

Measuring the Local Economic Impacts of Nature-Based Tourism in Uganda



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Abbreviations and Acronyms

BINP	Bwindi Impenetrable National Park
COMREVSH	Community revenue sharing
DCI	Data collection instrument
G	National government
GDP	Gross domestic product
K	Capital
LEWIE	Local Economy-Wide Impact Evaluation
LFSK	Labor female skilled workers
LFUSK	Labor female unskilled workers
LMSK	Labor male skilled workers
LMUSK	Labor male unskilled workers
LocalG	Local government
LSMS	Living standards measurement survey
QENP	Queen Elizabeth National Park
ROW	Rest of the world (outside of the local economy)
UWA	Uganda Wildlife Authority
SAM	Social Accounting Matrix
WBG	World Bank Group

**All dollar amounts are US dollars unless otherwise indicated.*

Glossary of Terms

Data collection instrument (DCI)	A survey used in data collection
Income multiplier	The income multiplier quantifies the total income that is generated in the local economy for every dollar spent by a tourist, including all indirect or spillover effects
Living standards measurement survey (LSMS)	Comprehensive World Bank household survey
Production multiplier	The production multiplier quantifies the total value of goods and services generated in the local economy for every dollar spent by a tourist, including all indirect impacts or spillover effects
Protected Area Tourism Local Economy-Wide Impact Evaluation “Lite” (LEWIE-LITE)	A tool to estimate the direct and indirect economic impacts of tourism in and around protected areas
Social accounting matrix (SAM)	Captures flows of all economic transactions that take place within an economy; usually, a matrix representation of national accounts but can also apply to regions or areas
Spillover effects	Indirect effects that occur after direct impacts

Executive Summary

This study addresses the critical connection between Uganda’s protected areas and tourism and estimates the economic impact of tourism on these sites and their surrounding communities. The primary audience of this report is decision-makers such as the ministry of tourism, protected area management authorities, local authorities, and task teams supporting nature-based tourism. In Uganda, where tens of thousands of tourists visit protected areas annually, there is little information on the economic implications of nature-based tourism. This hinders the ability of tourism authorities, protected area managers, and the government to optimize the economic value of protected areas and their associated benefits.

Studies on the economic impact of tourists on protected areas are scarce, and few consider the broader impacts on local economies. Most studies have focused on direct effects, such as those on tourism-related businesses (for example, tour operators, restaurants, and lodges), and overlooked the indirect impacts on other businesses, commercial farmers, and households near protected areas. These indirect or spillover effects determine how tourism influences local economies, especially local production, and helps households that are not directly involved in tourism. Therefore, it is necessary to include them in development plans, policies, and cost-benefit analyses when considering tourism development.

To address this knowledge gap and facilitate data-driven decision-making, this study introduces the Protected Area Tourism Local Economy-Wide Impact Evaluation (LEWIE) “Lite” tool—hereinafter referred to as LEWIE-LITE. LEWIE-LITE uses data from economic actors near protected areas to quantify direct and indirect impacts of tourist spending on local economies. The tool supports policies on tourism impacts and informs on park spending, community revenue sharing, and complementary policies for protected areas.

How Was the Study Done?

LEWIE-LITE was piloted in two of Uganda's protected areas: Queen Elizabeth National Park (QENP) and Bwindi Impenetrable National Park (BINP).

The LEWIE-LITE methodology entails collecting data from actors in the local economy in or around the protected area using data collection instruments (DCIs). The objective is to sample representative numbers and types of visitors, households, and businesses at each protected area. The LEWIE-LITE approach aims to minimize time and resources spent on data collection, which is important for scaling the model.

LEWIE-LITE models capture market linkages and direct and indirect impacts of tourist spending around protected areas. Figure ES.1 illustrates these linkages and the general theory behind the models used in this study. The black arrows show direct impacts and the yellow dotted arrows show indirect impacts. The direct impacts begin with tourists spending money on food, lodging, and activities when they visit a protected area. Tourists also pay taxes and fees, including park entry fees to the government.

Indirect effects include the flow of wages and profits from tourism businesses into households, which, in turn, spend this income and spread impacts to other businesses and farms. This creates additional rounds of sales, income gains to businesses, flows of profits and wages into local households, and household spending, which increase the local gross domestic product (GDP). Park authorities hire guides and wardens, invest in park improvements and, in some cases, share some park entry fees with local

communities. Spending by parks and communities adds to the local economic impacts of nature-based tourism.

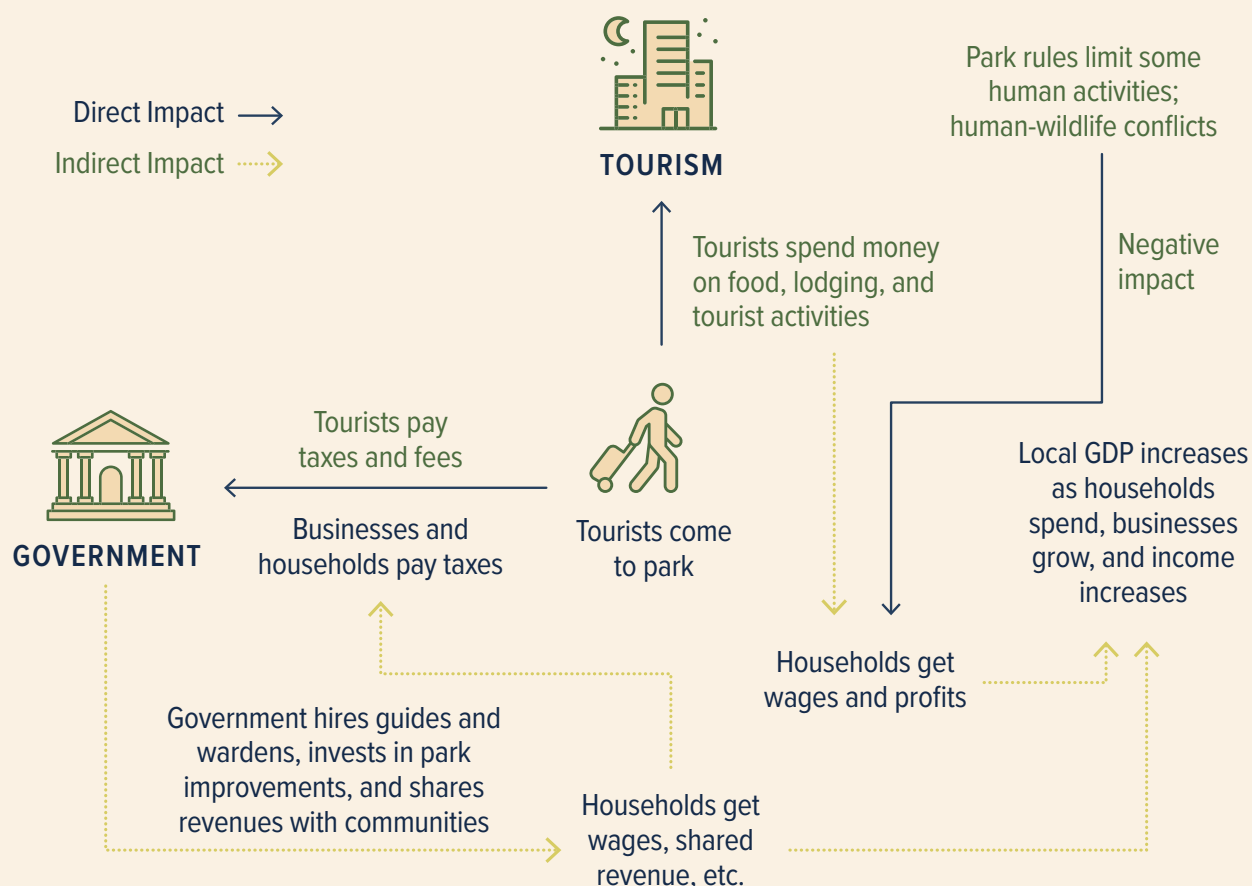
The sum of all direct and indirect impacts is likely to exceed the amount of money tourists spend.



Queen Elizabeth National Park. Photo credit: melissamn / Shutterstock

FIGURE ES.1

Direct and Indirect Impacts of Tourist Spending in Protected Areas



Source: World Bank 2023.

To build the model, field data were entered into Microsoft Excel. An algorithm was applied to these data to create a local social accounting matrix (SAM) and a SAM multiplier model, which is used by LEWIE-LITE to analyze tourism's impact on the local economy surrounding protected areas.

Finally, simulations were carried out on the local economic impacts of existing tourism, the effects of increases in tourism (for example, from a new investment in the protected area), changes in spending by the park and community revenue sharing projects, and an array of complementary interventions designed to enhance the benefits of tourism for the local economy.

A dashboard for each protected area was developed for government stakeholders, providing a user-friendly interface for government to explore local economy impacts, including the simulations carried out for this study.

What Did the Study Find?

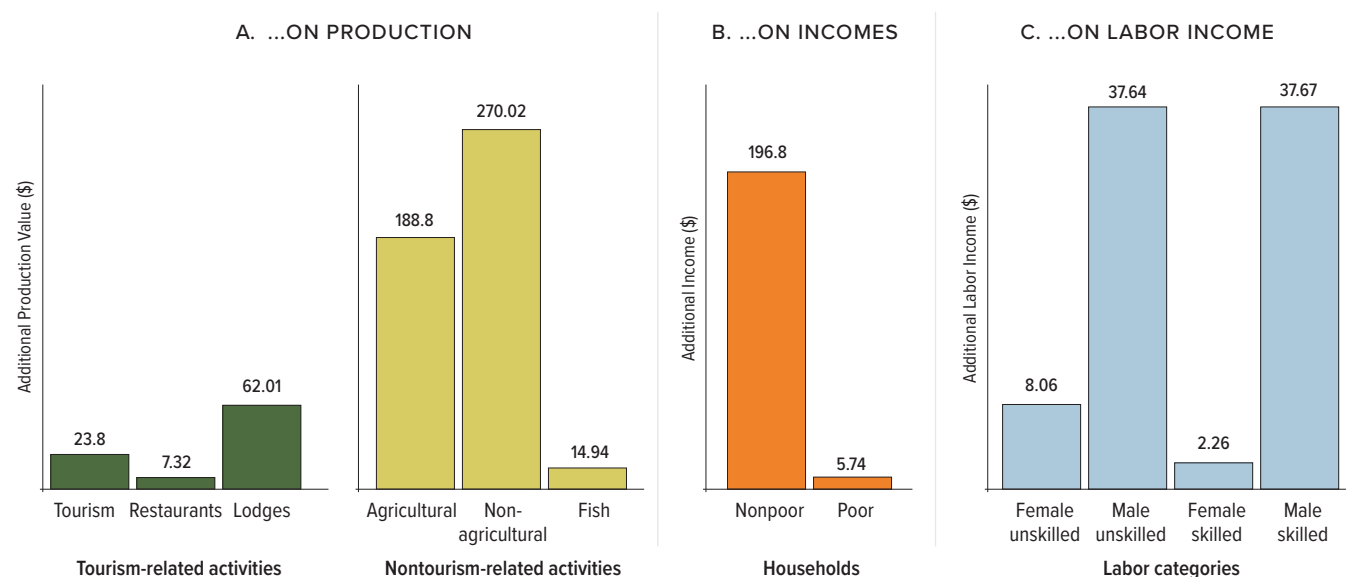
The study provides interesting observations on the local economies surrounding the two protected areas. Tourism impacts both local incomes and local production (business revenues). Protected areas support the local economy through their spending on local labor and local goods and services. **For every tourist dollar, the SAM multipliers indicate that local incomes increase by \$2.03 in the local economy surrounding QENP and by \$0.37 in the local economy of BINP. Local production increases by \$5.67 in QENP and \$1.20 in BINP.** The figures for BINP are lower because most park entry fees and gorilla permits fees are remitted to Uganda Wildlife Authority (UWA) and thus considered a leakage from the local economy. Net of park fees and gorilla permits, the values for BINP would increase to \$1.33 (local incomes) and \$4.29 (local production).

The dashboard can be used to detail the impacts of any amount of tourist spending on different production sectors or activities, household groups, wages by worker group, and community and park revenue. To illustrate this, the impacts of a \$100 increase in tourist spending were simulated. The dashboard displays the impact of this increase in tourist spending on production, on incomes, and on labor income, as shown for QENP in figure ES.2 and BINP in figure ES.3.

FIGURE ES.2

Effects of a \$100 Increase in Tourist Spending on the Local Economy Around QENP

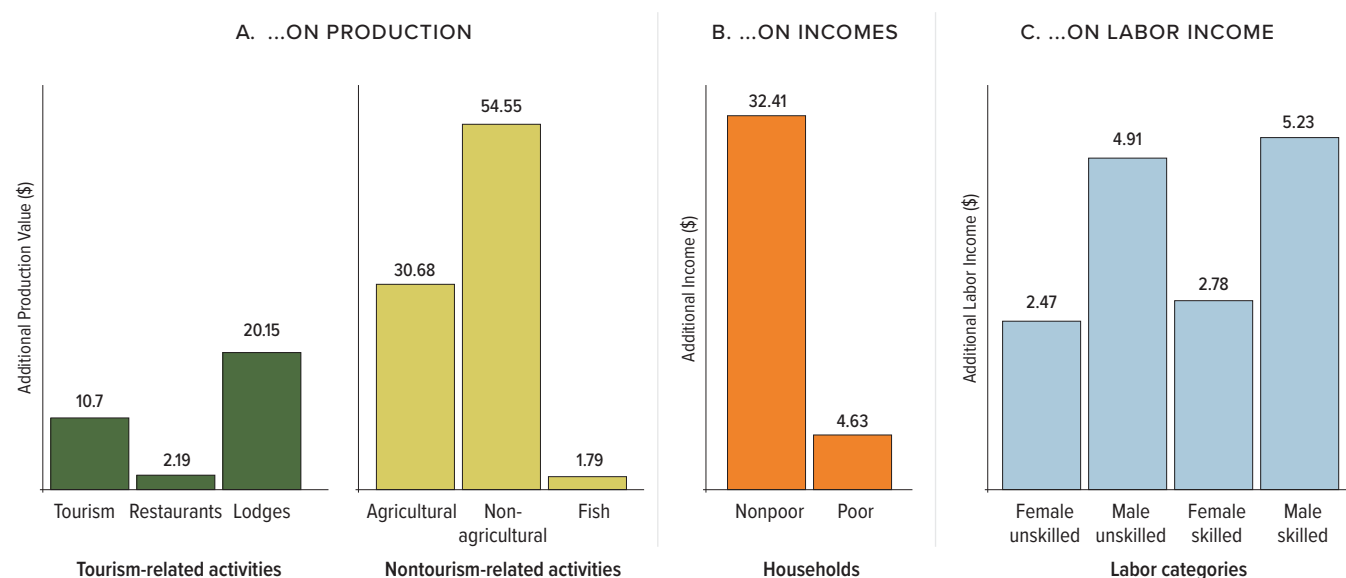
Effects of this tourist spending...



Source: World Bank 2023.

FIGURE ES.3
Effects of a \$100 Increase in Tourist Spending on the Local Economy Around BINP

Effects of this tourist spending...



Source: World Bank 2023.



Queen Elizabeth National Park. Photo credit: Pecold / Adobe Stock

Poor households are less employed in tourism and nontourism sectors of the local economies surrounding both parks. They receive only 3 percent (QENP) and 13.5 percent (BINP) of total direct and indirect tourism benefits. The small share of income gains to poor households reflects their lack of access to local formal jobs and capital.

Investing in park management generates economic benefits for local communities. In 2022, tourism to QENP generated \$69.6 million in benefits against a park budget of \$3 million, while tourism to BINP generated benefits of \$14.4 million against a budget of \$2.3 million. Additional tourism growth, particularly of international tourists, can generate even higher local economic benefits. If the number of visitors to the parks increases at prepandemic annual growth rates, then QENP and BINP will generate an additional income to households of \$5.1 million and \$2 million, respectively.

Increases in community revenue sharing spending can create additional substantial local economic benefits. Uganda has a formal revenue sharing program in which 20 percent of park entry fees and \$10 from each gorilla permit are used to fund projects that reduce human-wildlife conflict, build local infrastructure, or support other socio-economic programs. **Simulations on the dashboards revealed that a \$100 increase in community revenue sharing would lead to a local GDP gain of \$245 (QENP) and \$120 (BINP).**

The data also provide valuable insights that may be missed in other tourism sector research. For example, **the study found a higher percentage of women workers in tourism-related jobs than in nontourism-related jobs**, corroborating the view that tourism worldwide is a valuable job entry point for women. Additionally, **model simulations reveal that the impacts of tourist spending are considerably larger on nontourism activities than on tourism activities** and highlight the importance of looking beyond tourism activities when evaluating the impacts of tourism in local economies.



Bwindi Impenetrable National Park. Photo credit: Gunter Nuyts / Shutterstock

What Recommendations and Lessons Can Be Drawn from the Study?

Indirect impacts or spillover effects of tourism are an important part of how tourism can impact local economies. LEWIE-LITE simulations indicate that tourism generates higher multipliers in nontourism activities than on tourism activities; these impacts should therefore be considered in country economic development plans, policy design, or cost-benefit studies before designing and implementing new tourism projects.

The analysis of the tourism sectors around BINP and QENP suggests several ways for policy makers to maximize the impacts from the sector. **For example, local linkages between tourism and other sectors, such as agriculture, fishing, and manufacturing could be strengthened to increase income and production multipliers. Using Bwindi as an example, if more inputs to non-agricultural businesses could be procured locally, the production and income multipliers from tourism would increase.** Also, promoting local ownership of businesses and employment of local workers may increase economic benefits in communities surrounding the parks. These kinds of interventions could also address how to increase the employment of women in nontourism activities which is currently at 4 percent (as against a 12 percent of employment of women in tourism activities).

Considering the lower proportion of poor households that benefit from tourism compared to nonpoor households, skills and entrepreneurship programs for poor households in tourism and nontourism activities could increase the amount of tourism benefits that they capture. Reviewing Uganda's national revenue sharing program to direct more benefits to poor households may also make these benefits more equitable.

This pilot shows how the LEWIE-LITE model can help address data gaps on the direct and indirect impacts to local economies in and surrounding protected areas. The tool can support government to estimate the costs and benefits of investing in tourism at protected area sites. The model can also simulate local economy impacts of fewer tourists but higher tourist spending and vice versa—or increasing both the number of tourists and how much they spend. One could also use the tool to monitor developments in the tourist sector such as increased demand for ecotourism, or negative impacts like a reduction in local agricultural revenue due to human-wildlife conflicts. The model can further be used to simulate the impacts of expanding Uganda's community revenue sharing program.

While recognizing the limitations of the LEWIE-LITE model's simplified nature, this research prompts further studies to delve deeper into the results. Technically, the model and dashboard could be adapted to study specific subsectors of the local economy or tourism markets and products. A comparison could be undertaken of the results from LEWIE-LITE against a more comprehensive LEWIE model for protected area tourism (World Bank, 2021) to enhance understanding of direct and indirect effects of protected area tourism on local economies.

SECTION 1

Introduction



A country's protected areas and tourism are closely connected, and yet, the economic impacts of tourism on the businesses and households in and around protected areas are largely unknown. Protected areas in Uganda are visited by hundreds of thousands of tourists every year, but there are few data on the economic impact of these tourists. Without this information, tourism ministries, park services, communities, and the central and local government are unaware of the economic value of protected areas and the costs and benefits of investing in protected areas and tourism. While there have been some economic and statistical analyses of tourism in Uganda¹, studies on the impact of tourist dollars on specific Ugandan protected areas are rare, and only a few studies have estimated the impacts of tourism on local economies surrounding protected areas, such as the World Bank's [Banking on Protected Areas](#) report (2021).

Direct and Indirect Impacts of Tourism

Studies seldom go beyond direct impacts on tourism businesses—tour operators, restaurants, lodges, souvenir shops, and so on—to include indirect impacts on, for example, commercial farmers whose crops are sold to restaurants, poor and nonpoor households that get income from tourism activities, or expenditures by households and businesses that create local income, production, and employment multipliers.

Indirect impacts or spillover effects of tourism are an important part of how tourism affects local economies. These impacts should be considered in country economic development plans, sector development plans, policies, or cost-benefit studies before new tourism projects are undertaken.

This study demonstrates a tool that can be widely employed to satisfy these needs. The tool is the Protected Area Tourism Local Economy-Wide Impact Evaluation Lite (LEWIE-LITE) model, which gathers information from economic actors around a protected area and uses it to calculate direct and indirect impacts of tourist dollars on the local economy.

LEWIE-LITE models capture market linkages and direct and indirect impacts of tourist spending around protected areas. Figure 1.1 illustrates these linkages and the general theory behind the models. The black arrows show direct impacts and the yellow dotted arrows, indirect impacts. The direct impacts begin with tourists spending money on food, accommodation, shopping and tourist activities. They also pay taxes and fees, important among which are park entry fees that accrue to the government. Not all impacts are necessarily positive. For example, park rules can limit some human activities which can impact negatively on sources of income, while human-wildlife conflict around protected areas can result in losses for communities. These direct effects of tourist spending appear in the top part of the figure.

