killing more animals as a revenue source may have serious

ecological consequences, even the extinction of trophy animals (Palazy et al., 2011). The study also found that trophy hunting management costs are not internalised within SGR and revenues are not accounted for transparently. This information is treated confidentially, making the availability of such information for analysis is difficult.

Crucially, IUCN provides the utilitarian rule that guides trophy hunting in providing the greatest good for the greatest number. It demands that trophy hunting "*accounts for revenues in a transparent manner and distributes net revenues to conservation and community beneficiaries according to properly agreed decisions"* (IUCN, 2012, p.7). Trophy hunting in the study area diverts from this rule. The agreed decision in the Wildlife Conservation Act 2022 is that 25% of game fees be directed to the Tanzania Wildlife Protection Fund, and every trophy hunting outfitter is to contribute 5000 USD to local community development every year. None of this was implemented in 2022, as observed in the study's analysis of cash inflows and outflows. Accounting for trophy hunting is not transparent either, as was also observed by Picard, (2016).

IUCN also demands that trophy hunting *"is linked to identifiable and specific parcels of land where habitat for wildlife is a priority (albeit not necessarily the sole priority or only legitimate use); and on which the costs of management and conservation of biological diversity [are] internalized within the area of management and reflected in the distribution of the benefits from the use"* (the page number needs to be provided for this direct quote). Trophy hunting in the study area also falls short of this condition because the management of both trophy hunting benefits and costs is under the Ministry of Finance, outside SGR. Also, costs are scattered between the government and conservation donor projects.

As postulated by utilitarian theory, deviation from a utilitarian rule hinders an action from providing the greatest good for the greatest number. Much as this simplified cost-benefit analysis of trophy hunting shows that it yields positive net benefits when the distribution of benefits does not prioritise communities and conservation, certain individuals may reap the benefits of trophy hunting at the expense of local communities' costs and ecological harm. Consequently, trophy hunting fails to achieve optimal welfare for everyone.

7. Conclusion and Policy Implication

In light of the findings, it is evident that trophy hunting in SGR falls short of IUCN guidelines for trophy hunting as a conservation tool. Specifically, it

fails to prioritise local communities and conservation, which are the main justifications for legalising the practice. Based on the evidence of deviation from utilitarian rule and a failure to produce the greatest good for the greatest number, a utilitarian perspective concludes that trophy hunting is unethical. Trophy hunting can not be a conservation tool when conservation is not at the heart of the matter; instead it remains an income generation tool with social and environmental costs that may be irreversible. Therefore, we advise against it. The study recommends further research on ventures in sustainable ecotourism that will raise the needed funds for wildlife conservation. Where animal population culling may be necessary, we suggest easier access to subsistence hunting that will discourage poaching and cater for the nutritional needs of local communities who bear the burden of living with wildlife.

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