

Journal of  
**Tourism & Adventure**

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**Conservation Finance of Annapurna Conservation  
Area during COVID-19 Pandemic**

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**Article**

Received: 28 July 2023

Revised: 20 August 2023

Accepted: 22 August 2023

**Keywords**

Conservation,  
tourism,  
conservation  
finance,  
Rangeland, forest-  
based enterprises

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**Abstract**

*Annapurna Conservation Area is considered as the only self-financed protected area in Nepal. With the aim of investigating the impact caused by COVID-19 on income and expenditure of Annapurna Conservation Area and its conservation activities, the study gathered primary data by interviewing representatives from different committees related to tourism, youth, women, and local people. Similarly, audit reports from Conservation Area Management Committee offices and Annapurna Conservation Area headquarter office were taken as secondary data. The income reduced by 36 percent in the fiscal year 2076/77 as pandemic effects began and further plummeted by 96.5 percent after a complete lockdown and travel limitations in the following year. Consequently, expenses for thematic areas and budget allocation for different*

*management committees significantly declined. As a result, the committees minimized but did not stop spending their budget on conservation initiatives. The study recommends diversifying the income sources of the conservation area through effective rangeland management, prioritization of forest-based enterprises, utilizing the available resources, and policy reform in tourism fee collection.*

## **Introduction**

Tourism has an enormous potential to boost economic growth and offer opportunities for sustainable development (Sharma, 2018). It is one of the mainstays of the Nepali economy and a major source of foreign exchange and revenue (Neupane et al., 2013; Kharel et al., 2022). There are different forms of tourism developed worldwide, such as community-based tourism, wildlife tourism, nature-based tourism, cultural tourism, trekking and mountaineering tourism, and rural ecotourism (Lamichhane et al., 2020, K C & Fernandez, 2022). Nepal is at the frontline in protected area-based tourism due to the variations in landscape, biodiversity, and culture. Protected areas (PAs) of Nepal occupy 23.39 percent of the terrestrial cover and include twelve national parks, six conservation areas, one wildlife reserve, one hunting reserve, and thirteen buffer zones (Aryal et al., 2019). These protected regions hold great potential for the development of ecotourism and are popular international tourism destinations as they attract more than half of the tourists visiting Nepal (Aryal & Maharjan, 2018). Ecotourism activities in the PAs include witnessing wildlife in the natural habitat, elephant rides, jungle safari, camping, boating, rafting, issuing hunting licenses, enjoying minimal accommodations, and learning about nature, culture, and the environment (Chan & Baum, 2007; Dahal et al., 2020).

Numerous regions with high levels of biodiversity are located in areas that face significant challenges such as poverty, poor governance, extensive resource extraction, and widespread development. As a result, conservation finance plays a crucial role in generating sustainable and varied sources of income dedicated to conservation efforts (K C, 2016). Conservation finance is defined as “mechanisms and strategies that generate, manage, and deploy financial resources and align incentives to achieve nature conservation outcomes” (Meyers et al., 2020). The main objective of conservation finance is to find ways to generate revenue for conservation and ensure that these funds are efficiently managed and allocated to provide both social and community benefits (Cosma et al., 2023).

Unlike protected areas in other tourist sites, Nepali PAs charge both foreign and domestic visitors a park entry fee (Baral et al., 2008; Thapa, 2014). The protected area management authority charges fee to the visitors in the form of entrance fees, licenses, permits, and tourism-based activities (Heil, 2017; Neupane et al., 2021; NPWC Regulation 1974). The fees charged are a reflection of the expenses required to maintain recreational facilities, the importance of preserving natural resources, and the significance that visitors attach to their experience at the location (Clark, 2007). The earned tourism revenue from entry fees goes to the government

treasury in general except in Annapurna Conservation Area (ACA), Manaslu Conservation Area (MCA), and Gaurishankar Conservation Area (GCA). The fees are utilized to carry out park management activities, support community development, conservation programs, environmental awareness, skill development, and capacity building (Thapa, 2014). Hence, tourism flow is very important in protected areas, especially in developing countries like Nepal where collected tourism revenue is used to administer and manage the protected areas (Gautam et al., 2022). The revenue generated from tourism in protected areas is allocated towards the management of buffer zone. There is also a legal provision stating that 30-50 percent of the income generated by the park must be directly allocated to the local community welfare and development activities (Bhusal, 2014; Spiteri & Nepal, 2008).