Indirect effects include the flow of wages and profits from tourism businesses into households, which, in turn, spend this income and spread impacts to new businesses

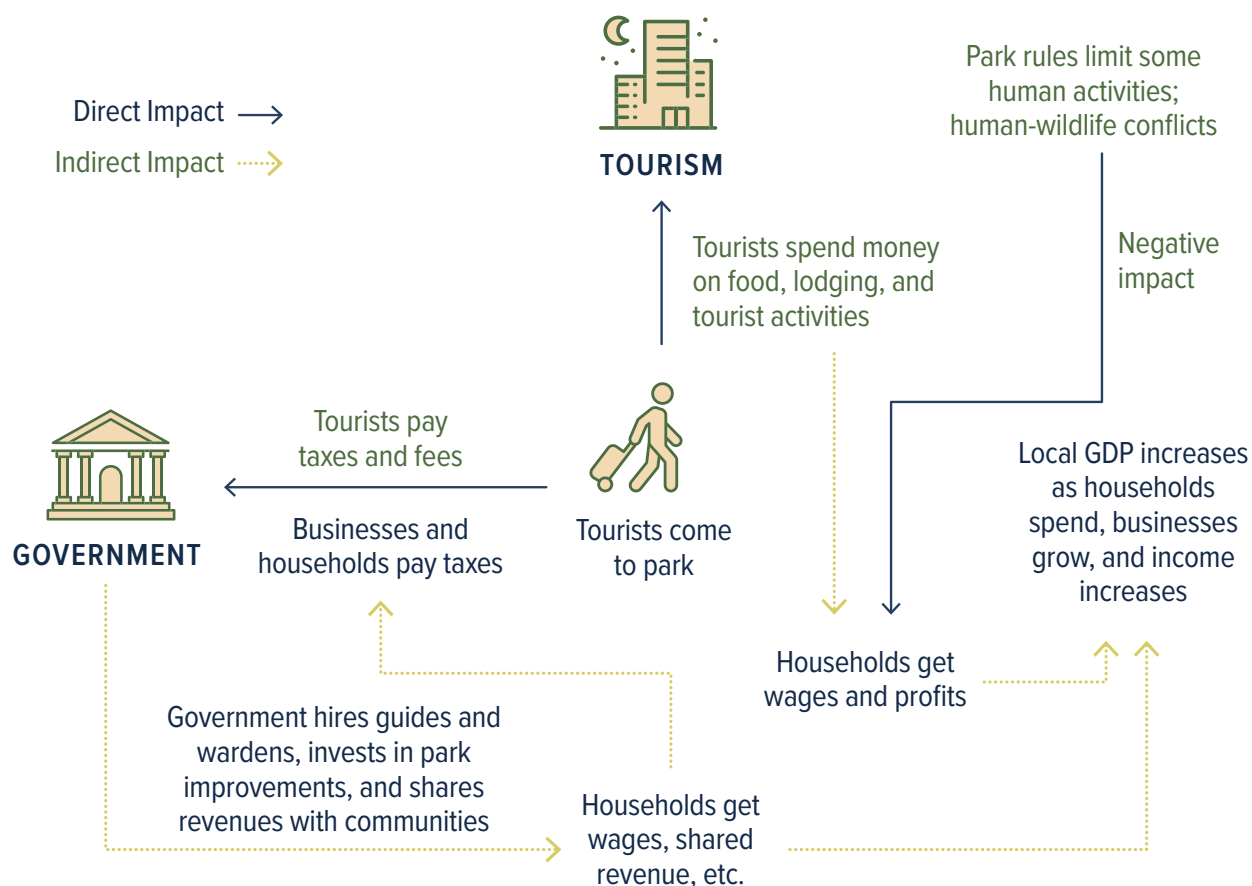
¹ See <https://www.wavespartnership.org/en/knowledge-center/economic-and-statistical-analysis-tourism-uganda> and, https://utb.go.ug/wp-content/uploads/2024/04/UG-Tourism-Stat-and-Econ-Analysis-2020-brief_compressed.pdf

and farms. This creates additional rounds of sales, income for businesses, flows of profits and wages into local households, and household spending, which increase local GDPs. As business and household incomes grow, so do tax revenues to governments. Park authorities hire guides and wardens, invest in park improvements and, in some cases, share park entry fees with local communities. Spending by parks and communities adds to the local economic impacts of nature-based tourism. According to LEWIE-LITE, the sum of all direct and indirect impacts is likely to exceed the amount of money tourists spend. The sum of impacts divided by tourist spending gives the multiplier effect of tourist spending on local economies. The model calculates multiplier effects on local production (sales), household income, and employment per tourist and per dollar of tourist spending.

LEWIE-LITE can also guide policies to strengthen linkages among local actors, and simulate interventions to strengthen tourism impacts in communities around protected areas. It is easy to use, clear, and generates tables and visuals. LEWIE-LITE builds on the LEWIE models for protected area tourism created for the World Bank's [Banking on Protected Areas](#) report of 2021, but with a simpler, more scalable approach.

FIGURE 1.1

Direct and Indirect Impacts of Tourist Spending in Protected Areas



Nature-based Tourism in Uganda and the LEWIE-LITE Pilot

Uganda ranks among the top 10 most bio-diverse countries globally, hosting approximately 54 percent of the world's mountain gorillas, 11 percent of the world's bird species, 7.8 percent of global mammal diversity, 19 percent of Africa's amphibian species, and 14 percent of Africa's reptiles.² To conserve this rich natural heritage, the government has designated a number of protected areas, which include national parks, wildlife reserves and wildlife sanctuaries, community wildlife areas, central forest reserves, and local forest reserves. These resources and attractions, complemented by an attractive year-round climate, offer a conducive environment for nature-based tourism and is the foundation of Uganda's tourism sector. In 2019, Uganda received 1.5 million international arrivals. Tourism has been identified as a priority sector within the Third National Development Plan (2020/2021–2024/2025)³ which seeks to increase tourism arrivals and revenues as well as employment in the tourism sector. The World Bank is supporting nature-based tourism in Uganda via investments under the *Investing in Forests and Protected Areas for Climate-Smart Development Project*. One of the main objectives of the project is to increase benefits to communities from the sustainable management of forests and protected areas. For these reasons, Uganda was selected as a pilot for the LEWIE-LITE methodology.



Bwindi Impenetrable National Park. Photo credit: Jane Rix / Shutterstock

Two Ugandan parks, Queen Elizabeth National Park (QENP) and Bwindi Impenetrable National Park (BINP), were selected with the help of the Uganda Wildlife Authority (UWA) for piloting. Queen Elizabeth National Park was selected because it is one of the most visited parks in the country and also offered an opportunity to assess impacts of resource extraction such as fishing. Bwindi Impenetrable National Park was selected because it offers one of Uganda's main nature-based tourism attractions, gorilla trekking.

² Uganda Tourism Development Master Plan 2014-2024.

³ See <https://www.health.go.ug/wp-content/uploads/2020/08/NDP-3-Report.pdf>

The tool offers an easy-to-use online dashboard for each site. On this dashboard, users such as government (ministries of tourism or environment, protected area managers, etc.) or World Bank teams supporting tourism projects can explore different assumptions about current or anticipated levels of protected area tourism and model the impacts of complementary interventions on local economies surrounding each park.

Structure of this Report

This report explains the LEWIE-LITE methodology (sections 2 and 3) and provides descriptive statistics on the economic impacts of tourism in each protected area collated through the field surveys (section 4). It also presents and compares results of simulations using the LEWIE-LITE interactive dashboards, and discusses simulated impacts of changes in tourism spending surrounding QENP and BINP (sections 5 and 6), local economy impacts of park and community revenue sharing spending (section 7), and impacts of complementary interventions such as increasing demand for locally produced goods and services (section 8). The final section offers conclusions and recommendations for further work (section 9).



Queen Elizabeth National Park. Photo credit: melissamn / Shutterstock

SECTION 2

Methodology



The two protected areas selected for this project were surveyed separately but with similar DCIs and methods. They are:

Queen Elizabeth National Park, renowned for its rich biodiversity, is home to elephants, leopards, buffaloes, hippos, and crocodiles, and famous for its tree-climbing lions. It is situated in the southwest of Uganda (map 2.1) and spans 1,978 square kilometers of savanna, forests, wetlands, and crater lakes. The park received 95,340 visitors in 2022. It is bordered by many communities in the districts of Kasese, Rubirizi, Kamwenge, and Rukungiri and even has a few fishing villages within its boundaries. These communities participate in various economic activities. Some are directly related to tourism, such as hotels and lodges, restaurants, souvenir shops, and tour operators, while others indirectly benefit from these activities by working in or owning retail shops, local services, and small manufacturing enterprises such as furniture making. Those inside the park may not farm or keep livestock but still participate in fishing and local businesses, while those surrounding the park engage in agriculture and other businesses. The population of this local economy is approximately 600,300 people living in 129,589 households.¹

Bwindi Impenetrable National Park is also endowed with rich biodiversity, including endangered mountain gorillas and over 350 species of birds. It is a landlocked park located southwest of QENP along the border with the Democratic Republic of Congo. It covers approximately 331 square kilometers of dense rainforest, hills, and steep valleys. The park welcomed 32,628 visitors in 2022. It is bordered by communities in Kanungu, Kisoro, and Kabale districts, which engage in a range of local economic activities including tourism and nontourism-related work. They also farm and keep livestock. The population of this local economy consists of approximately 76,900 people living in 15,276 households.²

1 Estimates from World Bank 2019 population data for subcounties surrounding the parks.

2 Estimates from World Bank 2019 population data for subcounties surrounding the parks.

MAP 2.1

Map of Uganda Highlighting Queen Elizabeth and Bwindi Impenetrable National Parks



Sampling Design

The LEWIE-LITE methodology entails collecting a small set of data from key local economy actors, using DCIs designed for this purpose. Definitions of the local economy vary, reflecting the structure of economies and markets as well as the regional interest of studies. For this study, a 10-kilometer distance from each park's boundary (and, in the case of QENP, in the park itself) was used to define the sampling area for the two local economies. Similar criteria are used in other local-economy models; for example, the Economic Impact of Giving Land to Refugees (Zhu et al. 2023) and the Banking on Protected Areas studies.

The fieldwork objective was to gather data from the parks, local government, visitors, and businesses (by type) at each site, using DCIs programmed into tablets. Table 2.1 summarizes the samples by types of actor.

TABLE 2.1
Summary of Sample Size by Types of Actor

ACTOR OR ENTITY	SAMPLE
Park manager	Budget and entrance fees to QENP and BINP Revenue sharing projects for each of the parks
Tourists	200 tourists targeted and randomly selected from various park gates and key tourist locations (QENP) and gorilla trekking debriefing and graduation points (BINP) 100 questionnaires per site
Hotels, lodges, and resorts	5 hotels or lodges and 5 all-inclusive resorts selected randomly from a list of accommodation compiled locally through consultations 10 questionnaires per site
Restaurants	20 restaurants selected randomly 10 restaurants per site
Other tourism-related businesses	30 units selected randomly 15 units per site, including 5 units per business type (tour operators or guides, souvenir shops, and equipment rental)
Other nonagricultural businesses	30 units selected randomly based on a list of enterprises 15 units by site, 5 from each of 3 categories: retail businesses (small and large stores), other services (repairs, hairdressers, beauty salons, and so on), and nonservice businesses (carpentry shops, food processors, and so on)
Commercial farmers	20 commercial farmers selected randomly 10 farmers per site
Commercial fishers	10 fishers interviewed (only for QENP)
Tour operators in the capital	10 tour operators surveyed in the capital, Kampala

Source: World Bank 2023.

The information was collected as follows:

1. Protected areas

QENP and BINP are managed by UWA. Data were collected through face-to-face interviews at each site in which park staff were asked about park budgets and revenue sharing revenues.

2. Revenue sharing program

Uganda, through UWA, has an arrangement through which 20 percent of all park entry fees and \$10 from each gorilla trek permit are reinvested into community programs to improve local livelihoods or address human-wildlife conflict. The beneficiaries are communities bordering the national parks. Data were obtained by interviewing authorities for each park.

3. Tourists

Tourists were interviewed at the two national parks. The study considered three types of tourists: nationals, foreigners with residency in Uganda, and foreigners visiting Uganda for tourism. In total, 200 tourists (100 at each site) were randomly surveyed. In the case of a group³, only one member was interviewed.

4. Hotels, lodges, and resorts

Information was gathered from 10 hotels/ lodges/resorts from each site. Through local consultations with park and government officials, lists of hotels, lodges, and resorts were compiled and a random selection were chosen for interviews, comprising five small and five medium-to-large establishments.

5. Restaurants

Interviews were conducted with 20 restaurants, 10 at each site, randomly selected.

6. Other tourism-related businesses

Besides lodges and restaurants, 30 tourism-related businesses, 15 from each site, were randomly selected. Data were collected from three types of tourism businesses: tour operators or guides (excursions and so on), souvenir shops, and equipment rental stores. Five interviews were conducted for each type of business per park.

7. Other nonagricultural businesses

Thirty nonagricultural businesses, not related to tourism, 15 from each site, were randomly selected. Data were collected through face-to-face interviews with three types of nontourism businesses: retail trade (small and large grocery stores), other services (auto repairs, transport, hairdressers, beauty salons, and so on), and nonservice establishments (for example, carpentry shops and food processing companies). Five interviews were carried out for each type of business per park.

8. Commercial farmers

Twenty farmers, 10 from each site, were randomly selected and interviewed.

³ Either a family or tour group.

9. Commercial fishers

As natural resource users, 10 fishers were randomly selected and interviewed at QENP (Bwindi has no fishing).

10. Households

The LEWIE-LITE model also simulates the effects of tourism and other benefits on household incomes. Households surrounding a park may supply labor, produce crops and livestock, run businesses, and in some cases, receive profits from tourist firms and operations. Household data were extracted from the most recent World Bank Living Standards Measurement Survey (LSMS) for Uganda, conducted in 2019–20. Location data were used to identify households from the districts around each park. The districts identified in the LSMS (which were the same or comparable to the districts surrounding the parks where surveys were conducted) and used for BINP were Rubanda, Kisoro, and Kanungu. For QENP, Mitooma, Ibanda, Rukungiri, Kamwenge, Kasese, and Bushenyi were used. Using World Bank 2018–19 absolute poverty lines, these households were separated into poor and nonpoor categories.

11. Tour operators

Many protected area visitors purchase travel packages from tour operators outside the local economy, typically in Kampala, the capital. Ten tour operators based in Kampala were surveyed. These data are important because tourists who buy package deals generally do not know how costs are allocated to local spending by sector (lodges, tour operators, meals, etc.). To get this information, tour operators in Kampala were asked what share of the package price went to businesses around the two parks. Additionally, respondents were asked for the percentages spent on skilled and unskilled male and female workers. The definitions were agreed on with local experts (table 2.2).

TABLE 2.2
Definitions of Skilled and Unskilled Workers

LEVEL	PERSONNEL	SKILLED OR UNSKILLED
Level 1	Executive managers For example, institutional heads, administrative and financial directors, and human resource directors	Skilled Regardless of degree or years of experience
Level 2	Managers or employees who have authority over others For example, accountants and managers	Skilled Regardless of degree or years of experience
Level 3	Cleaning staff Servers Janitors Bartenders Gardeners Kitchen staff Guides	Skilled If (and only if) have diploma or qualification Unskilled If they have experience (regardless of the number of years) but do not have a diploma or qualification

Source: World Bank 2023.

SECTION 3

Data Collection and Analysis



Data were collected for the LEWIE-LITE survey from February 6 to March 17, 2023, including travel. Five enumerators were mobilized through a local data collection firm, Laterite, to carry out the field survey. The survey was timed to capture the largest number of tourists as well as the dynamics of the local economy during the tourism high season. Ideally, this exercise would be repeated multiple times a year to capture the economic impacts across high and low tourist seasons.

A goal of the LEWIE-LITE approach is to minimize time and resources spent on data collection, which is essential for scalability of the model. This means surveying an adequate sample of tourists to obtain reasonable estimates of their spending patterns, combined with interviews of local tourism and nontourism businesses. Keeping the information gathered to a minimum meant that interviews could be carried out quickly.

Table 3.1 summarizes the information gathered from visitors and businesses (see appendix A for the short questionnaires used for each type of actor or entity), and that were collected from national park authorities and households (from the LSMS data for the region surrounding each park). This is the minimum data set needed for LEWIE-LITE to model local economic activity directly or indirectly connected to protected area tourism.

The visitor survey (table 3.1a) asked respondents about how much money they spent on each category of goods and services listed on the visitor DCI: lodging, restaurant meals, souvenirs, and so on.

The goal of the business survey (b) is to capture broadly, yet comprehensively, all activities in the local economy that may benefit directly or indirectly from tourism. Most of the questions concern percentages of total revenue that businesses spent on intermediate inputs and labor, purchased (or hired) locally or outside the local economy (“local imports,” for purposes of the model). Businesses were also asked to “ballpark” a typical profit share for enterprises in their activity and to estimate what share of these businesses are locally owned.

Data from park budgets (c) were used to calculate protected area spending on local and outside goods and services, including wages for different worker groups. They also provided the information needed to calculate the amount of park entry fees shared with local communities, which comprises the community revenue sharing budget. Interviews with community revenue sharing staff provided information on how much of this revenue was spent on local and outside goods and services, including wages to different worker groups.¹ The spending categories for community revenue sharing and park spending were the same, as given in 3.1c.

The LSMS data were used to calculate average per capita income, remittances, government transfer incomes, and other variables for each household group (d), as well as household budget shares and goods and services purchased locally and outside the local economy.

¹ Since there were several community projects, the study took the largest one from each park to estimate the shares of expenditures and wages to labor, and applied those shares to the total amount.

TABLE 3.1

Summary of Information Collected from Visitors, Local Businesses, Protected Area Authorities, and Households (from Data Collection Instruments)

A. VISITORS (FROM VISITOR SURVEY)	B. BUSINESSES (FROM BUSINESS SURVEY)	C. PROTECTED AREA (FROM NATIONAL PARK ACCOUNTS)	D. HOUSEHOLDS (FROM HOUSEHOLD SURVEY)
Number of multi-day tourists (adults and children >5) (in the whole zone of impact)	About what percentage of monthly spending goes to each of the following:	Total expected annual park budget 2022	What is the population of the communities constituting this local economy (number of people)
Average stay (days)	Salaries and wages for male unskilled workers	Total expected park entry fees 2022	How many households are in this local economy (number of households)
Average stay (nights)	Salaries and wages for male skilled workers (machine operators, supervisors, receptionists, accountants, etc.)	What share of park entry fees are being assigned to community revenue sharing	About what is the average annual per-capita income of households in this region (\$)
Average nightly price per room (total, including taxes, double occupancy, including resort and other fees)	Salaries and wages for female unskilled workers	Difference (net transfer from government to parks)	About what is the average annual government transfers (e.g., social cash transfers) to households in this region
Expected number of single-day tourists (adults and children >5, no lodging)	Salaries and wages for female skilled workers (machine operators, supervisors, receptionists, accountants, etc.)	Total community revenue sharing budget	About what percentage of household income comes from:
Expected spending per person per day while visiting this protected area, on:	Crop purchases from local farmers or animal products from local ranchers		Wages earned by male unskilled workers in the household
Park entry	Purchases from tourism	How much of this budget goes to:	Wages earned by male skilled workers in the household
Local restaurants (food and drink)	Local fish	Salaries and wages for male unskilled workers	Wages earned by female unskilled workers in the household
Guides and tours	Services (machine maintenance, construction, repairs) from local providers	Salaries and wages for male skilled workers	Wages earned by female skilled workers in the household
Souvenirs/handicrafts	Purchases from local stores and other businesses	Salaries and wages for female unskilled workers	Profits from household-owned farms or businesses or renting property the household owns
Retail shops, local markets	Purchases outside the local economy, like merchandise (for stores) or supplies	Salaries and wages for female skilled workers	Migrant remittances (domestic and foreign)
Other	Farm tax/fishing business tax rate (%)	Payment of rents on land, buildings, etc.	About what percentage of household spending each month is on:
	Other variables	Locally produced agricultural products (fruits, vegetables, meats)	Food bought from local grocery stores
	Share of businesses locally owned	Locally produced fish or other natural resources	Buying food direct from local farmers or your own farm
	Share of wages paid to local workers	Services (laundry, maintenance, construction, repairs) from local providers	Buying local fish
	Average profit margin	Purchases from local stores and other businesses	Buying food and drink at local restaurants
		Purchases made outside the local economy	Things besides food that are sold by people or businesses in your community, including services
		Other variables	Things you buy from businesses, etc., in places outside your community
		Percentage of salaries and wages paid to local workers	Rental income
			Income tax payments

Source: World Bank 2023.

Data Analysis and the LEWIE-LITE Dashboard

After the data are collected, they are entered into structured spreadsheets using Microsoft Excel. An algorithm then uses the data to construct a social accounting matrix (SAM), and from it, a SAM multiplier model, upon which the LEWIE-LITE online dashboard is built. The first SAM was built in 1962 as a matrix representation of national accounts (Stone and Brown 1962). Since then, country-level SAMs have been used widely by the World Bank, the Organisation for Economic Co-operation and Development, and other international organizations, and form the basis for many countries' computer general equilibrium models.

The DCIs, SAM, and SAM multiplier matrices for each protected area are accessed by the “Data” link on the dashboard's main page menu bar. Figure 3.1 shows a picture of the dashboard with data and a SAM multiplier matrix for QENP.

The dashboard can run simulations on the impacts of tourism and other policies on the local economy. When users run a simulation, for example, to estimate the impact of an additional \$100 in visitor spending in the protected area on local production, employment, and incomes (the simulation discussed in section 5), the number (in this case, 100) is entered onto the dashboard under: *“How much tourist spending (\$) do you want to simulate?”* The dashboard passes this number to the model algorithm and reports the results in easy-to-visualize figures. Figure 3.2 shows the dashboard display of the multiplier results of tourist spending from the data and a \$100 increase simulation, using the “Simulations” tab, for QENP.