Different studies have been conducted within ACA to estimate the willingness to pay of visitors, the role of ecotourism for conservation, and socio-economic development (Baral et al., 2008; Wrobel & Kozlowski, 2011). However, studies about protected areas relying on tourism for operating income are limited. During the COVID-19 pandemic, tourism and hospitality industry of Nepal slumped heavily with a more than 80% shrink in foreign visitors, which is even higher than the global figure i.e., 73% (MoCTCA, 2020). Likewise, ACA, a popular tourist destination in Nepal also experienced a decline in visitor numbers, resulting in a decrease in a source of funds for conservation and management efforts. Therefore, examining the mechanisms during pandemic is important as it could offer insights into maintaining undisturbed ecosystems and their functions, as well as strategies for handling similar situations in the future. It is also crucial to understand how local communities involved in protected area management benefit during these difficult times. Additionally, the institutional structure of tourism-dependent protected areas and the impact of the COVID-19 pandemic on global biodiversity must be considered (Corlett et al., 2020). Therefore, this study aimed to investigate the impact caused by COVID-19 on income and expenditure of ACA and its conservation activities.

### **Study area**

The study was carried out in ACA of Nepal. Covering an area of 7,629 sq. km, it is located in the hills and mountains of west-central Nepal. The area is famous for trekking destinations, rich cultural heritages, pilgrimages, and majestic views of mountains. Enriched by a high level of biodiversity due to the wide range of climatic conditions and altitude, the area is managed by an autonomous non-governmental organization, the National Trust for Nature Conservation (NTNC), in partnership with local communities, through their Conservation Area Management Committees (CAMC). ACA has adopted Integrated Conservation Development Programs (ICDP), a 'people-oriented' conservation area model that has decentralized authority to grass-roots institutions to manage resources, infrastructure development, promote tourism, and provide income-generating opportunities (Heil, 2017; Mehta & Heinen, 2001). Tourism fees constitute the main source of revenue for management. Within the ACA, the Lower Mustang site was focused for primary data collection.

The site encompasses multiple villages with around 1000 inhabitants approximately that largely engage in agriculture and tourism as the main income source. Annually, Mustang welcomes around 68,576 visitors and is one of the main tourism destination sites in the ACA region. Every year, a large number of visitors from across the globe visit Mustang for trekking, to enjoy the panoramic view of mountains, for research, for wildlife photography, and to visit religious sites.

**Figure 1: Map of study area**



### Data collection

A cross-sectional study approach was employed and both the primary and secondary data were used for the study. For primary data collection, a semi-structured questionnaire was prepared and a purposive sampling technique was adopted to identify the participants in Lower Mustang. In-person interviews with the key informants (CAMC executive members, local government representatives, representatives from NTNC, Tourism Management

Committee (TMC), and liaison officers) were done from 1-15 May 2022. Information on the demographics of the impact of the COVID-19 period was collected.

Secondary data formed the main basis of the study and included the analysis of the last five years' audit reports from ACA project (ACAP) headquarters and planning and CAMC records. These records contained information regarding the income and expenditure of CAMC and the ACAP headquarters office. Additionally, official publications from the ACA office and liaison office, along with relevant articles, reports, and journals related to the topic, were referred to for data gathering.

### **Data analysis**

The collected data were analyzed by using descriptive and inferential statistics. One-way ANOVA was applied to examine differences in a dependent variable based on an independent variable containing two or more levels. While the dependent variable was COVID-19, the independent variable were seven thematic areas of ACAP; species conservation, protected area, and ecosystem (PAE), conservation economy, climate change, environment education and research, governance, and gender equity and social inclusion (GESI).

### **Results**

#### **Income and expenditure of the ACA per fiscal year**

Overall, the total revenue of ACA was lower than expenditure except for the fiscal year (FY) 2074/75, and 2075/76 (Table 1). The income showed an upward trend, peaking at NRs. 376,881,436 in FY 2075/76, correlating with an increase in tourist visits. However, income dropped by 36% in 2076/77 and by 97% in 2077/78 due to COVID-19 and travel restrictions.

Expenses mirrored the income trend and were found significantly declined. The expenditure in ACA was broadly categorized as administrative and thematic programs with thematic programs being the major expenditure department. In FY 2072/73, 2073/74, and 2074/75, expenses were allocated to administration and conservation activities at a ratio of approximately 2:3. The administrative sector received 30% of the budget, with 70% allocated to conservation in the following year. Although the revenue was reduced in 2076/77, administration costs rose by 78% and conservation expenses decreased by 3%. The expenses on administration and conservation initiatives dropped by 70% in 2077/78 compared to previous years.