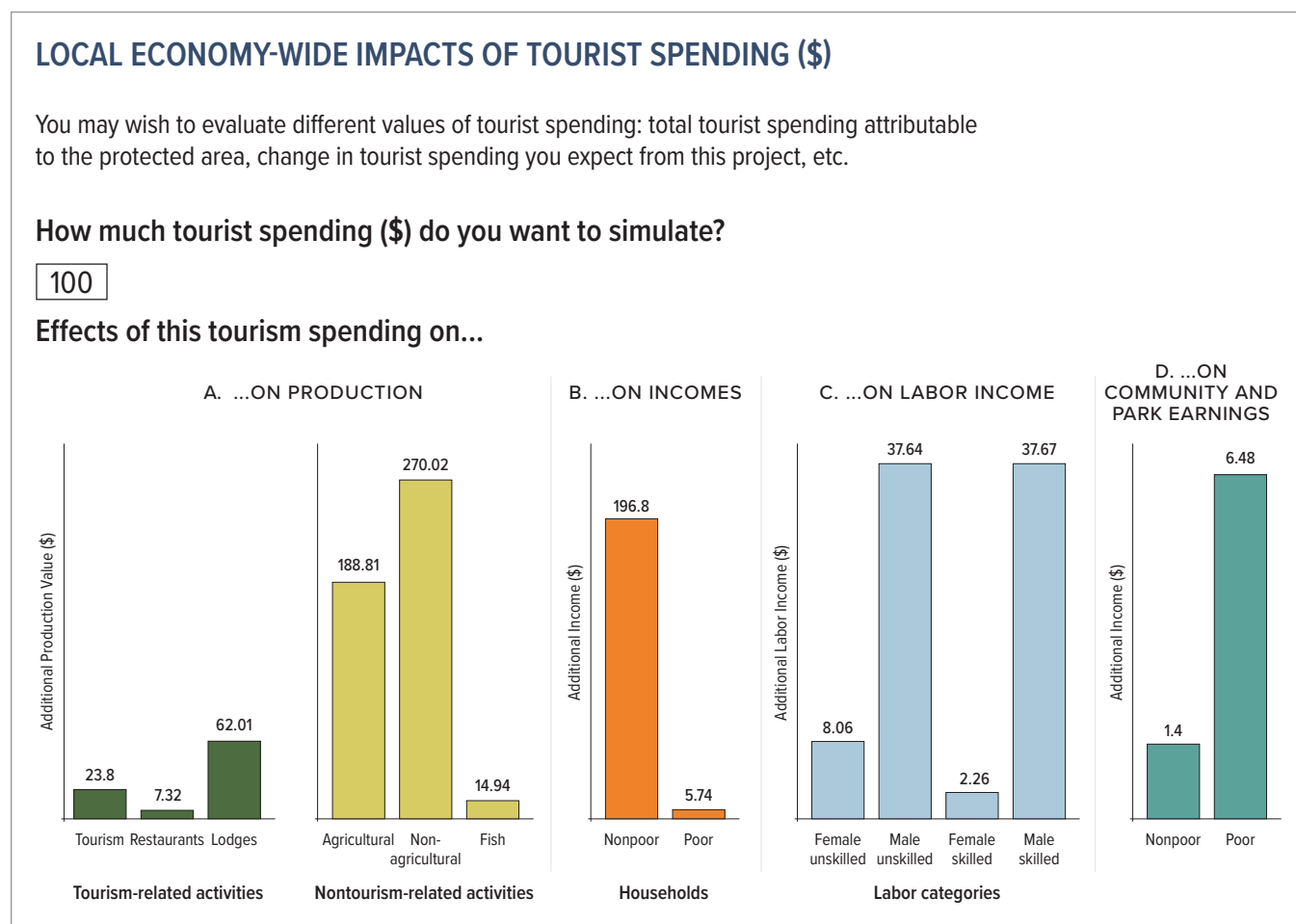
Bwindi Impenetrable National Park. Photo credit: typepng / Adobe Stock

FIGURE 3.1**Social Accounting Matrix for QENP as shown on the LEWIE-LITE Dashboard**

	AGRICU	TOURISM	NONAGR.	FISH	LMUSK	LMSK	LFUSK	LFSK	K	POOR	NONPOOR	RESTAURANTS	LODGES	TOURISTS	PROT. AREA	COMREVSH
Agricultural	3.11	1.61	1.97	1.59	2.33	2.33	2.34	2.34	2.33	2.61	2.32	2.30	1.95	1.89	1.95	2.16
Tourism	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.24	0.00	0.00
Nonagricultural	2.90	2.29	3.68	2.31	3.21	3.21	3.21	3.21	3.21	3.19	3.21	2.83	2.68	2.70	3.20	3.45
Fish	0.15	0.12	0.16	1.12	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.20	0.16	0.15	0.15	0.16
LMUSK	0.52	0.33	0.40	0.42	1.43	0.43	0.43	0.43	0.43	0.47	0.43	0.43	0.38	0.38	0.44	0.70
LMSK	0.52	0.31	0.37	0.29	0.41	1.41	0.42	0.42	0.41	0.45	0.41	0.43	0.40	0.38	0.37	0.43
LFUSK	0.05	0.08	0.07	0.05	0.06	0.06	1.06	0.06	0.06	0.06	0.06	0.06	0.06	0.08	0.27	0.21
LFSK	0.00	0.01	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.01	0.03	0.02	0.04	0.00
K	1.33	1.06	1.07	1.02	1.15	1.15	1.15	1.15	2.15	1.22	1.14	1.34	1.23	1.17	1.01	1.11
Poor	0.07	0.05	0.05	0.05	0.09	0.08	0.13	0.12	0.08	1.06	0.06	0.06	0.06	0.06	0.07	0.08
Nonpoor	2.37	1.74	1.85	1.73	2.96	2.98	2.93	2.94	2.97	2.14	2.99	2.21	2.04	1.97	2.05	2.37
Restaurants	0.05	0.04	0.04	0.04	0.07	0.07	0.06	0.06	0.07	0.05	0.07	1.05	0.05	0.07	0.05	0.05
Lodges	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.62	0.00	0.00
Tourists	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Protected area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	1.00	0.00
ComRevSh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.22	1.00

Source: World Bank 2023.

Note: LMUSK = Labor male unskilled workers; LMSK = Labor male skilled workers; LFUSK = Labor female unskilled workers; LFSK = Labor female skilled workers; K = Capital; ComRevSh = Community revenue sharing;

FIGURE 3.2**LEWIE-LITE Dashboard for QENP Multipliers for \$100 of Tourist Spending under the Simulations Tab**

Source: World Bank 2023.

SECTION 4

Descriptive Statistics of Tourist Numbers and Spending at Queen Elizabeth and Bwindi Impenetrable National Parks



Tables 4.1 to 4.5 present the calculations for the LEWIE-LITE model based on the data gathered in the field, and provide a “snapshot” of tourist visits and spending across the local economies surrounding Bwindi Impenetrable National Park and Queen Elizabeth National Park.

Table 4.1 shows the number visitors and their spending on goods and services during their visit to each site. The total number of visitors to QENP in 2022 was 95,340. However, of these, 67,736 were multiday tourists (32,106 foreign nonresidents, 3,673 foreign residents, and 31,957 East African residents) while the remaining comprised mainly students. While students could also potentially be multiday tourists, they have a much lower expenditure than tourists whose main purpose of travel is to engage in the specific tourism activities offered by the park. Therefore, for the purposes of this study, it was decided to remove students from the total number of visitors to QENP. BINP had 32,628 visitors, all of whom were multiday tourists (30,440 foreign nonresidents, 341 foreign residents, and 1,818 East African residents). The average stay was 1.9–2.2 nights at QENP and 2.3 days at BINP. Rooms were, on average, more expensive at BINP: \$182 per room, compared with \$164 at QENP. Entry fees were considerably higher at Bwindi where visitors purchase their entry fee plus a gorilla trekking permit, which includes a park guide. This gives an average park fee of \$698 per person per day, versus \$32.80 at QENP.¹ Bwindi visitors spent more in local restaurants and on guides, tours and souvenirs; while in and around QENP, visitors spent more at retail businesses and local markets and other categories of expenditure.

In summary, the average visitor to QENP spent \$268 per day, of which 61 percent went to accommodation, 12 percent to park fees, 2.5 percent to local restaurants, 14 percent to guides and tours, 4.6 percent to souvenirs and handicrafts, 2.5 percent to retail shops and local markets, and 3 percent to other goods and services. The relatively low percentage spent in local restaurants (as also in the case of BINP as indicated later in this paragraph) is because most accommodation offer meals in their packages on either a half or full board basis. On the other hand, the average visitor to BINP spent \$998 per day, of which 19 percent went to accommodation, 67 percent to park fees, 2 percent to local restaurants, 5 percent to guides and tours, 3 percent to souvenirs and handicrafts, 1 percent to retail shops and local markets, and 3 percent to other goods and services. The disparity in spending between the two parks is mainly due to the costs of the gorilla trekking permit at BINP, particularly for foreign (nonresident and resident) visitors.

¹ These are average entry prices for randomly selected tourists who are primarily nonresident foreigners (especially at Bwindi Impenetrable) but include some domestic and foreign resident visitors as well (mainly at Queen Elizabeth National Park).

TABLE 4.1**Number of Visitors and Their Expenditures at QENP and BINP**

VISITOR INFORMATION GATHERED		QUEEN ELIZABETH NATIONAL PARK	BWINDI IMPENETRABLE NATIONAL PARK
Park records	Number of multi-day tourists (adults and children > 5)	67,736	32,628
Visitor surveys	Average stay (days)	2.2	2.3
	Average stay (nights)	1.9	2.3
	Average nightly price per room (total, including taxes, double occupancy, including resort and other fees, \$)	\$164	\$182
	Expected spending in \$ per person per day on:		
	Expenditure category		
	Park entry	\$32.80	\$698.00
	Local restaurants (food and drink)	\$6.70	\$17.80
	Guides and tours	\$37.00	\$55.40
	Souvenirs and handicrafts	\$12.30	\$32.20
	Retail shops and local markets	\$6.70	\$5.30
	Other (including hotel shops)	\$8.40	\$6.90
Total		\$267.90	\$997.60

Source: World Bank 2023.

Attribution can be challenging at some protected area sites. Can one attribute tourist expenditure in the local economy to the existence of the park itself? In the case of QENP and BINP, attribution is straightforward, as the parks are the main tourism attractions in each area so one can assume that all, or almost all, tourist spending in the local economies can be attributed to the parks.

Visitor spending is the direct or first-round impact of protected area tourism on the local economy, as illustrated in figure 1.1. The LEWIE-LITE algorithm calculates visitor spending for each expenditure category. It channels park entry fees to the park sector and visitor goods and services to mainly the local tourism business sectors.²

Visitor demands for local goods and services direct more money to the corresponding production activities. Tourism businesses spend this money purchasing intermediate and factor inputs, including hired labor. This transmits impacts to nontourism businesses, which supply other inputs, as well as to households, which receive wage and profit incomes from tourism activities. Wages and profits stimulate household spending, which adds to the local demand for goods and services from nontourism activities and creates

² This may not be the case for all tourist spending. For example, in many high-end accommodation facilities, wine is perhaps not acquired through a local business but imported and delivered directly to the establishment.

new rounds of impacts on nontourism businesses and households. The model adds up these multiple rounds of impacts which converge to local multiplier effects of protected area tourism.

Table 4.2 Expenditure Shares in Tourism Activities, Restaurants, and Hotels or Lodges Surrounding QENP and BINP⁴ reports the gross income or sales, percentages of gross income spent on intermediate inputs and wages, and profit margins of tourism-related activities (tourism businesses, restaurants, and hotels and lodges) in BINP and QENP. These were calculated from the interviews with souvenir stores, tour operators and tour equipment rental shops, restaurants, and hotels and lodges surrounding the parks.³ The numbers reveal how these businesses channel income to male and female unskilled and skilled workers; local purchases from commercial farmers, herders, and fishers; nearby retail and service businesses; profits; and nonlocal purchases.

TABLE 4.2**Expenditure Shares in Tourism Activities, Restaurants, and Hotels or Lodges Surrounding QENP and BINP**

	QUEEN ELIZABETH NATIONAL PARK (AVG. %)			BWINDI IMPENETRABLE NATIONAL PARK (AVG. %)		
About what percentage of monthly spending goes to each of the following:	TOURIST BUSINESSES	RESTAURANTS	HOTELS/ LODGES	TOURIST BUSINESSES	RESTAURANTS	HOTELS/ LODGES
Salaries and wages for male unskilled workers	6%	4%	4%	0%	3%	5%
Salaries and wages for male skilled workers (machine operators, supervisors, receptionists)	6%	4%	12%	1%	8%	9%
Salaries and wages for female unskilled workers	8%	7%	3%	2%	3%	6%
Salaries and wages for female skilled workers (machine operators, supervisors, receptionists)	2%	7%	7%	4%	2%	12%
Crop purchases from local farmers or animal products from local ranchers	13%	28%	20%	31%	44%	12%
Purchases from tourism activities	0%	0%	4%	0%	0%	4%
Local fish	1%	4%	3%	2%	7%	2%
Services (machine maintenance, construction, repairs, etc.) from local providers	13%	16%	15%	24%	8%	10%
Purchases from local stores and other businesses	14%	13%	13%	19%	13%	12%
Purchases outside the local economy, like merchandise (for stores) or supplies	35%	15%	14%	16%	9%	26%
Nonfarm tax/meal tax/lodge tax rate (%)	3%	2%	6%	3%	2%	3%
Other variables						
Share of businesses locally owned	71%	100%	36%	100%	90%	17%
Share of wages paid to local workers	53%	80%	51%	100%	43%	80%
Average profit margin	32%	25%	46%	32%	25%	46%
Number of observations	15	10	11	15	10	10

Source: World Bank 2023.

3 Profit margins in BINP were not calculated but presumed to be similar to businesses in QENP.

Table 4.3 reports the same expenditure shares for agricultural and nontourism related businesses. These businesses benefit mainly indirectly from tourists. For example, tourists buy directly from restaurants which purchase food from local farmers.

TABLE 4.3

Expenditure Shares for Agriculture, Fishing, Retail Services, and Production Businesses Surrounding QENP and BINP

About what percentage of monthly spending goes to each of the following:	QUEEN ELIZABETH NATIONAL PARK (AVG. %)			BWINDI IMPENETRABLE NATIONAL PARK (AVG. %)		
	AGRICULTURE	FISHING	RETAIL/ SERVICES / PRODUCTION	AGRICULTURE	FISHING (NOT AVAILABLE LOCALLY)	RETAIL/ SERVICES / PRODUCTION
Salaries and wages for male unskilled workers	19%	16%	7%	18%	-	1%
Salaries and wages for male skilled workers	21%	1%	5%	12%	-	5%
Salaries and wages for female unskilled workers	0%	0%	4%	2%	-	0%
Salaries and wages for female skilled workers	0%	0%	0%	1%	-	1%
Crop purchases from local farmers or animal products from local ranchers	19%	10%	27%	14%	-	15%
Purchases from tourism activities	0%	0%	0%	0%	-	0%
Local fish	2%	2%	3%	1%	-	2%
Services (machine maintenance, construction, repairs) from local providers	15%	22%	14%	14%	-	11%
Purchases from local stores and other businesses	11%	8%	20%	18%	-	21%
Purchases outside the local economy, like merchandise (for stores) or supplies	14%	36%	16%	16%	-	42%
Nonfarm tax/meal tax/lodge tax rate (%)	1%	3%	2%	5%	-	2%
Other variables						
Share of businesses locally owned	100%	100%	90%	100%		93%
Share of wages paid to local workers	100%	43%	43%	100%	-	47%
Average profit margin	30%	23%	11%	30%	-	11%
Number of observations	10	10	15	15	-	15

Source: World Bank 2023.

Tables 4.2 and 4.3 are snapshots of the data input for the model, gathered from the local interviews. They reveal interesting aspects of the local economies surrounding the protected areas. For example, table 4.3 shows limited participation of women as paid employees in agriculture, fishing, and other nontourism activities. The percentages of income (gross sales) that these activities spend on female-worker wages range from 0 percent to 4 percent. However, the percentages going to male-worker wages in these activities are usually much higher—12 percent to 21 percent in the case of agriculture. Female-worker wages are higher in tourism-related activities (table 4.2). It appears that tourism is an important entry point for female workers in the local economy. This raises the question of why women are not being employed much in nontourism sectors.

These tables reveal both direct local impacts of business spending as well as leakages out of the local economy, as businesses purchase intermediate inputs in outside markets and send wages and profits to households outside local economies. Most nontourism businesses are locally owned and hire mostly local labor. Nonlocal ownership and hiring are more common among tourism-related businesses. Promoting local ownership and employment of local workers may increase economic benefits in communities surrounding the parks. The model does not explain why local tourism business ownership and local employment are not higher (or how to make them higher), but it does show that local business ownership and employment can inform interventions to increase local economic benefits from protected area tourism.

Retail stores have large leakages in these local economies (like most), because a large portion of their merchandise comes from outside markets. The same is true for production activities. For example, carpentry shops purchase many of their inputs from outside markets. At BINP, which is more isolated than QENP, purchases from outside markets make up 42 percent of total retail spending compared with 16 percent at QENP. Households in QENP also spend a large share of their income in local stores (see table 4.3). Because stores at QENP source more of what they sell locally, more money is circulated in the local economy thereby creating larger multipliers.

Household spending is an important link in the chain of income and expenditures that can create local income multipliers. Table 4.4 shows the population, income, and expenditures of poor and nonpoor households in the two local economies, which were calculated from LSMS survey data.

Generally, households surrounding QENP tend to be better off than those surrounding BINP. This is due to the fact that QENP is located in a busy commercial part of the country, along the main north-south trunk road while BINP is located in mountainous terrain far away from main cities. The average annual per capita income at QENP is \$207 for poor households and \$682 for nonpoor households, \$26 and \$174 higher, respectively, than at BINP. The share of poor households is also much higher in villages surrounding BINP: 44 percent, compared with only 11 percent at QENP. In both parks, poor households receive more income from unskilled and skilled female workers than nonpoor households—20 percent and 15 percent compared to 8 percent and 7 percent.

TABLE 4.4**Population, Income, and Expenditures of Poor and Nonpoor Households Surrounding QENP and BINP**

HOUSEHOLD POPULATION, INCOME AND EXPENDITURES	QUEEN ELIZABETH NATIONAL PARK		BWINDI IMPENETRABLE NATIONAL PARK	
	POOR	NONPOOR	POOR	NONPOOR
What is the population of the communities constituting this local economy (number of people)	70,775	529,525	29,453	47,447
How many households are in this local economy (number of households)	12,522	117,067	4,692	10,584
About what is the average annual per-capita income of households in this region	\$207	\$682	\$181	\$508
About what is the average annual government transfers (e.g., social cash transfers) to households in this region	\$ -	\$ -	\$ -	\$9
About what percentage of household income comes from...				
Wages earned by male unskilled workers in the household	10%	8%	10%	8%
Wages earned by male skilled workers in the household	5%	8%	5%	8%
Wages earned by female unskilled workers in the household	20%	8%	20%	8%
Wages earned by female skilled workers in the household	15%	7%	15%	7%
Profits from household-owned farms or businesses or renting property the household owns	21%	25%	6%	24%
Migrant remittances (domestic and foreign)	7%	3%	1%	4%
About what percentage of household spending each month is on...				
Food bought from local grocery stores	2%	7%	9%	12%
Buying food direct from local farmers or your own farm	48%	35%	41%	35%
Buying local fish	0%	1%	0%	0%
Buying food and drink at local restaurants	0%	2%	0%	1%
Things besides food that are sold by people or businesses in your community, including services	31%	45%	32%	40%
Things you buy from businesses, etc., in places outside your community	1%	3%	4%	2%
Rental income	1%	1%	0%	0%
Income tax payments	0%	1%	0%	0%

Source: World Bank 2023.

Nonpoor households receive more income from renting property or having their own businesses than poor households. This is especially true in Bwindi where nonpoor households earn 24 percent of their income from farms, businesses, or renting property, while poor households earn only 6 percent. Poor households surrounding the two parks spend from 40–50 percent of their income on purchases from local farms, with the rest of expenditures mainly on other goods and services from local businesses, with little purchased from outside of the local economy.

Table 4.5 shows the park budgets and park revenue from entry fees for QENP and BINP. Parks can have various sources of revenue (entry fees, concession fees, research fees, etc.) but, for the purposes of this LEWIE-LITE exercise, park revenue is considered as the total income from park entry fees (and at BINP, gorilla permits). The park budget is determined by the government. At both parks, park revenue exceeds the park budget—substantially, in the case of BINP. **Park revenue is transferred to UWA which then shares 20 percent of park entry fees (plus \$10 of each gorilla trek permit fee at BINP) with local communities under the revenue sharing program**, thereby creating incentives for conservation via this arrangement.⁴ Communities spend this money on various projects, generally using local labor and materials.

⁴ The calculation of payments to local community revenue sharing is more complicated at BINP than QENP due to the gorilla fee. At QENP, foreign visitors pay park entry fees of \$40 and domestic visitors pay \$5.20, of which 20 percent, or \$8 and \$1.04, respectively, go to local community revenue sharing. At BINP, nearly all visitors are foreigners who pay a \$40 entry fee plus a gorilla permit of around \$660. There, 20 percent of the park entry fee and \$10 per gorilla permit go to community revenue sharing, for an average of \$18 per foreign visitor.

TABLE 4.5**Park Budgets and Community Revenue Sharing and Spending in 2022**

	QUEEN ELIZABETH NATIONAL PARK		BWINDI IMPENETRABLE NATIONAL PARK	
	PARK BUDGET	COMMUNITY REVENUE SHARING	PARK BUDGET	COMMUNITY REVENUE SHARING
Total annual park budget 2022	\$3,008,398		\$2,276,284	
Total park entry fees 2022	\$3,127,775		\$45,265,300	
What share of park entry fees are being assigned to community revenue sharing	20%		20% of park entry fees and \$10 of every gorilla permit	
Amount sent to the national government	\$119,377		\$42,989,016	
Park budget as a percent of park entry fees	96%		5%	
Total Community Revenue Sharing Budget		\$625,555		\$842,262
How much of park and community revenue sharing budgets go to...				
Salaries and wages for male unskilled workers	0.3%	28.5%	1.7%	7.4%
Salaries and wages for male skilled workers	0.0%	3.3%	0.2%	3.5%
Salaries and wages for female unskilled workers	37.0%	14.9%	36.8%	32.6%
Salaries and wages for female skilled workers	7.5%	0.0%	7.7%	0.0%
Payment of rents on land, buildings, etc.	0.1%	0.0%	0.5%	0.0%
Locally produced agricultural products (fruits, vegetables, meats)	2.9%	1.7%	4.6%	10.9%
Locally produced fish or other natural resources	0.0%	0.0%	0.0%	0.0%
Services (laundry, maintenance, construction, repairs) from local providers	30.9%	0.2%	14.9%	4.3%
Purchases from local stores and other businesses	13.2%	51.4%	28.0%	41.3%
Purchases made outside the local economy	8%	0%	5.8%	0.0%
Percentage of salaries and wages paid to local workers	45%	100%	46%	100%

Source: World Bank 2023.

Park revenue is higher at BINP than QENP due to the gorilla trekking activity. In 2022, a visitor paid an average of \$700 per person for a gorilla trek (a \$40 park entry fee plus \$660 gorilla permit) at BINP but only \$40 to enter QENP. The visitor sample from BINP contained no Ugandan nationals and only two out of 89 visitors surveyed were foreign residents of Uganda. The rest were nonresident foreigners; thus, the average fee for BINP is close to what nonresident foreigners pay. This contrasts with QENP, where 20 out of 98 surveyed were domestic visitors (including two foreign residents). Domestic visitors pay only \$5.20 as entry fee at QENP, bringing the average park entry fee among surveyed visitors down to \$32.80. Both parks are fully funded by their fees and, in fact, generate a net income to the national government, which can use this money for other purposes, including to help fund parks that receive fewer visitors. BINP generates especially large net revenues through gorilla permit fees. However, local multiplier effects of tourist spending are lower at BINP because most of the gorilla permit fees are paid to UWA and are not spent locally.

Community revenue sharing programs create local social assets and generate economic benefits by hiring local workers and buying materials from local businesses. However, local purchases by both parks impact the local economy in ways beyond just the community revenue sharing program: local purchases make up 92 percent of the budget for QENP and 94 percent for BINP.⁵

5 The percentage of the budget spent on local purchases is calculated as 100 percent, minus the percentage of “purchases made outside the local economy.”

SECTION 5

Using the Model to Simulate Impacts of Tourism



To illustrate uses of the model, the two LEWIE-LITE dashboards were used to simulate impacts of changes in tourist spending surrounding Queen Elizabeth National Park and Bwindi Impenetrable National Park (further simulations are shown in sections 7 and 8). The online dashboards generate graphs showing impacts on local production activities (both tourism-related and nontourism-related), incomes of poor and nonpoor households, and wages of male and female skilled and unskilled workers.

For this report, the authors compared impacts for an additional \$100 in spending across the different sectors (income, production, jobs, wages, skilled and unskilled, and poor and nonpoor). It was determined that this was a reasonable simulation to run because the additional \$100 could come from more tourists or the same number of tourists spending more. Other simulations can be undertaken (for example, increasing the number of tourists or increasing the spending of tourists per day; see appendix B for more information on how LEWIE-LITE can be used).