**Table 1: Annual income and expenditure of ACA**

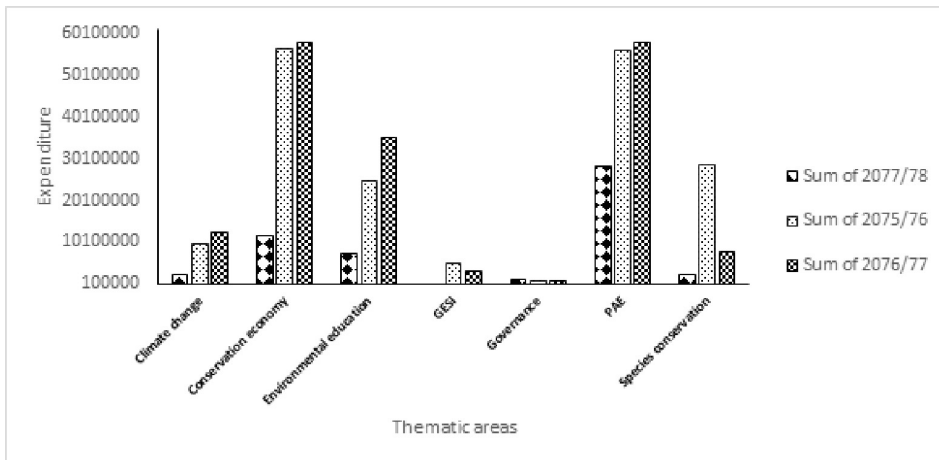
Fiscal years	Income (NRs.)	Growth %	Expenditure				Total
			Administrative (NRs.)	Growth %	Program (NRs.)	Growth %	
2072/73	147731416	-	85035178	-	128499973	-	213535151
2073/74	240622286	63	123867632	46	135763125	6	259630757
2074/75	288332319	20	118855599	-4	159163689	17	278019288
2075/76	376881436	31	86568030	-27	180843007	14	267411037
2076/77	241774900	-36	154877855	78	175139529	-3	330017384
2077/78	8426518	-97	46135059	-70	52396814	-70	98531872

Source: ACAP, 2021

**Expenditure of ACA under different themes**

In 2075/76, ACA upgraded its thematic areas into seven categories, which included species conservation, PAE, conservation economy, climate change, environmental education, research and knowledge, governance, and GESI, with the conservation economy receiving the largest share at 31.1%. In 2076/77, PAE became the top priority, followed by conservation economy. However, with the decline in income during 2077/78 due to COVID-19, expenses were reduced significantly by a huge margin including a complete cut in GESI by 100%.

**Figure 2: Expenditure of ACA on different themes**



Source: ACAP, 2022

Table 2 shows the relationships between thematic areas and their corresponding expenditures in ACA. PAE received the highest allocation of budget and differed significantly from all other themes except conservation economy. The conservation economy had the

second-highest priority, with higher funding compared to other themes except PAE. Climate change, environmental education, governance, and GESI had lower fund allocation compared to PAE and conservation economy, with varying degrees of significance. Overall, PAE and conservation economy emerged as the top-prioritized programs in the whole ACA during the crisis.

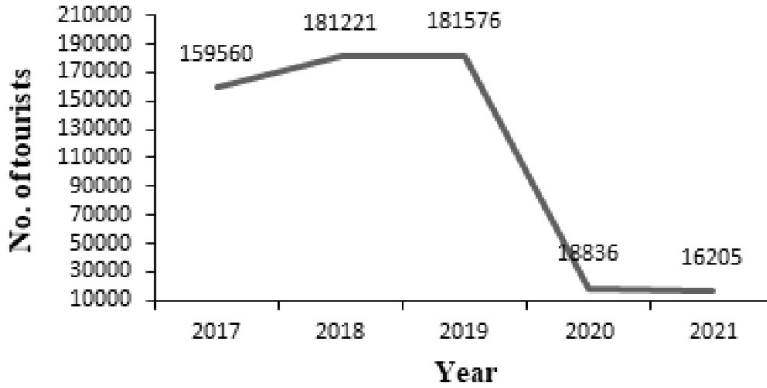
**Table 2: One-way ANOVA test of different thematic areas**

(I) group	(J)group	Mean Difference (I-J)	Sig.
Species conservation	PAE	-34543132.333*	.010
Species conservation	Conservation economy	-29040888.333*	.025
PAE	Climate change	39501817.667*	.004
PAE	Environmental education and research	24979081.333*	.048
PAE	Governance	46636831.667*	.001
PAE	GESI	44700171.333*	.002
Conservation economy	Climate change	33999573.667*	.011
Conservation economy	Governance	41134587.667*	.003
Conservation economy	GESI	39197927.333*	.004

#### **Trend of tourists' arrival in ACA region**

Before the COVID-19 pandemic, the number of tourist arrivals in ACA showed a consistent upward trend, reaching a peak of approximately 181,576 numbers in 2019. However, as a result of travel restrictions and lockdown measures imposed due to the pandemic, the tourism industry experienced a significant decline. The number of tourists plummeted by 89% in 2020 and by 14% in 2021 compared to the previous year's tourist arrival trend.