Queen Elizabeth National Park. Photo credit: Kylie Nicholson / Adobe Stock

Local-Economy Impacts of Tourist Spending (\$)

The dashboard gives a snapshot of tourist spending at the parks as well as the total multiplier effects of tourist expenditures. These are the changes in gross sales or the total value of local production of goods and services, household incomes, wages, and profits per dollar of tourist spending. They include both direct impacts on tourist industries such as lodges, restaurants, guides, and souvenir shops, and indirect impacts on the local economy.

Queen Elizabeth National Park

The tourist spending multipliers for QENP are shown in figure 5.1. **An additional dollar of tourist spending increases total local production by \$5.67 and local income or GDP by \$2.03.** Most of this income gain, \$1.97, accrues to nonpoor households. Poor households' income rises by \$0.06 per dollar spent by park visitors. Of the \$2.03 increase in income, \$0.86 is worker wages and \$1.17 is profits or payments to capital. A more detailed explanation of how these multipliers are calculated is in appendix C.

The dashboard can be used to detail the impacts of any amount of tourist spending on different production sectors or activities, household groups, wages by worker group, and community and park revenue. To illustrate this, the impacts of a \$100 increase in tourist spending were simulated. The dashboard displays the impact of this increase in tourist spending on production, on incomes, and on labor income, as shown for QENP in figure 5.2.

This was done by multiplying the previously mentioned multipliers and others produced by the model by \$100 in extra tourist dollars. For example, the increase in income in figure 5.2b is the \$100 increase in tourist spending times the multiplier on income, 2.03, giving the total \$203 of which approximately \$197 would accrue to nonpoor households and \$6 to poor households.

Although the direct impacts of tourist expenditures are strong, there are indirect impacts that, taken together, exceed the direct impacts of tourist spending. Figure 5.2a shows that the largest impacts are on nonagricultural activities such as retail shops, local services, and other production activities.

The large impacts on nonagricultural activities and local agriculture reflect their importance in the local economy. Workers in the tourist industry use a large share of their income to purchase local goods and services. Local business owners and workers in nontourist sectors also now have extra income to spend on these same goods and services, creating additional rounds of indirect impacts. Summing up the six production bars in figure 5.2a, the total impact on all production sectors of \$567 exceeds the simulated \$100 increase in tourist spending.

FIGURE 5.1
LEWIE-LITE Dashboard of Tourist Spending Multipliers for QENP
Local-economy impacts of tourist spending (\$):

For every dollar of tourist spending, the total production multiplier is:

WHICH CAN BE SPLIT INTO:



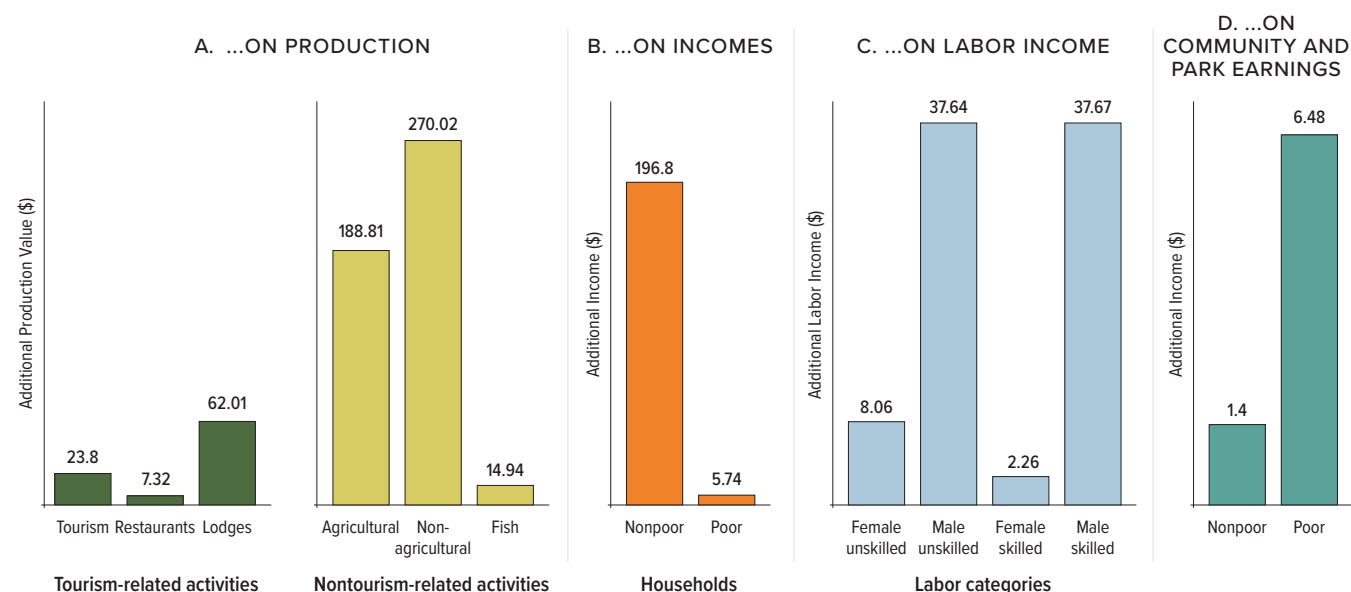
For every dollar of tourist spending, the total income multiplier is:

WHICH CAN BE SPLIT INTO:

OR, ALTERNATIVELY, CAN BE SPLIT INTO:



Source: World Bank 2023.

FIGURE 5.2
Effects of a \$100 Increase in Tourist Spending on the Local Economy Around QENP
Effects of this tourist spending...


Source: World Bank 2023.

Bwindi Impenetrable National Park

Production, income, and wage and profit multipliers are smaller at BINP, as shown in figure 5.3. **An additional dollar of tourist spending at BINP increases total local production by \$1.20 and local income or GDP by \$0.37.** These impacts are much smaller than at QENP due to the large share of tourist spending that goes to the gorilla permit, most of which leaves the local economy when remitted to central government. This is considered a leakage from the local economy. As at QENP, most of the income gain of \$0.32 accrues to nonpoor households while poor households' income rises by \$0.05 per dollar spent by park visitors. Of the \$0.37 increase in income, \$0.15 goes to workers as wages and \$0.22 goes to owners of capital (including local businesses) as profits.

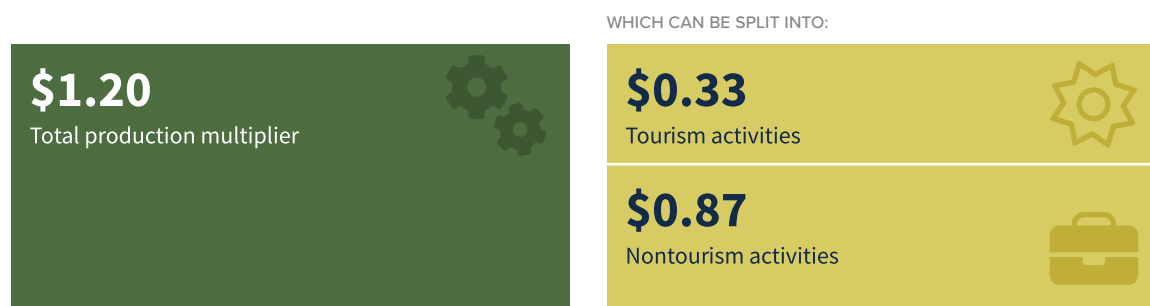
The simulated production impacts of an additional \$100 of tourist spending in the local economy around BINP are shown in figure 5.4, disaggregated by sector, income impacts by household group, and wage income impacts by worker group. A \$100 increase in tourist spending generates \$120 in all production sectors where, similar to QENP, the largest production impacts are in nontourism businesses (figure 5.4a).

FIGURE 5.3

LEWIE-LITE Dashboard of Tourist Spending Multipliers for BINP

Local-economy impacts of tourist spending (\$):

For every dollar of tourist spending, the total production multiplier is:



For every dollar of tourist spending, the total income multiplier is:

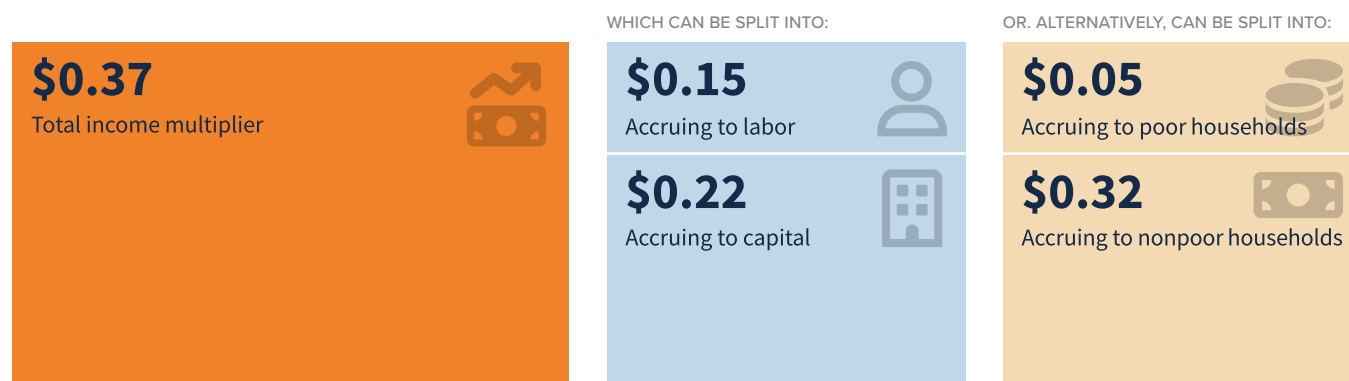
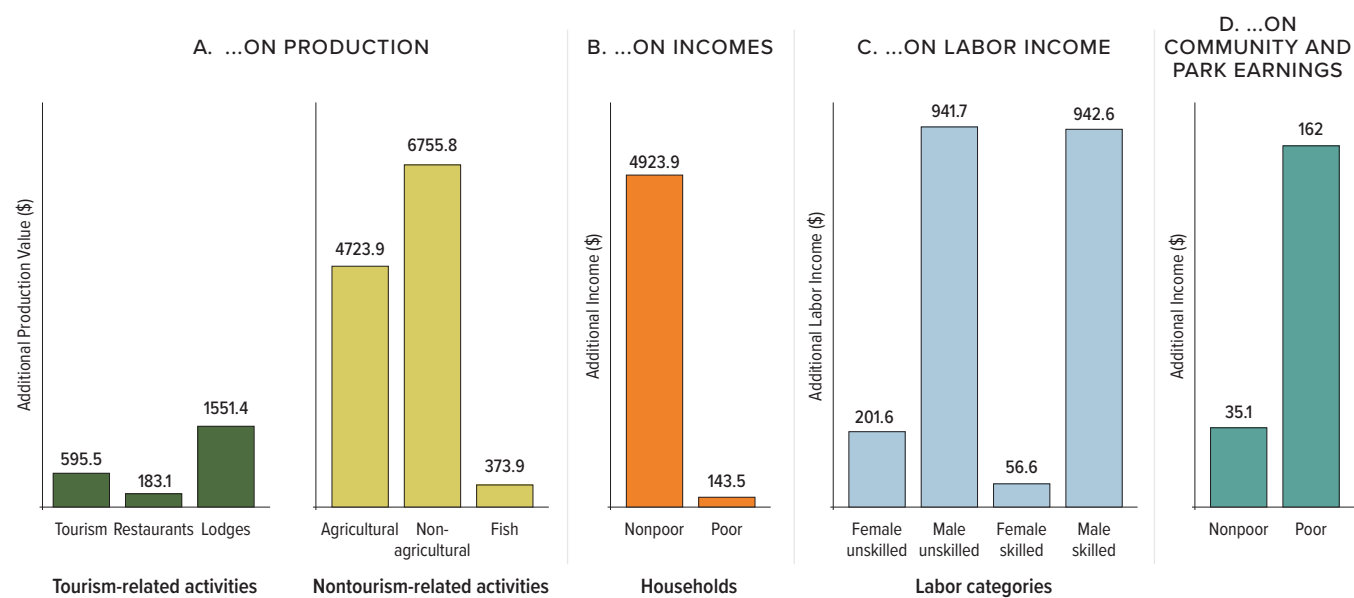


FIGURE 5.4

Effects of a \$100 Increase in Tourist Spending on the Local Economy Around BINP

Effects of this tourist spending...



Source: World Bank 2023.



Bwindi Impenetrable National Park. Photo credit: Adrian Solumsmo / Adobe Stock

Local-Economy Impacts of Tourist Spending (\$) Net of Park Entry Fees

A large portion of tourist spending at BINP is made up of the park entry fee (including gorilla trek permit fee). Given the large number of visitors that visit the park annually, the total park entry revenue (that is, income from park entry fees and gorilla permits) far exceeds the park's operational budget. As a result, the surplus is remitted to UWA which then uses this money to support other protected areas in the country. Since this money leaves the local economy, it is considered a leakage and it reduces the production and income multipliers of additional tourist dollars for the local economy.

The dashboard provides an adjustment factor that can be used to calculate tourist impact multipliers net of park fees. This answers a different question to the simulation on tourist spending above. Instead of asking how much an extra tourist or extra tourist spending may contribute to the park, it asks how encouraging tourists to spend more money per day, but without any change in park entry fees, might affect the local economy. The adjustment factor is $1/(1-pfs)$, where pfs is the share of park fees in average tourist spending.

Figure 5.5 presents the multipliers for BINP, net of park entry fees. These are larger than those in figure 5.3. It shows that an additional dollar of tourist spending outside of the park entry fees at BINP increases total local production by \$4.29 instead of \$1.20; and local income or GDP by \$1.33 rather than \$0.37, more than three times as much. These impacts are still smaller than at QENP but now much higher than when park entry fees were included in the calculation (see figure 5.3). Poor households receive \$0.17 per dollar of tourist income and \$1.16 goes to nonpoor households. Of the \$1.33 increase in income, \$0.55 goes to workers as wages and \$0.78 goes to owners of capital.

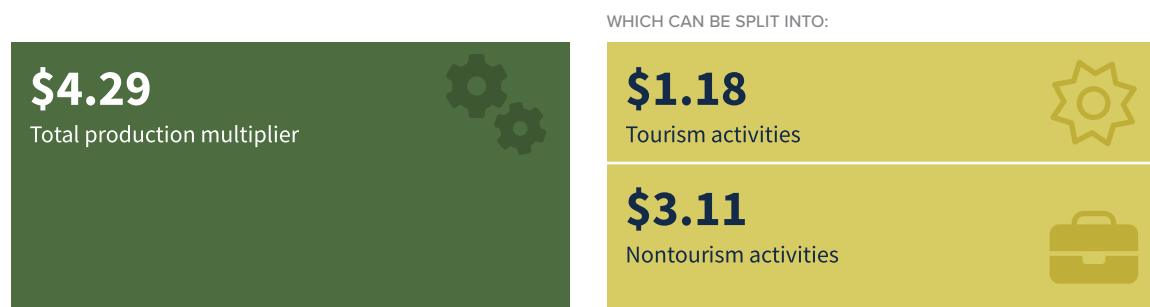
The simulated impacts of \$100 of tourist spending in the local economy at BINP net of park entry fees are shown in figure 5.6, disaggregated by production impacts, income impacts, wage income impacts, and community and park earnings. As expected, impacts on the different sectors, household groups, and labor categories net of park entry fees are substantially higher given the larger multipliers. An additional \$100 of tourist spending increases tour and souvenir sales by around \$38 (as opposed to only \$10.70 without netting out park fees). Sales of hotel or lodge accommodation increase by \$72 instead of only \$20. Again, the largest production impacts are on nonagricultural activities, which increase by \$195 instead of \$55, followed by agricultural production (\$110 as opposed to only \$31). The largest wage impacts are for male unskilled (\$17.57 instead of \$4.91) and skilled workers (\$18.69 instead of \$5.23); wages for unskilled and skilled female workers rise by \$8.84 and \$9.93 instead of only \$2.47 and \$2.78, respectively. For both males and females, wage impacts are slightly larger for skilled workers.

FIGURE 5.5

LEWIE-LITE Dashboard of Tourist Spending Multipliers Net of Park Fees for BINP

Local-economy impacts of tourist spending (\$):

For every dollar of tourist spending, the total production multiplier is:



For every dollar of tourist spending, the total income multiplier is:

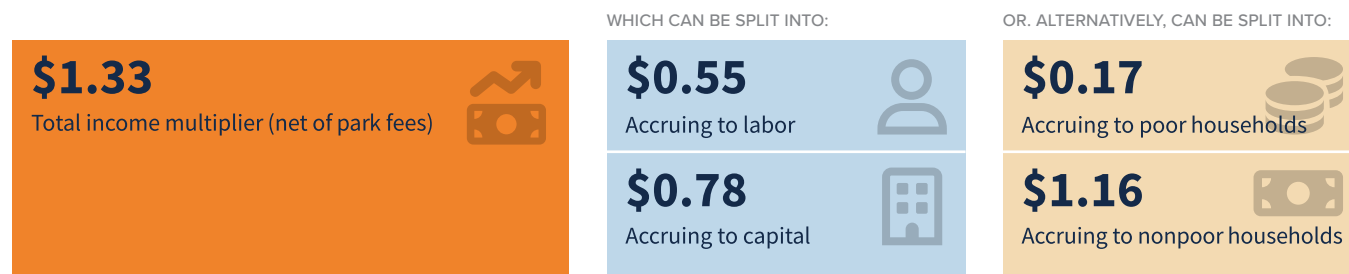


FIGURE 5.6

Effects of a \$100 Increase in Tourist Spending Net of Park Fees on the Local Economy Around BINP

Effects of this tourist spending...

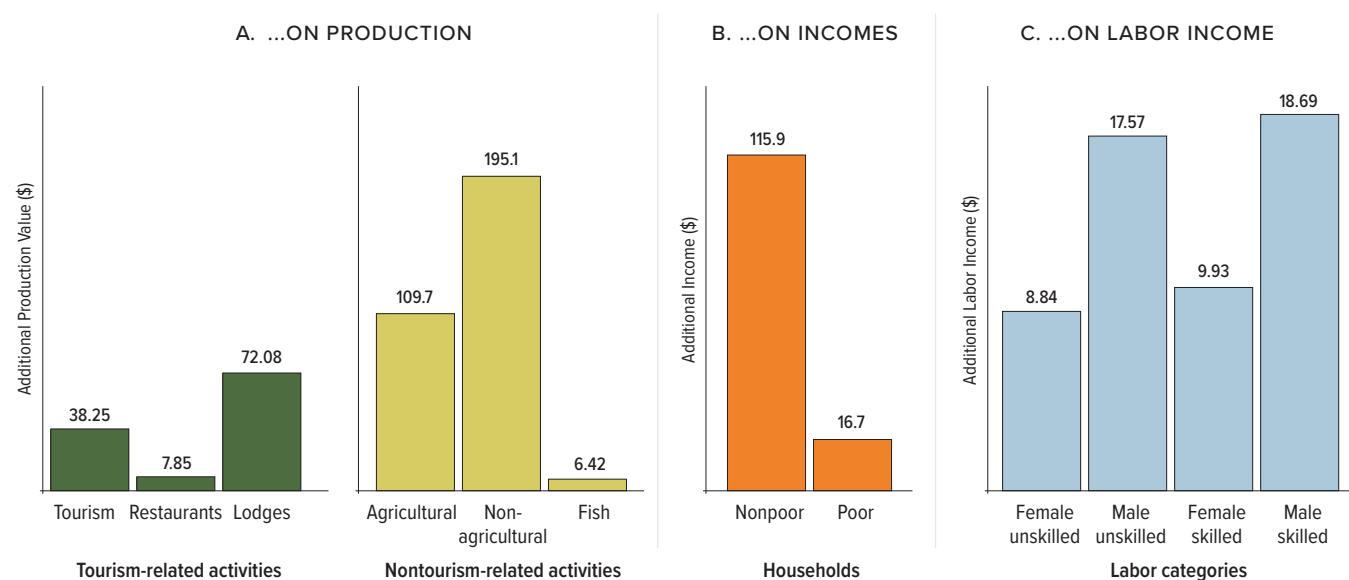


Table 5.1 summarizes the multiplier impacts of the extra \$100 in tourist spending on the economies surrounding QENP and BINP. For BINP, it includes impacts of a \$100 increase in tourist spending with and without park entry fees. Again, it is notable that large percentages of gross revenue benefits from tourists go to sectors other than tourism, specifically retail, services, production and, in QENP, agriculture.

TABLE 5.1**Summary of the Impact of a \$100 Increase in Tourist Spending at QENP and BINP**

OUTCOME	IMPACTS OF TOURIST SPENDING (\$)		
	QUEEN ELIZABETH NATIONAL PARK	BWINDI IMPENETRABLE NATIONAL PARK (WITH PARK ENTRY FEE)	BWINDI IMPENETRABLE NATIONAL PARK (WITHOUT PARK ENTRY FEE)
Impacts per \$100 of tourist spending			
Gross revenue from local production			
Agriculture	\$189	\$31	\$110
Fishing	\$16	\$2	\$6
Tourism businesses	\$24	\$11	\$38
Retail, services, and production	\$270	\$55	\$195
Restaurants	\$7	\$2	\$8
Lodges	\$62	\$20	\$72
Total production multiplier	\$567	\$120	\$429
Payments to:			
Labor (wages)	\$86	\$15	\$55
Male unskilled labor (wages)	\$38	\$5	\$18
Female unskilled labor (wages)	\$8	\$2	\$9
Male skilled labor (wages)	\$38	\$5	\$19
Female skilled labor (wages)	\$2	\$3	\$10
Capital (profits)	\$117	\$22	\$78
Income to			
Poor households	\$6	\$5	\$17
Nonpoor households	\$197	\$32	\$116
Total income (GDP) multiplier	\$203	\$37	\$133
Park revenue	\$6	\$67	
Community revenue sharing	\$1	\$1	
Impacts of an additional tourist			
Average spending per tourist	\$506	\$1,194	\$496
Total local GDP impact per tourist	\$1,028	\$442	\$660
To poor households	\$30	\$60	\$84
To nonpoor households	\$998	\$382	\$575

Source: World Bank 2023.

The table also shows total impacts per visitor. A tourist spends \$506 on average in and around QENP and \$1,194 around BINP (\$496 net of park entry fees). Using the income (local GDP) multipliers, this translates to an additional \$1,028 ($\506×2.03) GDP gain per visitor for QENP and \$442 for BINP ($\$1,194 \times 0.37$ with park entry fees) and \$660 ($\496×1.33 net of park entry fees). When applying the number of tourists that visited each protected area in 2022 (67,736¹ in QENP and 32,628 for BINP as per table 4.1), the total amount generated by these tourists was \$69.6 million for QENP and \$14.4 million for BINP (\$21.5 million net of park entry fees). Both amounts exceed the park budgets needed to operate these sites (\$3 million and \$2.3 million, respectively).

Impacts of Future Growth in Tourism

The LEWIE-LITE tool was used to estimate the impact of projected growth in protected area tourism for QENP and BINP. COVID-19 was a major shock to Ugandan tourism, causing respective declines of 62 percent and 78 percent from fiscal year 2019/20 to fiscal year 2020/21.² However, according to UWA data collected for this study, tourism had recovered to prepandemic levels by 2022 (although this includes a growing share of domestic visitors which tend to spend less than foreign visitors).

The model used the prepandemic (2012/19) average annual growth rate in visits to QENP and BINP (7.3 percent and 12.9 percent, respectively) to forecast the increase in tourists for 2023/24 and the likely impacts on the local economy. This implied an increase of 4,945 tourists to QENP and 4,209 tourists to BINP. At the average spending per tourist estimated from the survey data, these increases would add \$2.5 million and \$5.03 million (\$2.09 million net of entry fees) in tourist spending at QENP and BINP, respectively. Entering this average additional tourist spending onto the dashboard for tourism impacts, the model gives the local economy impacts shown in figures 5.7 and 5.8.³ For QENP (figure 5.7), the overall impact predicted for the local economy was a \$14.2 million increase in local production, a \$5.1 million increase in income to households, and a \$2.1 million increase in labor income. For BINP (figure 5.8), the impact on the local economy would be a \$6.4 million increase in local production, a \$2 million increase in income to households, and a \$0.8 million increase in labor income. Keeping park entry fees fixed at BINP, a rise in local tourist spending would create an additional \$9 million increase in local production, a \$2.8 million increase in income to households, and a \$1.2 million increase in labor income.⁴

1 Although QENP received 95,340 visitors in 2022, for purposes of this study, the authors only counted the volume of foreign nonresident, foreign resident, and East African Community resident visitors which totaled 67,736. This is because the remaining number of visitors to the park are students whose expenditure tends to be very low in comparison with tourists

2 Find Ministry of Tourism, Wildlife and Antiquities 2021 statistics at <https://docs.google.com/spreadsheets/d/e/2PACX-1vSPEGocHS8SrstAoSFXREW5Aq5IFwbgANFilmPKOZWNR9SVcyIOE1WoXCstGo4cTSMfDeUSHhw4nR6/pubhtml>.

3 Since the model is linear, the overall multipliers are the same as the estimations of the impact of an additional \$100 in tourist spending, but the magnitudes are different.

4 Policy makers could also estimate negative impacts or tourism losses by entering a negative value into the tourist spending window. Graphs would show negative magnitudes and impacts for actors in the local economy.

Queen Elizabeth National Park

FIGURE 5.7

Effects of a \$2.5 Million Increase in Tourist Spending on the Local Economy Around QENP

How much tourist spending (\$) do you want to simulate? Effects of this tourism spending...



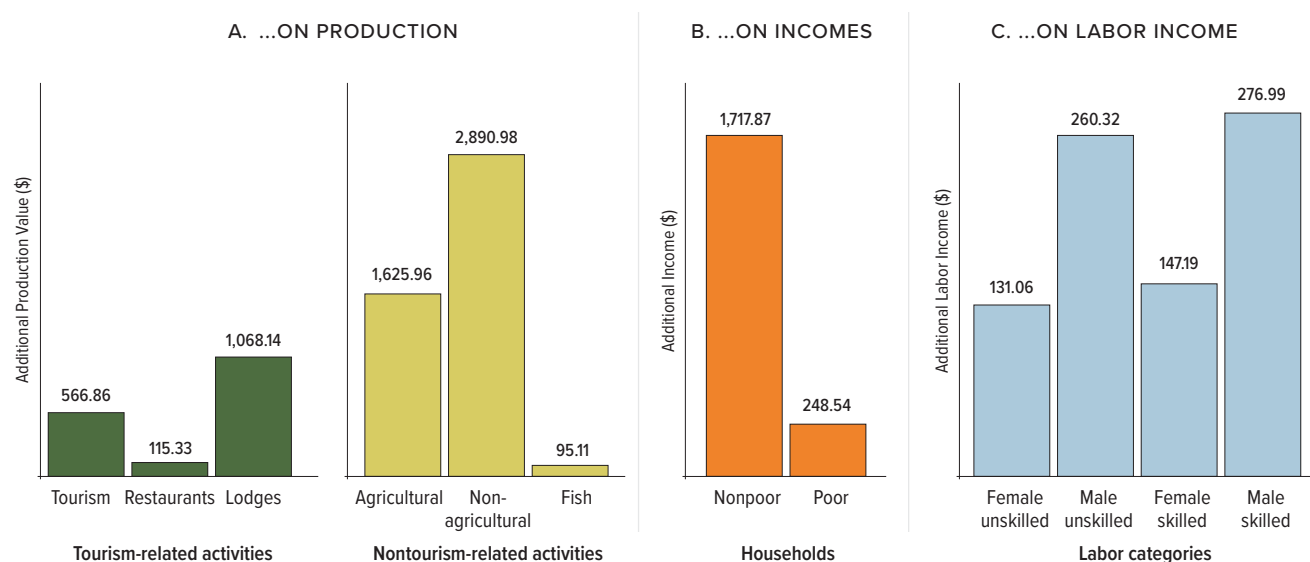
Source: World Bank 2023.

Bwindi Impenetrable National Park

FIGURE 5.8A

Effects of a \$5.03 Million Increase in Tourist Spending on the Local Economy Around BINP

How much tourist spending (\$) do you want to simulate? Effects of this tourism spending...



Source: World Bank 2023.

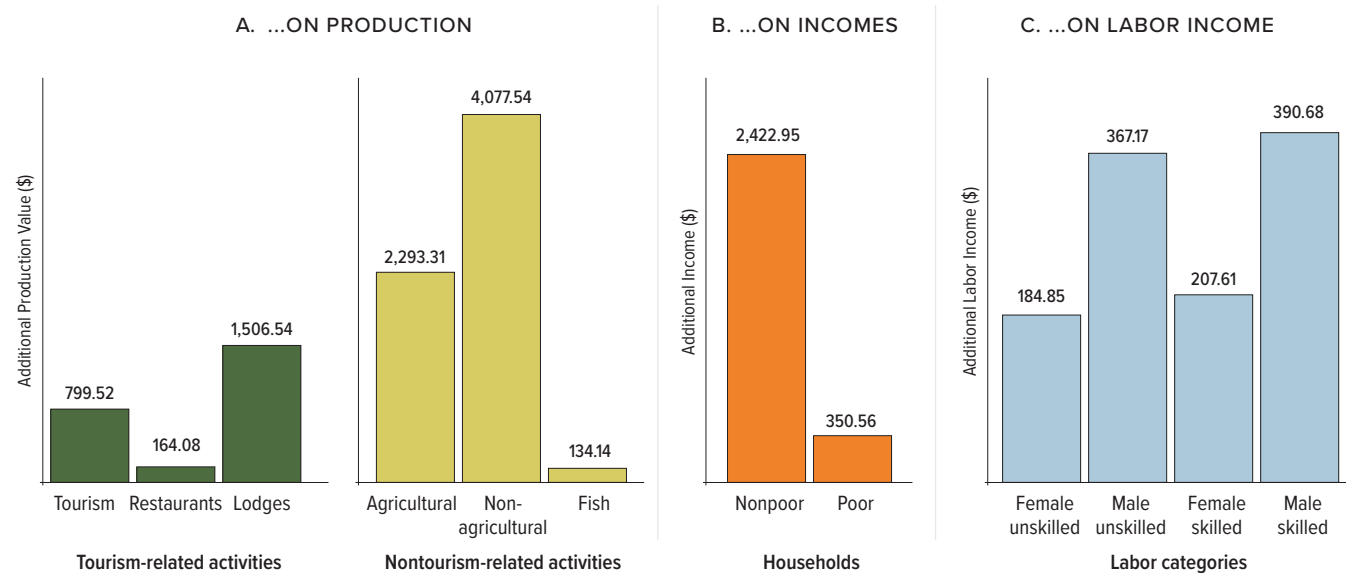
FIGURE 5.8B

Effects of a \$2.09 Million Increase (Net of Park Entry Fees) in Tourist Spending on the Local Economy Around BINP

How much tourist spending (\$) do you want to simulate?

2090

Effects of this tourism spending...



Source: World Bank 2023.

SECTION 6

Testing the Robustness of Results and Analyzing the Differences in Multipliers Between the Two Protected Areas



The methodology should reasonably represent the local economies, including the actors within them. One way to check this is to ask whether modelled per capita incomes correspond with what they would be expected to be. The SAM and DCIs were used to predict per capita incomes of poor and nonpoor households at the two sites. They are shown in table 6.1.

At both sites, poor households have per capita incomes substantially less than \$1 per day, whereas nonpoor households have cash incomes more than \$1 per day. The per capita incomes of both household groups are slightly lower, on average, near BINP.

At both parks, the impacts of tourist spending are considerably larger on nontourism activities, particularly nonagricultural businesses and agricultural production, than on tourism activities. These findings highlight the importance of looking beyond tourism to evaluate the impacts of tourism on local economies. Impacts are shaped and magnified by local market linkages. When visitors spend money on tourism activities, at lodges, or in restaurants, this stimulates tourism businesses' demand for locally produced goods and services, grows wages, and profits. These wages and profits flow into households, which spend this income in local businesses and create new rounds of impacts. As the cash created directly or indirectly by tourism ripples through local economies, it creates production, income, wage, and profit multipliers. Studies of tourism that ignore nontourism activities and households miss many, if not most, of these impacts. For example, tourists rarely purchase food directly from farmers, yet at both Ugandan parks, an additional dollar of tourist spending has a large positive effect on local farm sales. Also, tourists are not spending much on local retail, services, or production at either national park, but these businesses have the largest benefits from indirect effects of tourist spending (table 5.1).

TABLE 6.1**Incomes in the Local Economies Around Each Park**

QUEEN ELIZABETH NATIONAL PARK				
HOUSEHOLD GROUP	POPULATION	TOTAL INCOME	PER CAPITA INCOME	\$ PER DAY
Poor	70,775	\$9,565,000	\$135	\$0.37
Nonpoor	529,525	\$272,421,000	\$514	\$1.41
BWINDI IMPENETRABLE NATIONAL PARK				
HOUSEHOLD GROUP	POPULATION	TOTAL INCOME	PER CAPITA INCOME	\$ PER DAY
Poor	29,453	\$3,311,000	\$112	\$0.31
Nonpoor	47,447	\$24,103,228	\$508	\$1.39

Source: World Bank 2023.

In the tourist spending simulations presented earlier (and those in section 7), the largest production impacts are on nonagricultural sectors. This reflects the importance of nonagricultural production activities in these local economies. Most intermediate inputs purchased from local businesses are nonagricultural goods and services, and households—particularly nonpoor ones—spend more of their income on nonfood than food items.

Most wage and profit incomes flow to nonpoor households. This is an expected result because households are classified by income level, and nearly all incomes come from wages or profits. The small share of income gains to poor households reflects their lack of access to local formal jobs and capital. A summary of how wages and profits are channeled into the two household groups at both parks follows in table 6.2. It shows that, at QENP, only 1.9–7.2 percent of incomes flow to poor households. Poor households get larger shares of factor incomes at BINP; however, they are still low compared with the shares going to nonpoor households, especially in the case of profits.

The total income and production multipliers are larger at QENP than BINP. It is notable that an additional dollar of tourist spending increases local household income by more than one dollar at QENP. Several factors shape the size of these multipliers. Foremost among these, in the case of BINP, is the high price visitors pay for gorilla permits, and the leakage of this money from the local economy as it is remitted to Government. When the multipliers net of park entry fees are estimated, they increase substantially, but are still less than at QENP. This is because the local economy surrounding BINP is less developed, likely due to its remote setting and rugged terrain, which means more goods and services come from outside markets. Local purchases contribute to multipliers by circulating more cash within the local economy. Purchases from outside markets (which can be thought of as “imports” into the local economy) shift the multiplier effect from local to outside economies.

TABLE 6.2**Wage and Profit Flows to Households**

PARK AND HOUSEHOLD GROUP	FACTOR PAYMENTS				
	WAGES BY WORKER GROUP				PROFITS
	MALE UNSKILLED	MALE SKILLED	FEMALE UNSKILLED	FEMALE SKILLED	
Queen Elizabeth National Park					
Poor	\$1,745,000	\$874,000	\$649,000	\$110,000	\$3,391,000
Nonpoor	\$45,099,000	\$45,155,000	\$8,391,000	\$1,663,000	\$133,299,000
Percentage to Poor	3.7%	1.9%	7.2%	6.2%	2.5%
Bwindi Impenetrable National Park					
Poor	\$774,000	\$459,000	\$603,000	\$611,000	\$768,000
Nonpoor	\$2,680,000	\$3,178,000	\$1,043,000	\$1,235,000	\$14,327,000
Percentage to Poor	22.4%	12.6%	36.6%	33.1%	5.1%

Source: World Bank 2023.

Connections with outside markets through trade can offer many advantages for local economies. For example, it can provide local producers with access to a larger market for the goods they produce, which can be profitable if they are able to compete. It can also give consumers access to lower prices for goods produced more cheaply in other places. Nevertheless, at locations where external markets satisfy a large part of local demand, the local multiplier effects of tourism generally tend to be smaller, because purchasing goods from other places causes income to “leak out” of the local economy. Leakages are larger at BINP, as shown in table 6.3, and this explains the smaller multipliers there.

TABLE 6.3
Leakage Share from Production Sectors and Households

PARK AND EXTERNAL ACCOUNT	PRODUCTION SECTOR/ACTIVITY				HOUSEHOLD GROUP				PROTECTED AREA	COMMUNITY REVENUE SHARING
	AGRICULTURE	TOURISM	NONAGRICULTURE	FISH	RESTAURANTS	LODGES	POOR	NONPOOR		
Queen Elizabeth National Park										
G	\$1,676,000	\$401,000	\$6,498,000	\$458,000	\$150,000	\$2,158,000	\$1,987	\$2,336,000		-
ROW	\$24,025,000	\$5,050,000	\$54,900,000	\$5,040,000	\$614,000	\$5,483,000	\$102,000	\$8,436,000	\$575,000	-
TotalExp	\$241,683,000	\$17,693,000	\$340,558,000	\$18,031,000	\$8,229,000	\$46,095,000	\$9,565,000	\$272,421,000	\$6,778,000	\$1,468,000
Leakage share	10.6%	30.8%	18.0%	30.5%	9.3%	16.6%	1.1%	4.0%	8.5%	0.0%
Bwindi Impenetrable National Park										
G	\$763,000	\$130,000	\$883,000	-	\$20,000	\$392,000	-	\$74,759	\$41,131,000	-
ROW	\$2,395,000	\$768,000	\$15,149,000	\$1,244,000	\$167,000	\$3,140,000	\$146,000	\$646,763	\$129,000	-
TotalExp	\$21,900,000	\$7,007,000	\$38,724,000	\$1,244,000	\$1,454,000	\$13,203,000	\$3,311,000	\$24,103,228	\$43,611,000	\$822,000
Leakage share	14.4%	12.8%	41.4%	100.0%	12.9%	26.8%	4.4%	3.0%	94.6%	0.0%

Source: World Bank 2023.

SECTION 7

Using the Model to Simulate Changes in Park and Community Revenue Sharing Spending



Impacts of Changes in Park and Community Revenue Sharing

Governments generally decide on protected area budgets and the share (if any) of park revenue going to community revenue sharing. In some cases, the government subsidizes protected areas by giving them budgets that exceed the entrance fees paid by park visitors. In others, entrance fees exceed the park budget, and some of the park revenue is used to subsidize other parks or nonpark spending. UWA, like many protected area authorities globally, consolidates all revenue received from all protected areas to finance operations for the entire park system. Revenue from park entrance fees and gorilla permits exceeded park budgets at both Queen Elizabeth National Park and Bwindi Impenetrable National Park, and 20 percent of park entrance fees and \$10 from every gorilla permit spent on community revenue sharing.

While section 5 reported on simulations of increases in tourist spending, the model can also be used to simulate impacts of other types of spending, such as park spending and community revenue sharing spending. To illustrate the use of this feature, the dashboard was used to simulate the impacts of \$100 of park and community revenue sharing spending on the local economy around each park, and summarize the impacts on production, household incomes, and wages.

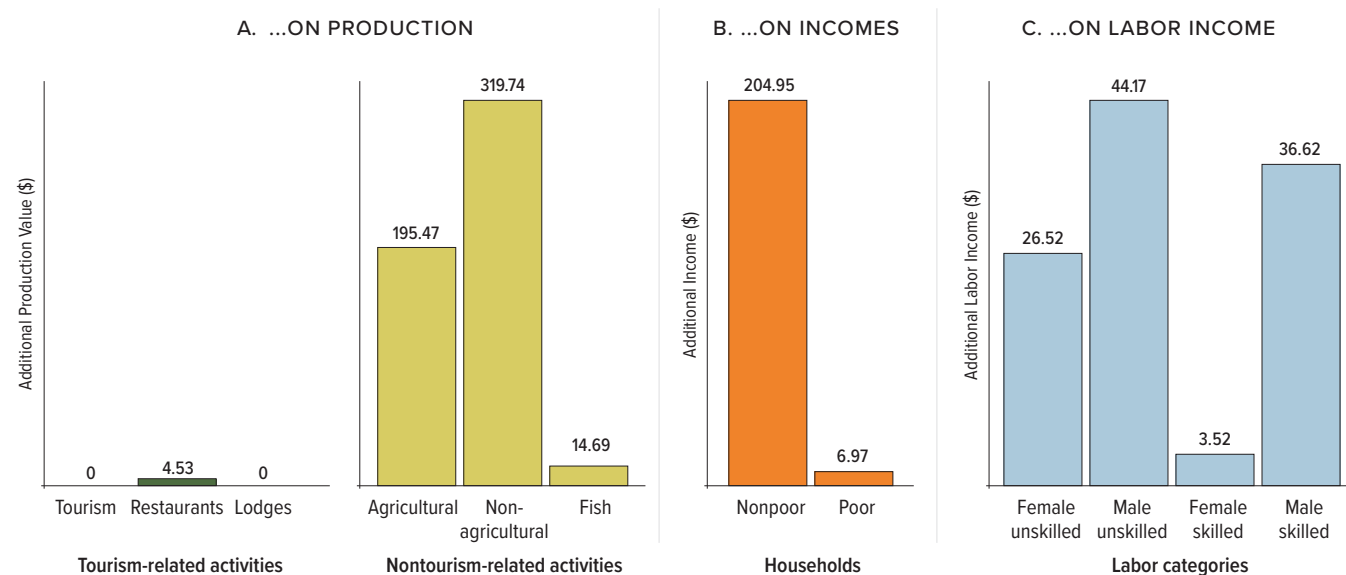
At QENP, a \$100 increase in park spending (or park budget) leads to a \$212 increase in local GDP, or an income multiplier of 2.12 for the local economy (with impacts disaggregated in figure 7.1). In comparison, a \$100 increase in community revenue sharing leads to a local GDP multiplier of 2.45 (figure 7.2). At BINP, a \$100 increase in park spending leads to a \$5.83 increase in local GDP, or a local income multiplier of 0.06 (figure 7.3). A \$100 increase in community revenue sharing leads to a local GDP multiplier of 1.2, with impacts disaggregated in figure 7.4.

Community revenue sharing income multipliers greater than one signify that economic gains exceed the amount transferred to communities around the parks. In contrast, park revenue spending has a small impact on local incomes at BINP: the local GDP multiplier is only 0.06. This is because most of the revenue is from the gorilla permit fee, most of which is transferred out of the local economy to the UWA consolidated fund. In QENP, on the other hand, park revenue spending has a local GDP multiplier of 2.12, which means that park spending favors local labor and local goods and services, making the multiplier greater than one. This is independent of any additional tourist demand that might result from increased park spending. Thus, park spending to improve the facilities and wages of local park officials generates positive impacts on the local economy, and if it attracts new tourists, there may be additional impacts due to additional demand.

The results presented in this report are for single simulations. However, the model can also be used to simulate impacts of changes in more than one variable—for example, an increase in park budget that stimulates new tourism to a protected area. It can also be used to perform a social cost-benefit analysis—that is, one that includes spillover effects in local economies. This would require making some assumptions, ideally backed up by data or experience, about changes in tourist revenue that might result from a larger park budget (for example, one that enables the park to accommodate more visitors).

FIGURE 7.1
Effects of a \$100 Increase in Park Spending on the Local Economy Around QENP

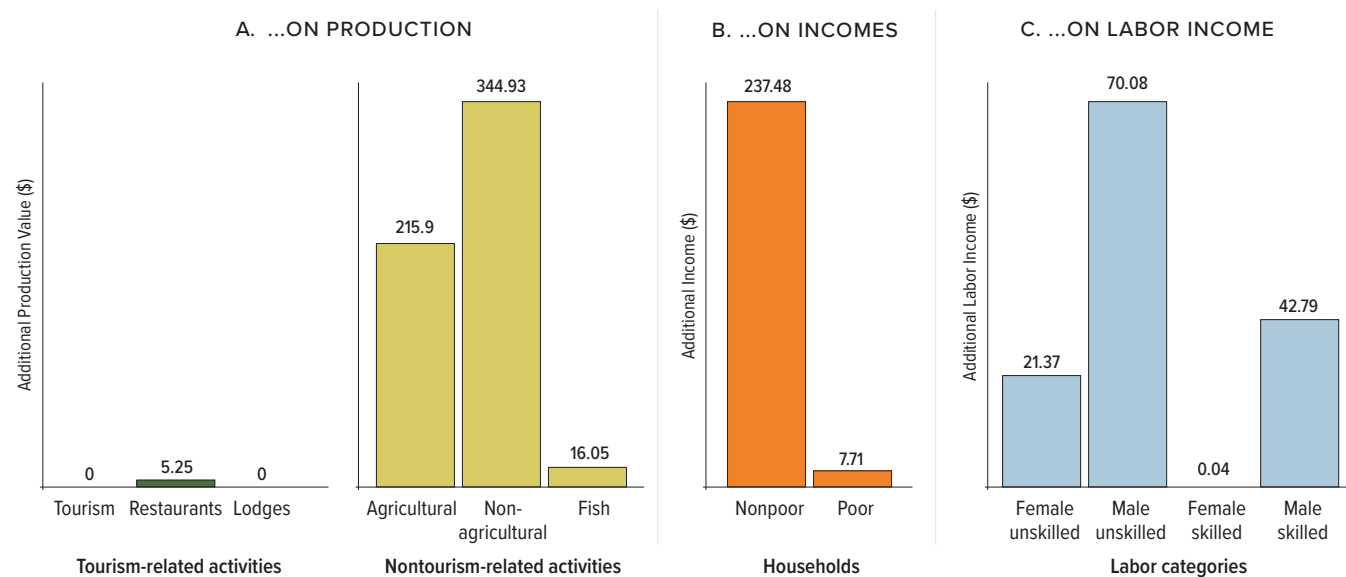
Effects of this park spending on...