Figure 3: Number of tourists' arrival in ACA



Source: ACAP, 2021

#### Income of CAMC of Lower Mustang

The income sources of CAMC also included costs of forest products and grazing, donations, government budget, hotel taxes, furniture sales, bank interests, previous years' lump sum, and revenue from documentary film production other than tourist entry fees. Across all CAMCs in Lower Mustang, their collective annual income constitutes a mere 0.1-0.2% of ACAP's total income. While income exhibited a gradual recovery post the 2072 earthquake, a subsequent decline was witnessed during the pandemic, particularly in CAMCs Kunjo, Muktinath, Jomsom, Tukucho, and Kagbeni. Conversely, other CAMCs experienced income growth due to additions of bank interest, sale of non-timber forest products (NTFP), and prior year's accumulations. In the fiscal year 2076/77, Jomsom, Kunjo, Muktinath, Tukucho, and Kagbeni observed income reductions of 11%, 20%, 34%, 23%, and 33% respectively whereas the income increased for other CAMCs.



**Table 3: Total income of Lower Mustang's CAMC**

Fiscal years	Income of CAMC (NRs.)									
	Kunjo	Muktinath	Jomsom	Lete	Kobang	Tukuche	Marpha	Kagbeni	Jhong	Total
2076/77	2395547	1740607	3389767	2829323	3569101	2651675	939948	975720	2272480	20764169
2075/76	2998535	2647524	3824362	1957886	3043755	3429026	845812	1447218	1469995	21664112
2074/75	3347123	2044665	4347811	4712171	4969823	2749130	834507	1526076	1173167	25704471
2073/74	3866397	2290585	5479069	3656954	3852047	2162682	897197	1221056	1019127	24445112
2072/73	3727136	2052405	3735401	3160963	4524516	3359019	1228722	1153989	1583979	24526129

Source: ACAP, 2021

### **Expenditure of CAMC of Lower Mustang**

The expenditure was categorized into various sectors which included day-to-day administration costs, waste management, relief support distribution for human-wildlife conflict victims, conservation activities, development activities, tourism management, forest conservation, schools, and other ad hoc programs. Conservation activities encompassed awareness campaigns, plantation, training, fencing, and gabion wall construction. Development activities involved ecotourism promotion, religious monument reconstruction, and infrastructure development. The prioritization of programs varied among different CAMCs based on their specific needs and geographic location. Kobang stood out as the highest-spending CAMC, followed by Tukuche, Jomsom, Kunjo, Lete, Muktinath, Jhong, Kagbeni, and Marpha. In the fiscal year 2076/77, the expenditure rate decreased in Kunjo,

Muktinath, Jomsom, and Kagbeni CAMCs by 41%, 23%, 58%, and 67% respectively but, it increased in other CAMCs in a fluctuating margin. Notably, in contrast to other CAMCs, those that emphasized bank savings as their primary source of income experienced less impact on their income and expenditure plans.

**Table 4: Total expenditure of Lower Mustang’s CAMC**

Fiscal years	Expenditure of CAMC (NRs.)								
	Kunjo	Muktinath	Jomsom	Lete	Kobang	Tukuche	Marpha	Kagbeni	Jhong
2076/77	945375	689020	914627	1149821	1993202	1891095	294546	302645	142011
2075/76	1234298	1637767	1544619	270331	1780716	1549040	250000	909195	353811
2074/75	1402000	1173563	1617613	3127030	3474619	695735	79510	715954	410300
2073/74	1496598	995620	1633458	458030	851794	617256	413730	519263	325949
2072/73	960098	1008889	525100	1377407	1825259	1659860	484760	304900	906112
2071/72	1448464	1135517	1521870	542961	1151629	2660955	310917	267517	711207

Source: ACAP, 2021

**Discussion**

The study revealed that the income of ACA exhibited an increasing trend with the growth of tourist numbers post the impact of the 2015 earthquake. However, the tourism sector was not immune to the effects of pandemics such as Severe Acute Respiratory System (SARS), Middle East Respiratory Syndrome (MERS), and COVID-19, resulting in a significant income decline. The Government of Nepal imposed strict restrictions and practiced a

national lockdown from March 24, 2020 (MoHP-GoN, 2021) to mitigate the spread of the pandemic which resulted in a complete halt of domestic and foreign tourist movements (K C et al., 2021). These measures, along with global lockdowns and travel bans further worsen the situation, leading to a sudden income drop of 96.5%. While domestic tourism resumed after the ease of the lockdown, foreign tourists were still unable to visit. As ACA did not collect entry fees from domestic visitors despite the provision in the regulation, there was a gap in income during this period. Hence ACA headquarter experienced losses in various income sources including tourism revenue, documentary, and film ventures. This mirrors the report by Shrestha (2020), which underscored the economic losses from travel restrictions and air travel disruptions.