Source: World Bank 2023.

FIGURE 7.2
Effects of a \$100 Increase in Community Revenue Sharing Spending on the Local Economy Around QENP

Effects of this community revenue sharing spending...

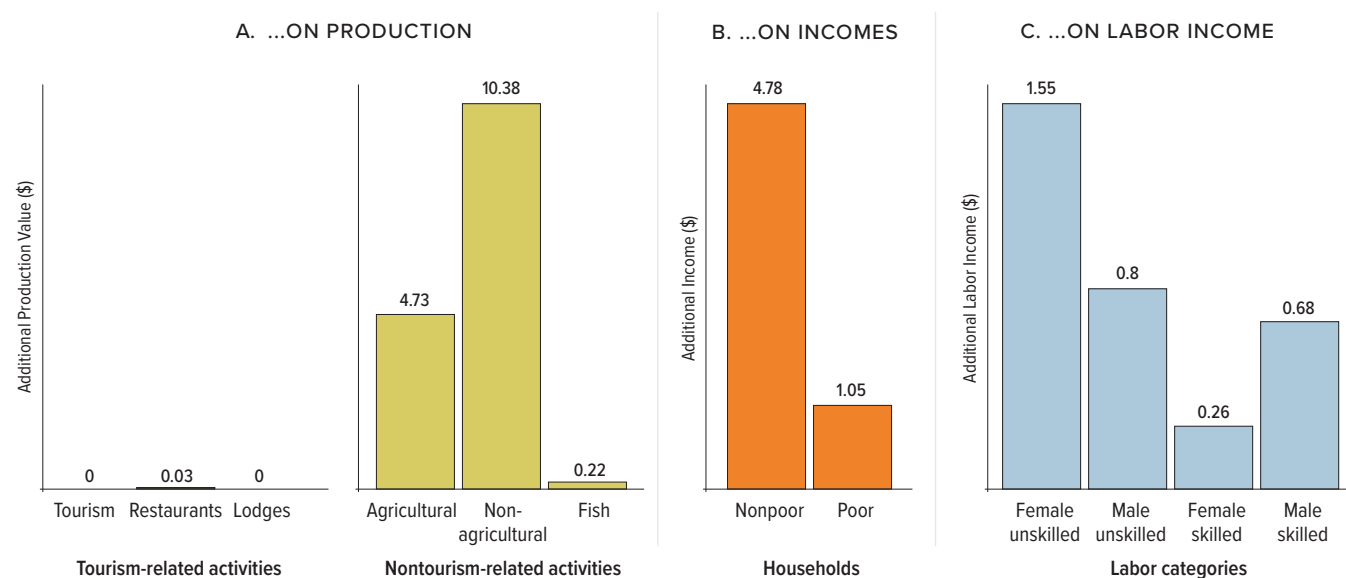


Source: World Bank 2023.

FIGURE 7.3

Effects of a \$100 Increase in Park Spending on the Local Economy Around BINP

Effects of this park spending...

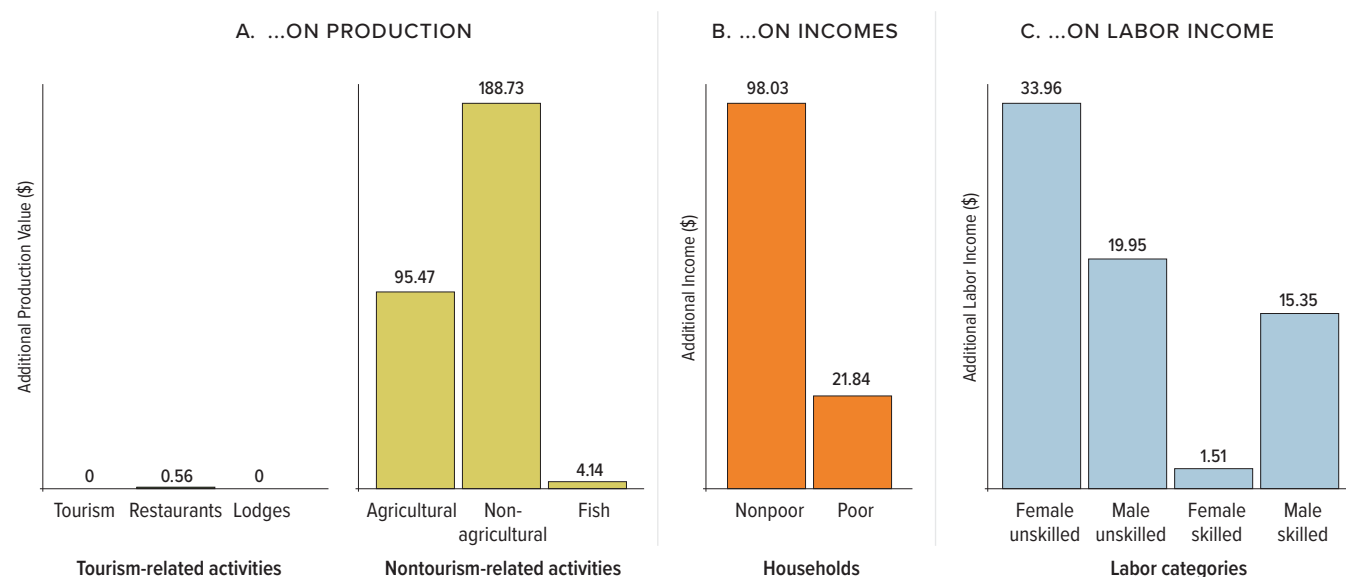


Source: World Bank 2023.

FIGURE 7.4

Effects of a \$100 Increase in Community Revenue Sharing Spending on the Local Economy Around BINP

Effects of this community revenue sharing spending...



Source: World Bank 2023.

SECTION 8

Using the Model to Simulate Complementary Interventions



Impacts of Increased Demand for Agricultural and Nonagricultural Goods

The LEWIE-LITE model can be used to simulate changes in the demand for locally produced agricultural and nonagricultural goods. This is of interest if governments or development agencies wish to design complementary interventions to diversify and grow tourism impacts by increasing local sourcing of goods and services. To illustrate the use of this feature, the dashboard was used to simulate the impacts of a \$100 increase in local demand for agricultural and nonagricultural goods on the local economy around each park, summarizing impacts on production, household incomes, and wages.¹

Logically, the largest impacts are on the production sector targeted by the intervention (for example, on agricultural production, for programs that seek to increase the local demand for farm products). However, local linkages transmit impacts to other sectors, stimulating their sales as well. Higher agricultural production increases farms' demand for intermediate inputs, labor, and capital. This creates new wage earnings and profits for households, especially nonpoor households. As households spend their new income, this stimulates local crop and noncrop production activities, which, in turn, creates additional rounds of production, income, and employment gains. Gross sales from nonagricultural activities rise nearly as much as agricultural sales when the demand for agricultural production increases.

At Queen Elizabeth National Park, a \$100 increase in demand for local agricultural production leads to a local GDP multiplier of \$2.43 (with impacts disaggregated as shown in figure 8.1). In comparison, a \$100 increase in demand for local nonagricultural production leads to a local GDP multiplier of \$1.91 (figure 8.2). For the economy surrounding BINP, the \$100 increase in demand for local agricultural production leads to a local GDP multiplier of \$1.22 (figure 8.3) and a \$100 increase in demand for local nonagricultural production leads to a local GDP multiplier of \$0.59 (figure 8.4).

In three out of the four cases, increasing local agricultural and nonagricultural production has a multiplier of greater than \$1 on local income. The only case where it is less than \$1 is an increase in nonagricultural production at BINP. The larger leakages in the local economy surrounding BINP, specifically in the nonagricultural sector, lead to this smaller multiplier effect. Even in this case, local GDP rises by almost 60 cents for every \$1 increase in nonagricultural production.

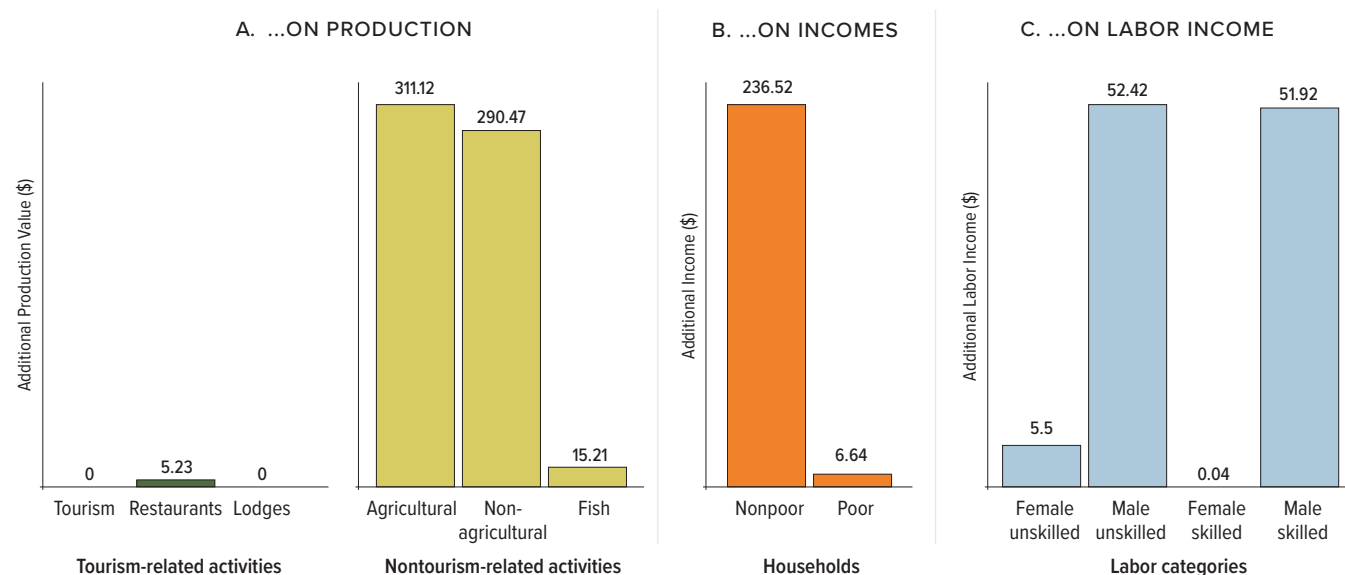
¹ There are no impacts on the park and community revenue sharing projects because there are no feedback effects from production activities to their budgets.

Queen Elizabeth National Park

FIGURE 8.1

Effects of a \$100 Increase in Local Agricultural Production on the Local Economy Around QENP

Effects of this increase in local agricultural production on...

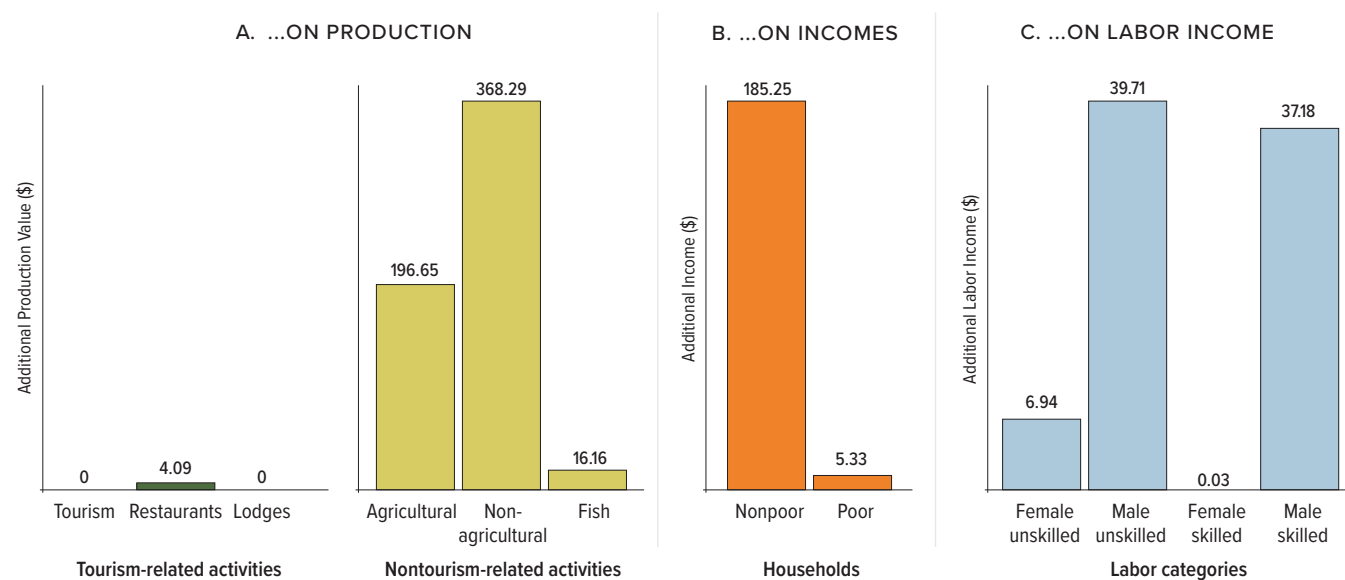


Source: World Bank 2023.

FIGURE 8.2

Effects of a \$100 Increase in Local Nonagricultural Production on the Local Economy Around QENP

Effects of increase in local nonagricultural production on...



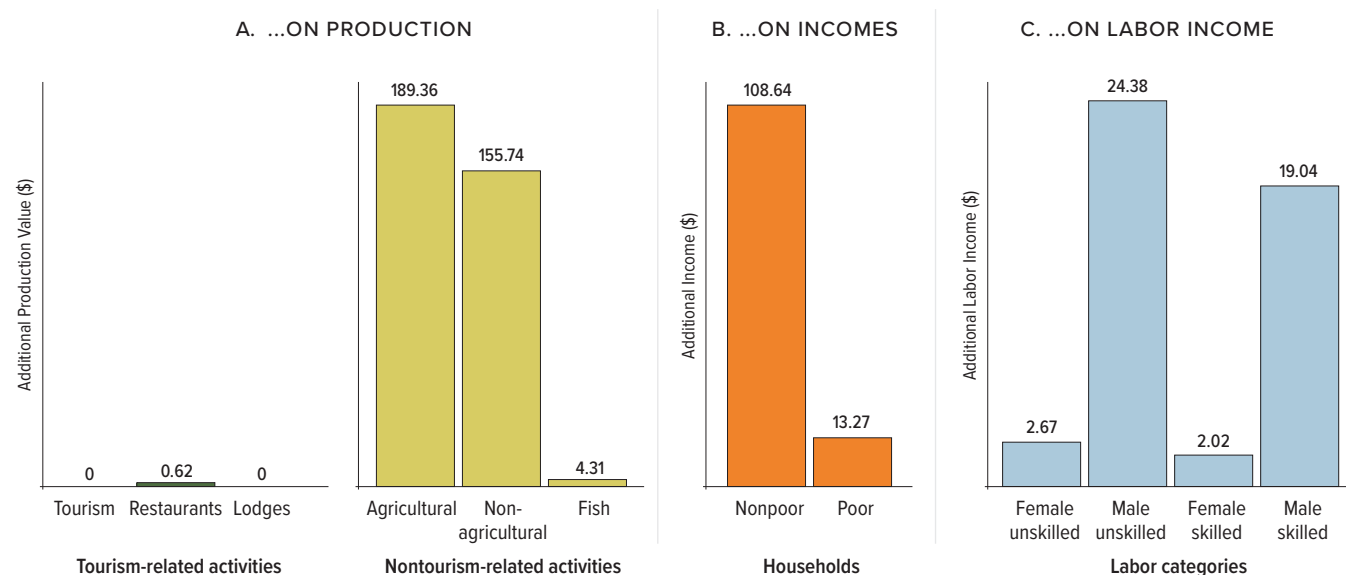
Source: World Bank 2023.

Bwindi Impenetrable National Park

FIGURE 8.3

Effects of a \$100 Increase in Local Agricultural Production on the Local Economy Around BINP

Effects of this increase in local agricultural production on...

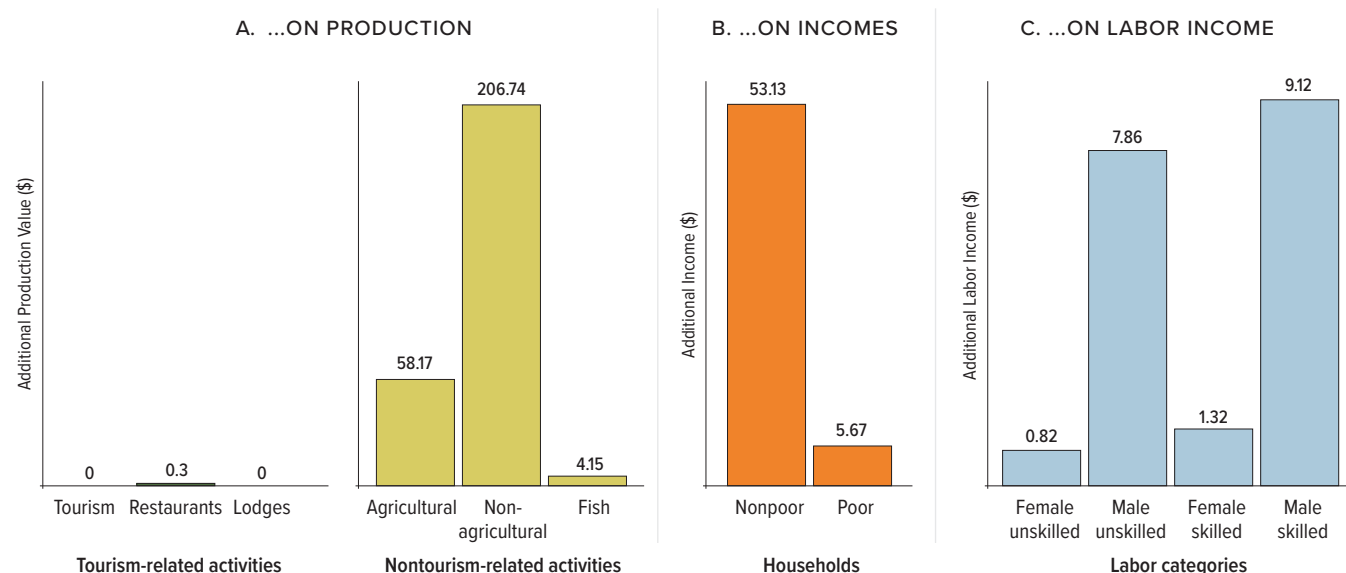


Source: World Bank 2023.

FIGURE 8.4

Effects of a \$100 Increase in Local Nonagricultural Production on the Local Economy Around BINP

Effects of this increase in local nonagricultural production on...



Source: World Bank 2023.

Impacts of Increased Wage Earnings for Local Workers

Another use of the tool could be to simulate impacts of changes in wage earnings for local workers. This is of interest if governments or development agencies wish to intervene to increase local employment, for example, by training and linking workers to tourism and/or nontourism activities. The impacts of a \$100 increase in wage earnings for local female and male workers, unskilled and skilled, on the local economy around each park was simulated, summarizing impacts on production, household incomes, and wages.²

Logically, the largest impacts are on the worker group targeted by the intervention (for example, on unskilled female wage earnings, for programs that seek to increase employment opportunities for unskilled female workers). However, local linkages transmit impacts to the other three worker groups, raising their earnings as well. Higher wage earnings increase incomes, mostly in nonpoor households. As these households spend this income, this stimulates local production activities, which, in turn, creates additional rounds of production, income, and employment gains.

At QENP, a \$100 increase in wage earnings for either unskilled female workers or skilled female workers leads to a GDP multiplier of \$3.06 for the local economy. Disaggregated impacts for unskilled female workers are shown in figure 8.5, and in figure 8.6 for skilled female workers. Similarly, a \$100 increase in wage earnings for either unskilled male workers or skilled male workers leads to a GDP multiplier of \$3.05 for the local economy, reporting practically the same result as for female workers. Disaggregated impacts for unskilled male workers are shown in figure 8.7, and in figure 8.8 for skilled male workers.

Results from BINP show lower multipliers. Impacts of a \$100 increase in wage earnings for unskilled female workers and skilled female workers are reflected in a local GDP multiplier of \$1.84. Disaggregated impacts for unskilled female workers are shown in figure 8.9, and in figure 8.10 for skilled female workers. For male workers, a \$100 increase in wage earnings for unskilled male workers and male skilled worker leads to a similar local GDP multiplier of \$1.83. Disaggregated impacts for unskilled male workers are shown in figure 8.11, and in figure 8.12 for skilled male workers.

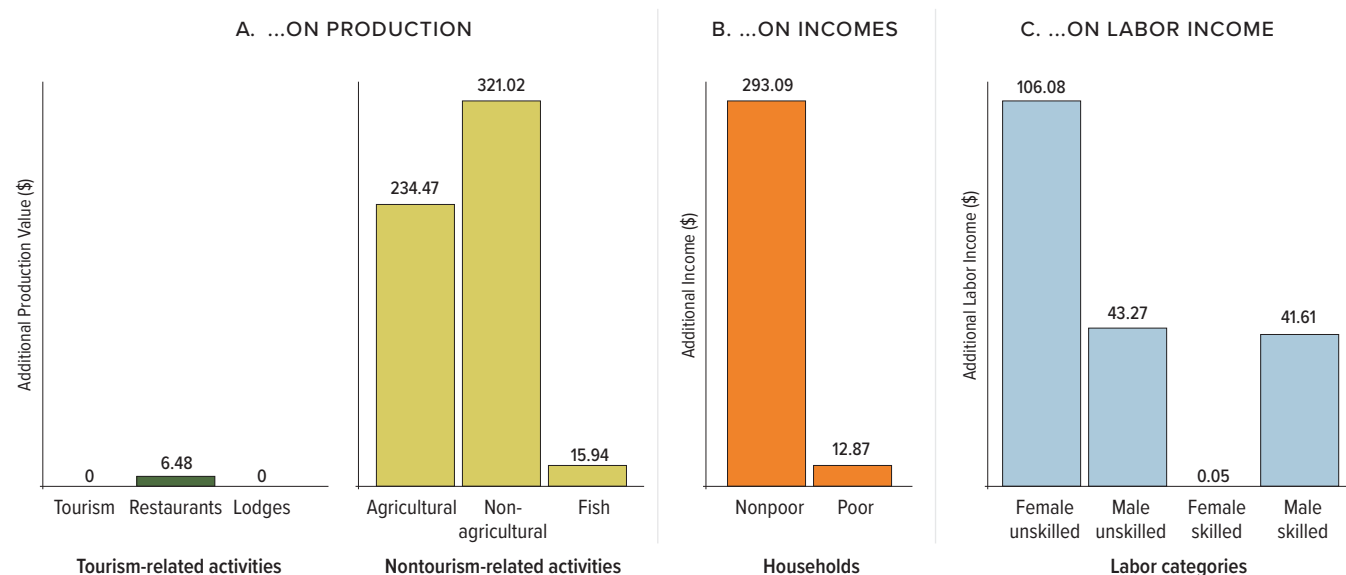
² Impacts on the park and community revenue sharing are nil because there are no feedback effects from local wage earnings to their budgets.

Queen Elizabeth National Park

FIGURE 8.5

Effects of a \$100 Increase in Earnings for Unskilled Female Workers on the Local Economy Around QENP

Effects of increase in earnings for unskilled female workers on...

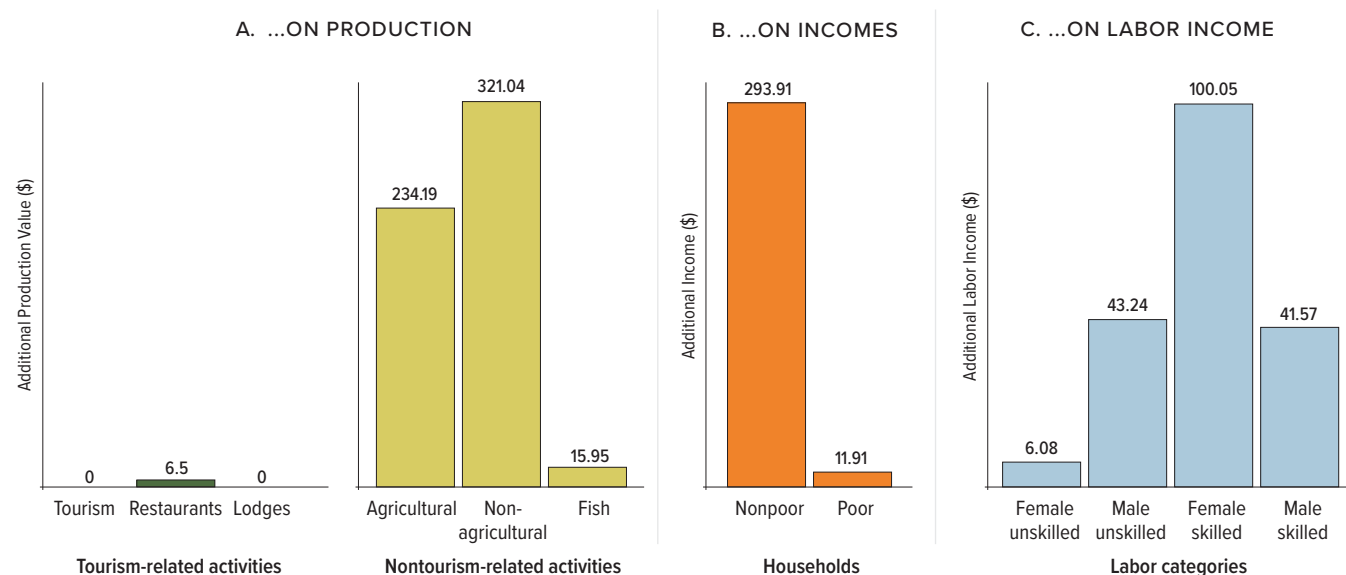


Source: World Bank 2023.

FIGURE 8.6

Effects of a \$100 Increase in Earnings for Skilled Female Workers on the Local Economy Around QENP

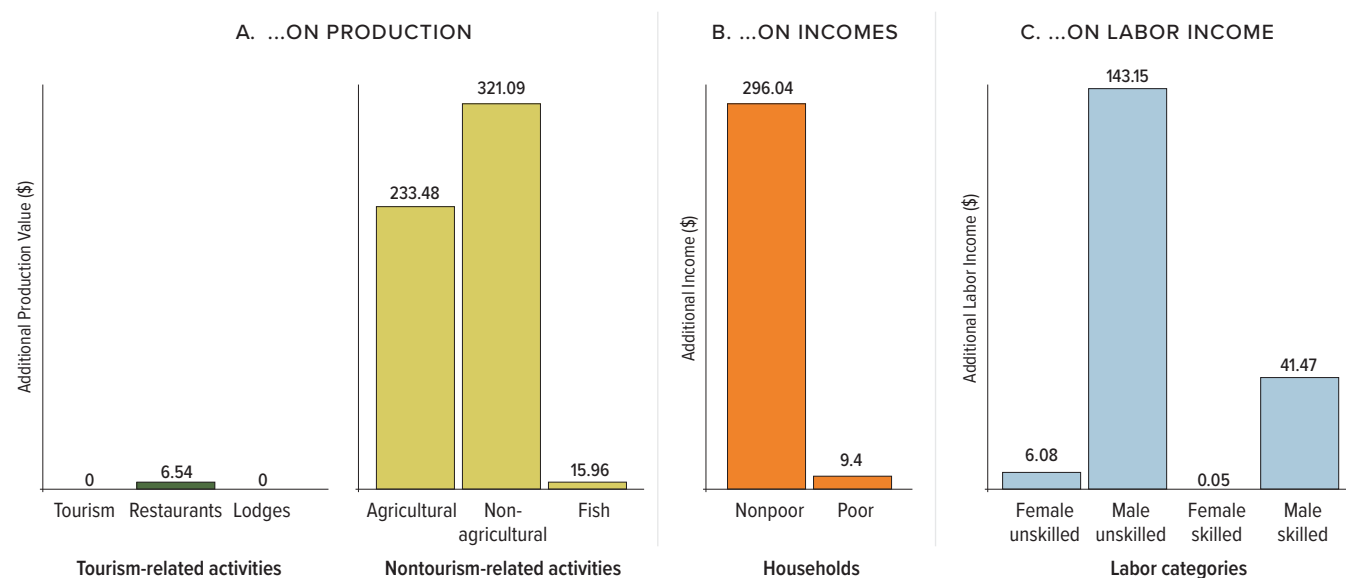
Effects of this increase in earnings for skilled female workers on...



Source: World Bank 2023.

FIGURE 8.7
Effects of a \$100 Increase in Earnings for Unskilled Male Workers on the Local Economy Around QENP

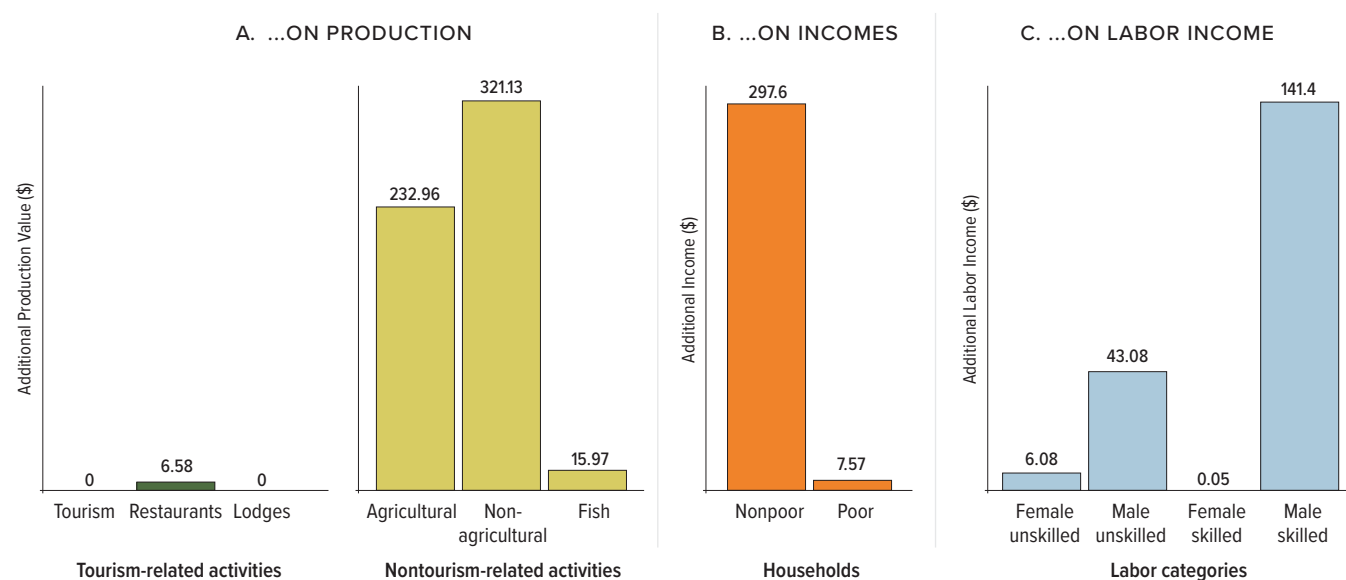
Effects of this increase in earnings for unskilled male workers ...



Source: World Bank 2023.

FIGURE 8.8
Effects of a \$100 Increase in Earnings for Skilled Male Workers on the Local Economy Around QENP

Effects of this increase in earnings for skilled male workers ...



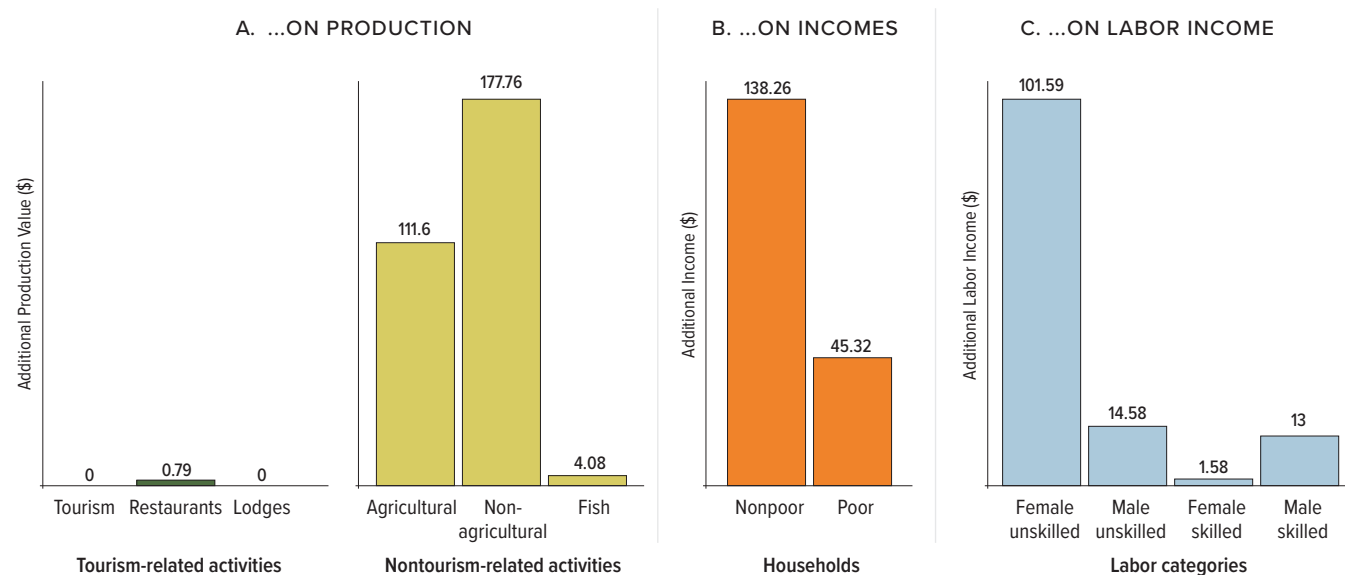
Source: World Bank 2023.

Bwindi Impenetrable National Park

FIGURE 8.9

Effects of a \$100 Increase in Earnings for Unskilled Female Workers on the Local Economy Around BINP

Effects of this increase in earnings for unskilled female workers on ...

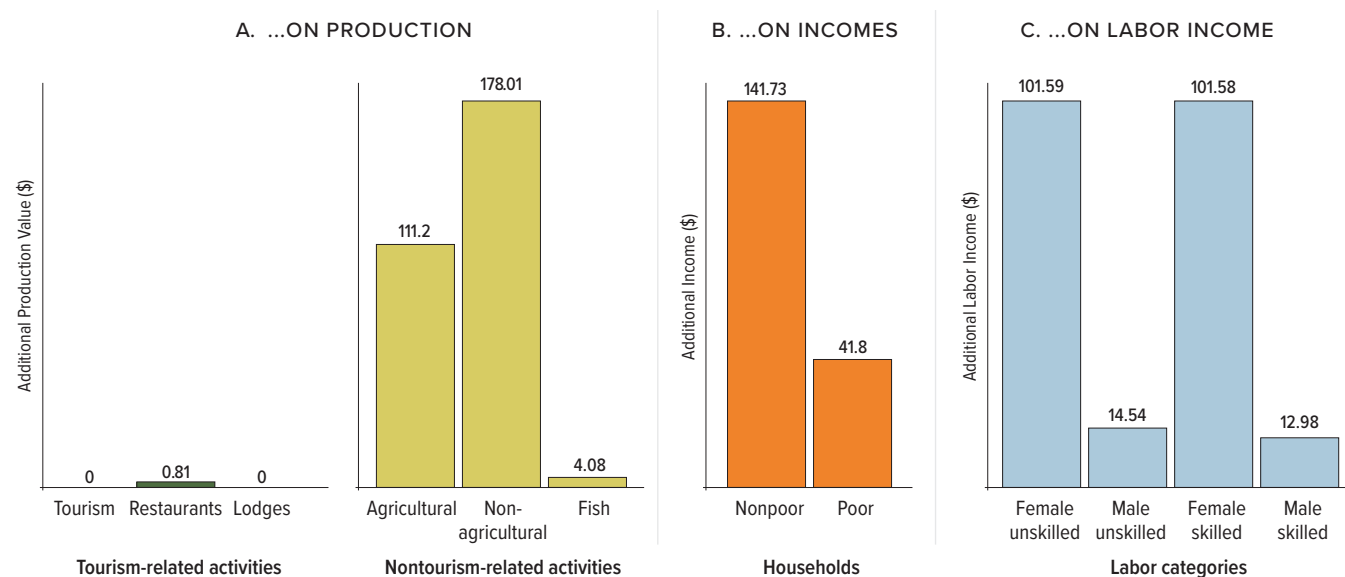


Source: World Bank 2023.

FIGURE 8.10

Effects of a \$100 Increase in Earnings for Skilled Female Workers on the Local Economy Around BINP

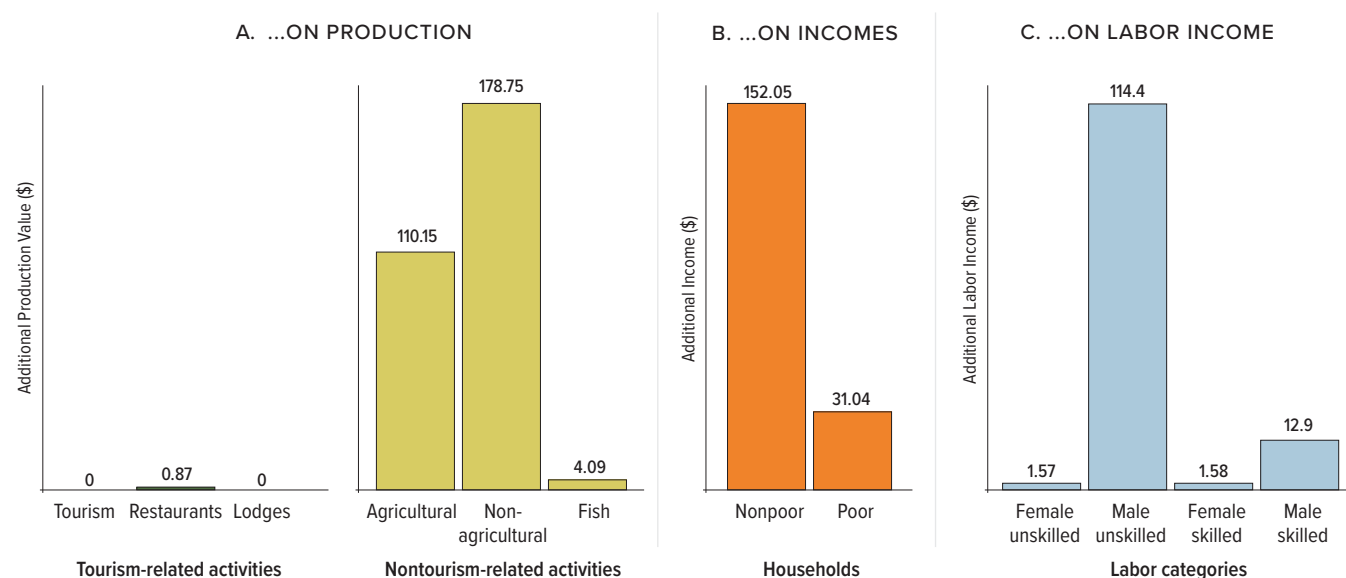
Effects of this increase in earnings for skilled female workers on ...



Source: World Bank 2023.

FIGURE 8.11
Effects of a \$100 Increase in Earnings for Unskilled Male Workers on the Local Economy Around BINP

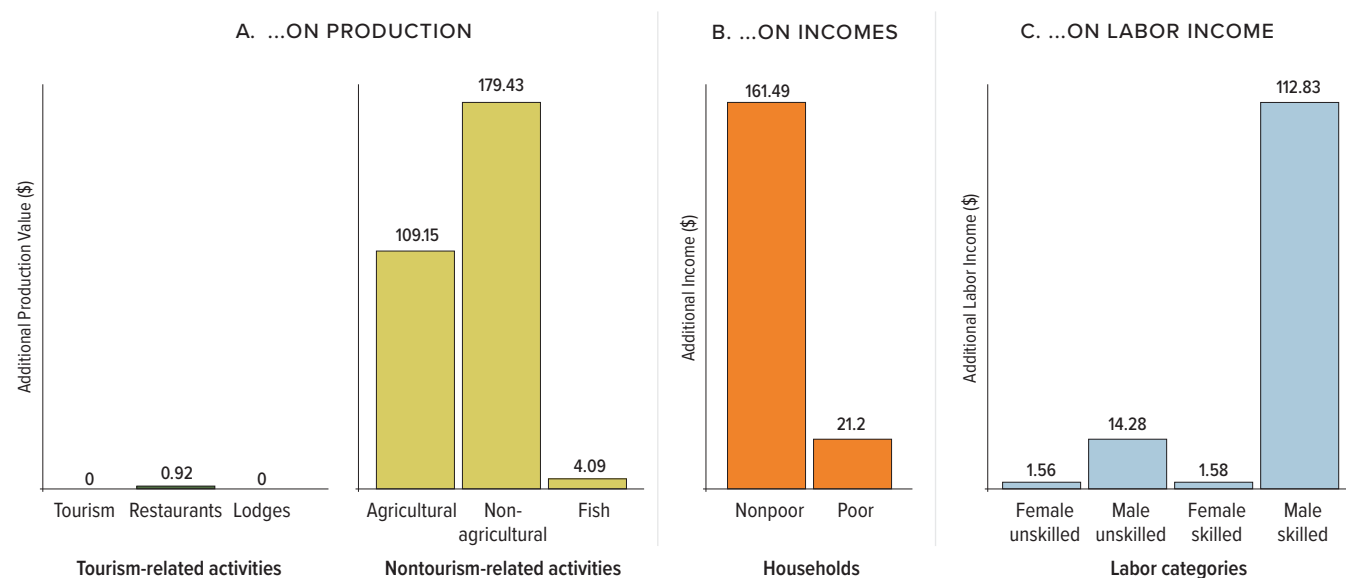
Effects of this increase in earnings to unskilled male workers on ...



Source: World Bank 2023.

FIGURE 8.12
Effects of a \$100 Increase in Earnings for Skilled Male Workers on the Local Economy Around BINP

Effects of this increase in earnings to skilled male workers on ...



Source: World Bank 2023.

Conclusions and Recommendations



The findings from these simulations underline the importance of looking beyond the activities and people most directly affected by protected area tourism to also consider indirect impacts on the local economies. For example, when a visitor spends money in a tourism business, lodge, or restaurant, markets transmit the impacts of this spending to other businesses, workers, and owners of capital. Household incomes from wages and profits increase, and most households spend most of their income locally. This creates additional rounds of impacts in local economies. The LEWIE-LITE model captures the total estimated impacts—both direct and indirect—of tourism, park and community revenue sharing spending, and complementary development interventions in local economies.

Main Results and Findings

Studying and simulating the local economic benefits of tourism offers valuable insights into the sector's economic contributions to communities, including women, living around protected areas

Even before using the model, the survey data provides interesting results that may be missed in other studies of the tourism sector. For example, up to 12 percent of employees across all tourism-related businesses (hotels, restaurants, and other tourism businesses) around Queen Elizabeth National Park and Bwindi Impenetrable National Park are women; however, in nontourism-related businesses, this figure is approximately 4 percent. This reinforces the global finding that tourism is a valuable job entry point for women as compared to other economic sectors.

Simulations using the model reveal tourism benefits that go beyond the direct impacts considered by most tourism impact studies. Production multipliers for QENP and BINP are greater than 1 (5.67 and 1.2, respectively). BINP's production multiplier rises to 4.29 if the model only includes local tourist spending and nets out the high entry fees which go to the national treasury. This means that local production expands by more than one dollar per dollar of increase in tourist spending. This impact is marked in the nonagricultural sector, which includes local grocery stores, salons, taxis, and small-scale production like carpentry shops. Local agriculture in both parks is also stimulated beyond the value of the initial tourist dollar as farmers supply food to restaurants and hotels as well as to households whose income increases thanks to protected area tourist spending.

Local income or GDP in the economies surrounding protected areas rises as a result of tourism

Local income rises by more than one dollar per dollar spent by tourists at QENP and by 37 cents at BINP. The income multiplier at QENP is 2.03, of which 1.97 goes to nonpoor households and 0.06 goes to poor households. The smaller income multiplier at BINP is mainly because most income from park entry fees and gorilla permits remits to UWA, rather than staying in the local economy. Net of entry fees, the income multiplier to the local economy surrounding BINP rises as high as 1.33. The 37 cent multiplier is not insignificant as it opens the possibility of creating additional benefits through complementary interventions that increase local sourcing of goods and services and employment of local workers, similarly to businesses at QENP.

Poor households are less employed in both tourism and nontourism sectors of the local economies surrounding both parks. They receive only 3 percent (QENP) and 13.52 percent (BINP) of total tourism benefits, and this small share reflects their lack of access to local formal jobs and capital.

Tourism growth can lead to economic benefits that ripple across local economies and generate high returns on investments for protected area management budgets

Using the income multipliers, it is possible to forecast the economic impacts of more tourists. One additional protected area tourist generates an average of \$1,028 during their stay at QENP and \$442 at BINP (or \$660 in local GDP for BINP net of park entry fees). This includes the direct impact of their spending and indirect impacts in the local economies surrounding the protected areas. Multiplying these per-tourist impacts by the number of tourists which visited these protected areas in 2022 (67,736 in QENP and 32,628 in BINP), the total income generated by tourists was approximately \$69.6 million at QENP and \$14.4 million for BINP—or \$21.5 million for BINP outside of park entry fees. These amounts far exceed the current park budgets at these sites, which are \$3 million (QENP) and \$2.3 million (BINP), and provide revenue for other parks and conservation areas, leading to multiplier impacts in those local economies. If the number of tourists to the parks increases at prepandemic annual growth rates, the protected areas will generate an additional income to households of \$5.1 million and \$2 million (or \$2.8 million net of entry fees), respectively, for the local economies of QENP and BINP.