Post the COVID-19 pandemic, there was a significant decrease in expenditure compared to pre-pandemic levels. Management authority reduced its budget allocation for programs and conservation activities. Notably, no funds were allocated for GESI initiatives, which could have adverse consequences for overall activities. Women's pivotal role in the tourism industry is evident, accounting for 54% of the sector's workforce, surpassing the 39% average across the broader economy (UNWTO, 2007). In ACA, women are primarily engaged in ecotourism, while men seek urban jobs and foreign employment. Women also play key roles in fuel wood collection, plantation, and cleaning activities. The sharp decline in budget allocation for these sectors might have perpetuated inequities and a lack of empowerment among local residents, thereby affecting decision-making processes and the comprehensive execution of conservation activities.

ACA project contributed nearly 70-90% of CAMC's income source with the rest coming from other sources. However, the pandemic led to restricted access to the Mustang area, which caused a significant challenge to CAMC due to the drop in visitor numbers. There was also a sharp decline in revenue from other sources like forest usage fees, fees for NTFP collection, and grazing. Nevertheless, the committee generated income from other sectors, including donations, forest-based enterprises, and contributions from the community. This aligns with the report of Buckley and Mossaz (2018) which mentioned enterprises as one of the long-term sources of income for conservation areas. Consequently, the reduced revenue prompted a notable decrease in the allocation of funds to conservation initiatives. Despite this, CAMC managed to direct the majority of its collected funds towards forest conservation, development promotion, and tourism management, while allocating fewer resources to waste management, relief distribution, and school construction initiatives. Waste management is a low-priority issue in developing countries (Brunner & Fellner, 2007). It is worth noting that relief distribution is provided by the government in all areas (Neupane et al., 2021).

Finally, securing a consistent income stream necessitates a strategic approach toward NTFPs management in the future (Endamana et al., 2016). Transforming the available resources into a forest-based enterprise could create mutually beneficial opportunities for both CAMC and local communities. Similarly, effective rangeland management could enhance

livestock diversity in the upper region, potentially offering a reliable and enduring income source if properly managed as a business venture (Rai et al., 2023). Increasing the entry fees periodically to align with inflation, or implementing a dual pricing system where foreign visitors are charged higher fees than locals as proposed by Spergel (2004) could also contribute to revenue enhancements. Insights from key informants have proposed government backing and the establishment of a juice factory. The amalgamation of these diversified revenue sources contributes to enhancing CAMC's financial stability and long-term sustainability.

### **Conclusion**

Heavily dependent on tourism revenue for revenue collection, ACA was severely impacted by COVID-19, which led to a reduction in budget allocation for different conservation initiatives. This situation further resulted in job losses of naturalists, trekking guides as well as project staff, leading to project disruptions. Although the PAE continued to be of the utmost importance, ACA eliminates its funding for GESI, which might potentially result in reduced empowerment and participation of women and marginalized communities in terms of decision-making and conservation programs. Therefore, for each action to be completed sustainably and efficiently, a budget should be equally focused on the other six thematic programs. In addition, income sources should be diversified, including rangeland management and forest-based enterprises in the conservation area. The Government of Nepal should immediately reform the existing tourist entry fee pattern. Furthermore, similar types of research related to conservation finance with in-depth and detailed long-term data should be conducted for better and robust generalizations of sustainable self-financing.

### **Acknowledgment**

We would like to express our sincere gratitude to Annapurna Conservation Area Liaison Office, Pokhara for supporting and providing valuable resources during our study. We thank Ms. Rakshya Thakuri, Mrs. Dhanu Gurung, Sanish Gautam, Kushal Neupane for assisting our survey. We are grateful to Unit Conservation Office (UCO) Mustang, CAMCs, youth clubs, Aama Samuha and ACAP headquarter for providing valuable support during our research.

### **Statement of interest**

The authors report there are no competing interests to declare.

### **Data availability**

The data will be made available after the request for the data.

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