Parks support local economies through their spending on local labor and local goods and services. Every \$100 increase in park spending adds \$212 to the GDP of communities around QENP and \$5.83 to BINP. Park revenue spending has a small impact on local GDP at BINP because most of the park revenue (almost 96 percent) is transferred out of the local economy to UWA. Net of park fees, a \$100 increase in park spending would result in \$108 increase in GDP in BINP.

Parks also support local economies through community revenue sharing. A \$100 increase in community revenue sharing spending leads to a local GDP gain of \$245 at QENP and \$120 at BINP. Furthermore, income multipliers from community revenue sharing spending are also greater than one: every additional dollar spent by the parks increases the benefit to the local economy by more than a dollar. This is in addition to the economic benefits created by tourist spending. These simulations demonstrate the high economic return on government investments in protected areas.

Complementary interventions around protected areas can magnify these impacts

LEWIE-LITE can simulate impacts of local sourcing of agricultural, fish, and nonagricultural goods and services, and employment, for example through training and linking workers to tourism and/or nontourism activities. Simulations of the impact of \$100 of additional wages for female skilled labor generated an additional \$306 in local income to households in QENP and \$184 in BINP. If a program was to generate additional female employment in the local economy, the multiplier impact on local incomes would be large, in addition to the impact of tourism. The model can be used to calculate multipliers generated by these complementary policies as well as the distribution of impacts across businesses, worker groups, and households.

Study Limitations

LEWIE-LITE is a useful tool; however, there are some limitations to the model. Further guidance on how LEWIE-LITE works and how it can be used is included in appendix B.

The model can explore potential scenarios of future visitation or tourism spend to inform policy discussions, but it cannot design tourism policies or programs

It is best to view LEWIE-LITE as a tool to explore the local economic benefits of protected area tourism that are explored in this report, for example, the impacts of increases in tourism and tourist spending, both overall and for different sectors, workers, and household groups. For example, in its current form, the model can show what impacts to expect if the number of tourists or tourist spending increased. It can also be used to simulate local economy impacts of having fewer tourists but higher tourist spending and vice versa—or of increasing both the number of tourists and how much they spend. However, it does not explain how to make more tourists come or spend more, or how to ensure the protected area is able to sustainably accommodate increased tourism and tourist spending. That is a policy design choice, for which it would be necessary to also model the likely effects of different tourism policies on the number of tourists and amount of tourist spending. This goes beyond what LEWIE-LITE is set up to do.

The simplified nature of the model supports scalability but brings technical tradeoffs

The LEWIE-LITE model cannot explore price changes on local-economy outcomes. It is a fixed-price multiplier model, based on a SAM created for a local economy. Examining price impacts directly would require a more comprehensive LEWIE approach (World Bank 2021). This is a tradeoff that must be made to create a relatively simple and scalable LEWIE-LITE platform. A basic assumption of LEWIE-LITE is that if the local demand for goods or services (including factors like labor) increases, the supply will increase to meet this demand. This assumption is more defensible for an economy with high unemployment and few constraints on local production. High unemployment is common in poor countries, so the availability of workers is not likely to be a constraint. However, worker skills may be. Other production constraints depend on a variety of factors, including the availability of land to grow crops, technological limitations, access to inputs and capital, and market transaction costs. If these constraints are present, it is important to address them as part of tourism development projects via interventions like job training.

The model also does not capture nonlinearities in production activities, household spending, and so on. SAM multiplier models are linear by nature. This is the second major tradeoff of using LEWIE-LITE versus more comprehensive LEWIE modeling. Nonlinearities occur if there are diminishing marginal returns to inputs in local production due to technological constraints, or if household spending on goods and services changes as household incomes change. If nonlinearities are important, the LEWIE-LITE model is likely to be better at assessing impacts of relatively small changes (for example, in tourist numbers and spending) than larger ones.

Recommendations

Based on the above analysis, this report offers several recommendations for policy makers to promote Uganda's nature-based tourism sector and maximize its contributions to development, poverty reduction, and biodiversity conservation.

Strengthening the local economic benefits of protected area tourism

1. Strengthen benefit sharing to reach poorer households

Uganda is one of the few countries with a national revenue sharing program from protected areas, in which 20 percent of park entry fees and \$10 from each gorilla permit are used to fund projects to address human-wildlife conflict, build local infrastructure, or support other socioeconomic programs. Benefit sharing is a mechanism through which local development can be financed directly from revenue generated by tourism. Sharing revenues from park entry fees with local communities can result in a greater than one-for-one dollar increase in local production, wages, and GDP. With the LEWIE-LITE analysis showing that poor households around QENP and BINP benefit less from tourism than nonpoor households, designing strategic interventions in the revenue sharing program that specifically target the poorest people can help make tourism benefits more equitable.

2. Promote local sourcing and local hiring

The economic benefits of tourism are reduced in rural communities with less developed local economies in which goods and services are purchased in urban centers farther away. This means less money is retained in the local economy and smaller economic impacts are generated. Local linkages to sectors such as agriculture, fishing, and manufacturing could be strengthened so that multipliers increase. Using BINP as an example, if local businesses sourced more inputs locally, the production and income multipliers from tourism could be boosted. Because BINP is more isolated than QENP, it would be necessary to address common challenges that affect local sourcing for tourism, such as the quality and quantity of local goods, prices, infrastructure and transport, and communications with producers and vendors. The pilot's findings prompt further studies to explore how to strengthen local market linkages in BINP and to grow the local economy to reduce leakages and maximize the impacts of tourism.

3. Strengthen employment, training, and entrepreneurship programs

Tourism is a significant source of employment, particularly in rural areas, and LEWIE-LITE has shown it as a principal entry point into the job market around QENP and BINP, particularly for women. The analysis also found that nonlocal ownership and hiring are more common in tourism-related businesses than nontourism-related businesses. Tourism requires skills and training, which can increase the types of jobs accessible to workers and promote entrepreneurship. Skills training and entrepreneurship programs for workers from poor households could increase the tourism benefits that poor households capture. The private sector, such as tour operators and hotels, can play a role by providing and expanding employment programs, targeting women and workers from local, poorer communities or households, and offering attractive jobs and fair remuneration.

Recognizing the economic value of protected areas

4. Assess and convey economic benefits to policy developers and decision-makers

The LEWIE-LITE model, with its simplified data collection and online dashboard, can help to close data gaps on the direct and indirect impacts of tourism on local economies in and around protected areas. It provides clear outputs to convey the economic value of these parks to the government, local communities, donors, and other stakeholders. It can do so in a way that is cost-effective, scalable, and understandable by policy makers and technical advisors from national parks and ministries of tourism, environment, and finance. It is also useful to private sector entities pursuing sustainable tourism and corporate social responsibility targets. The LEWIE-LITE model has been developed for tourism in data-poor contexts such as Uganda and delivers a product similar to the more complex LEWIE but more cheaply.

Potential further applications

This study identified several areas for potential investigation or further development of LEWIE-LITE. Technically, modifications to LEWIE-LITE and the dashboards, and a comparison of LEWIE-LITE and LEWIE could be undertaken to better understand the direct and indirect effects of tourism on local economies. This includes the use of the tool to estimate the costs and benefits of new investments in tourism at protected area sites. A short DCI could be filled out to detail new investments and an additional activity could be created for protected area tourism development projects in the LEWIE-LITE SAM.

The tool could also be used to monitor developments in the tourism sector such as increased demand for ecotourism, or negative impacts like lost agricultural revenue from human-wildlife conflicts. Decreases in tourist spending could just as easily be simulated to quantify losses to local economies if there are negative shocks to tourism. By using the tool to simulate impacts of negative shocks, governments can be more prepared for them and actively try to avoid them (for example, through tourism crisis communications).

This report provides snapshots that were modeled near the end of the high season for tourism at two protected areas in Uganda. Ideally, this exercise would be repeated multiple times in a year to capture economic impacts in high and low tourist seasons. Further, the exercise could be carried out with domestic tourists only, and followed by those from selected international markets to capture their different expenditure profiles and impacts these would have on local economies. In this way, the model could help government to develop, market and promote nature-based tourism. Finally, while the pilot showed that economic benefits from tourism flow to communities in two of the most popular national parks in Uganda, applying the tool to other protected areas in the country would allow comparison across sites and help obtain a national average of local production, employment, and income impacts.

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APPENDIX A.

Questionnaires

Park Entry

PARK RECORDS	2022	2023	UNIT
Tourists number			
What was/is the number of multi-day tourists (adults and children > 5) in the park for all of 2022 (2023)			number
What was/is the number of single-day visitors (adults and children > 5, no lodging) in the park for all of 2022 (2023)			number
Park budget for 2022 (2023)			
What was the total budget for 2022 (2023)			amount
What was the total amount received for park entry fees for 2022 (2023)			amount
Share of budget			
How much of the 2022 (2023) budget went to:			
Salaries and wages for male unskilled workers (for example, maintenance workers)			amount
Salaries and wages for female unskilled workers (for example, maintenance workers)			amount
Salaries and wages for male skilled workers (for example, some guides, wardens, ticket sales, admin)			amount
Salaries and wages for female skilled workers (for example, some guides, wardens, ticket sales, admin)			amount
Payment of rents on land, buildings, and so on			amount
Locally produced agricultural products (for example, fruits, vegetables, meats)			amount
Services (for example, laundry, maintenance, construction, repairs) from local providers			amount
Purchases from local stores and other businesses			amount
Purchases made outside the local economy			amount

Community Revenue Sharing

COMMUNITY REVENUE SHARING	2022	2023	UNIT
What was/is the total annual community revenue sharing budget for 2022 (2023)			amount
Community revenue sharing budget for 2022 (2023)			
What share of the 2022 (2023) community revenue went to:			
Salaries and wages for male unskilled workers (for example, maintenance workers)			%
Salaries and wages for female unskilled workers (for example, maintenance workers)			%
Salaries and wages for male skilled workers (for example, guides, wardens, ticket sales, admin)			%
Salaries and wages for female skilled workers (for example, guides, wardens, ticket sales, admin)			%
Payment of rents on land, buildings, and so on			%
Locally produced agricultural products (for example, fruits, vegetables, meats)			%
Services (for example, laundry, maintenance, construction, repairs) from local providers			%
Purchases from local stores and other businesses			%
Purchases made outside the local economy			%
Other			%
Please specify the other expense			text
Total community revenue sharing budget for 2022			100%

Tourists

TOURISTS SURVEY		UNIT
Tourist identification		
What is your gender?		text
What is your age range?		text
What is your nationality?		text
If more than one, please specify the other country		text
What is your country of residence?		text
If more than one, please specify the other country		text
Are you a foreigner, foreign resident of Uganda?		text
Expected spending		
Are you paying for this trip to {park_name} as part of a package tour (hotel/tour/food and so on)?		text
Package fee		
Can you estimate your package cost in:		
What is the total cost of this package?		amount
In your estimate, what is the value of the package that pertains to just {park_name} (lodging/food/ park fees/other local activities)?		amount
Number of days/ nights		
What is the number of days that you're expecting to stay in {park_name}?		number of days
What is the number of nights that you're expecting to stay in {park_name}?		number of nights
Expected spending		
In what currency can you estimate your local tourism expenses?		text
What is the price per room (including taxes, resort and other fees)?		amount
In what category of hotel did you stay?		number
Please specify the other category		text
Park entry in QENP		amount
Park entry in BINP		amount
Hotel shops/other hotel amenities		amount
Local restaurants (food and drink)		amount
Guides and tours		amount
Tourist equipment rental and purchases		amount
Souvenir/handicrafts		amount
Retail shops, local markets, and so on		amount
Local transportation (taxi, boda boda, and so on)		amount
Other		amount

TOURISTS SURVEY		UNIT
Please specify the other spending		text

Tour Operators (based in Kampala)

TOUR OPERATORS SURVEY (PACKAGE TOUR)		UNIT
In what currency can you estimate your package tour prices?		text
In your estimate, what is the value of the package that pertains to just this park (lodging/food/park fees/other local activities)?		amount
Tour operators shares		
About what percentage of your expenses for the package tour for \${park_name} goes to:		
Hotel room and meals		%
Park entry		%
Local restaurants (food and drink)		%
Guides and tours		%
Tourist equipment rental		%
Souvenir/handicrafts		%
Retail shops, local markets		%
Hotel shops/other hotel amenities		%
Local transportation		%
Other		%
Please specify the other category		text
After all your expenses, about what percentage of your revenue for the package tour for {park_name} goes to savings/profits		%
Tour operator total percentage		100%

Lodges

HOTELS AND LODGES		UNIT
About what percentage of your monthly spending for the hotel or lodge goes to:		
Salaries and wages for male unskilled workers		%
Salaries and wages for male skilled workers		%
Salaries and wages for female unskilled workers		%
Salaries and wages for female skilled workers		%
Crop purchases from local farmers or animals or animal products from local ranchers		%
Value of fish and fish parts purchased from local fishermen		% (only QENP)
Local services (for example, laundry, maintenance, construction, and repairs from local providers)		%
Tourism products and third-party tour operators		%
Purchases from local stores and other businesses		%
Purchases you make outside the local economy		%
Local rent		%
Local tax (plus concession fee if there is one)		%
Taxes other		%
Other lodge spending		%
Please specify the other lodge spending		text
Lodge total percentage		100%
Other information		
What percent of the lodge/hotel is locally owned?		%
Share of wages paid to local workers		%
After all your monthly expenses, about what percentage of your revenue {park_name} goes to savings/profits		%

Restaurants

RESTAURANTS		UNIT
About what percentage of your monthly spending for the restaurant goes to:		
Salaries and wages for male unskilled workers (for example, bussers, dishwashers, others)		%
Salaries and wages for female unskilled workers (for example, bussers, dishwashers, others)		%
Salaries and wages for male skilled workers (for example, cooks, servers, admin)		%
Salaries and wages for female skilled workers (for example, cooks, servers, admin)		%
Crop purchases from local farmers or animals or animal products from local ranchers		%
Value of fish and fish parts purchased from local fishermen		% (only QENP)
Services (for example, laundry, maintenance, construction, and repairs) from local providers		%
Purchases from local stores and other businesses		%
About what percentage of your monthly costs are purchases you make outside the local economy?		%
Local rent		%
Local taxes		%
Other taxes		%
Other restaurant spending (specify)		%
Please specify the other restaurant spending		text
Restaurant total percentage		100%
Other information		
Share of restaurants locally owned		%
Share of wages paid to local workers		%
After all your monthly expenses, about what percentage of your revenue {park_name} goes to savings/profits		%

Nonagricultural Producers (Tourism-Related Businesses)

NONAGRICULTURAL PRODUCERS (TOURISM-RELATED BUSINESSES)		UNIT
About what percentage of monthly spending by local nonfarm tourist businesses goes to:		
Salaries and wages for male unskilled workers		%
Salaries and wages for female unskilled workers		%
Salaries and wages for male skilled workers (for example, machine operators, clerks, supervisors)		%
Salaries and wages for female skilled workers (for example, machine operators, clerks, supervisors)		%
Value of crop purchases from local farmers or animal products from local ranchers		%
Value of fish and fish parts purchased from local fishermen		% (only QENP)
Services (for example, machine maintenance, construction, and repairs) from local providers		%
Purchases from local stores and other businesses		%
About what percentage of your monthly costs are purchases you make outside the local economy, like merchandise (for stores) or supplies?		%
Local rent		%
Nonfarm tax local		%
Nonfarm tax other		%
Other nonagricultural tourism-related producers spending (specify)		%
Please specify the other non-agricultural tourism-related producers spending		text
Nonagricultural producers (tourism-related) total percentage		100%
Other information		
Share of businesses locally owned		%
Share of wages paid to local workers		%
After all your monthly expense,s about what percentage of your revenue {park_name} goes to savings/profits		%

Nonagricultural Producers (Retailers, Other Services, and Other Producers)

NONAGRICULTURAL PRODUCERS (RETAILERS, SERVICES, AND PRODUCTION)		UNIT
About what percentage of monthly spending by local nonfarm nontourist businesses goes to:		
Salaries and wages for male unskilled workers		%
Salaries and wages for female unskilled workers		%
Salaries and wages for male skilled workers (for example, machine operators, clerks, supervisors)		%
Salaries and wages for female skilled workers (for example, machine operators, clerks, supervisors)		%
Value of crop purchases from local farmers or animal products from local ranchers		%
Value of fish and fish parts purchased from local fishermen		% (only QENP)
Services (for example, machine maintenance, construction, repairs) from local providers		%
Purchases from local stores and other businesses		%
About what percentage of your monthly costs are purchases you make outside the local economy, like merchandise (for stores) or supplies?		%
Local rent		%
Nonfarm local tax		%
Nonfarm tax other		%
Other nonagricultural producers' nontourism-related spending (specify)		%
Please specify the other nonagricultural nontourism-related producers spending		text
Nonagricultural producers (nontourism) total percentage		100%
Other information		
Share of businesses locally owned		%
Share of wages paid to local workers		%
After all your monthly expenses, about what percentage of your revenue {park_name} goes to savings/profits		%

Agricultural Producers (Commercial Crop and Livestock Producers)

COMMERCIAL FARMERS (CROP PRODUCERS AND LIVESTOCK)		UNIT
About what percentage of monthly spending by farms goes to:		
Salaries and wages for male unskilled workers		%
Salaries and wages for female unskilled workers		%
Salaries and wages for male skilled workers (for example, machine operators, supervisors)		%
Salaries and wages for female skilled workers (for example, machine operators, supervisors)		%
Land rate		%
Value from own harvest, livestock or neighbors (for example, seedlings, manure excluding fish or fish parts)		%
Value from own harvest, livestock or neighbors (only fish or fish parts)		%
Value of animal feed from your own farm or neighbors (excluding fish or fish parts)		%
Value of feed from fish or fish parts from your own farm or neighbors		%
Services (for example, machine maintenance, construction, repairs, veterinarian) from local providers		%
Purchases from local stores and other businesses for your farm		%
About what percentage of your monthly costs are purchases of inputs outside the local economy, like fertilizer, commercial seed, feed, and chemicals?		%
About what percentage of your monthly costs are purchases of inputs outside the local economy, like medicines or vet services from outside, materials?		%
Farm local tax		%
Farm tax other		%
Other commercial farmers (crop producers) spending (specify)		%
Please specify the other commercial farmers (crop producers) spending		text
Commercial farmers (crop producers) total percentage		100%
Other information		
After all your monthly expenses, about what percentage of your revenue {park_name} goes to savings/profits		%
Has your crop harvest been negatively impacted by the wildlife from the park?		text
What is your estimate of the share of your monthly revenue that has been lost?		%
Has your livestock stock been negatively impacted by the wildlife from the park?		text
What is your estimate of the share of your monthly revenue that has been lost?		%

Resource Extraction Producers (Fishers)

COMMERCIAL FISHERS		UNIT
About what percentage of monthly spending by fishing operations goes to:		
Salaries and wages for male unskilled workers		%
Salaries and wages for female unskilled workers		%
Salaries and wages for male skilled workers (for example, machine operators, supervisors)		%
Salaries and wages for female skilled workers (for example, machine operators, supervisors)		%
Crop purchases from local farmers or animals or animal products from local ranchers		%
Local fish (for example, fishing bait purchased from other fishers, or if you provide your own bait, what share of your monthly spending would you have to use to buy supplies from others?)		%
Services (for example, boat maintenance, construction, repairs) from local providers		%
Purchases from local stores and other businesses (for example, nets, lines, hooks, bait)		%
About what percentage of your monthly costs are purchases of inputs outside the local economy, like nets, lines, hooks, bait, or other supplies (whether imported or bought elsewhere?)		%
Fishing local tax		%
Fishing tax other		%
Other fishers spending (specify)		%
Please specify the other fishers spending		text
Fish total percentage		100%
Other information		
Share of fishing operations locally owned		%
Share of wages paid to local workers in fishing		%
After all your monthly expenses, about what percentage of your revenue {park_name} goes to savings/profits		%
Has your fishing catch been negatively impacted by the wildlife from the park?		text
What is your estimate of the share of your monthly revenue that has been lost?		%

Households¹

HOUSEHOLDS		UNIT
About what percentage of your monthly income comes from:		
Salaries and wages earned by male unskilled workers in the household		%
Salaries and wages earned by female unskilled workers in the household		%
Salaries and wages earned by male skilled workers in the household		%
Salaries and wages earned by female skilled workers in the household		%
Profits from household-owned farms or businesses or renting property the household owns		%
Migrant remittances (domestic and foreign)		%
Amount you receive monthly from the government (pensions, social cash transfers, other)		%
Other income source		%
Please specify the other household spending		text
Total percentage household income		100%
About what percentage of your monthly spending goes to:		
Buying food from local farmers or animals or animal products (eggs, milk, and so on) from local ranchers		%
Value of fish and fish parts purchased from local fishermen		%
Tourism products and third-party tour operators		%
Things besides food that are sold by people or businesses in your community, including services		%
Things you buy from businesses/households, and so on, in places outside your community		%
Household local income tax payments		%
Household other income tax payments		%
Rent (if household rents its house; don't include business rentals here)		%
Other household spending		%
Please specify the other household spending		text
Household total expenditure percentage		100%
Other information		
Share of wages earned locally		%
What is your household's average monthly income in Ugandan Shilling		amount
What is your household's size?		number

¹ For this LEWIE-LITE pilot in Uganda, household surveys were not implemented. Data was collected from the Living Standards Measurement Survey (LSMS). However, the questions contained in this survey were used as the basis to extract relevant information from the LSMS.

APPENDIX B.

Questions and Answers about the LEWIE-LITE Model and Analysis

This appendix outlines common questions and answers about the use of the LEWIE-LITE model and potential limitations of the model for analysis.

Q: Can the model tell us how different tourist groups (for example, foreign versus domestic) affect the local economy?

A: The current model does not differentiate between tourist groups. It focuses on an average park visitor. For example, if half of all visitors are foreign and half domestic, and foreigners spend an average of \$1,000 while domestic visitors spend an average of \$600, the average tourist in the model spends $\frac{1}{2} \times \$1000 + \frac{1}{2} \times \$600 = \$800$. The model is used to quantify the likely impacts of this spending. If one wanted to know how impacts between the two groups differ, it would be necessary to extend the model to have both tourist groups in it. It is feasible to do this using the LEWIE-LITE framework, but it would require some additional work. It would also require collecting data on a large enough sample of visitors in each group to reliably estimate these spending differences.

Q: Park fees can vary considerably from one protected area to another. How does this affect the local economy impacts of tourism?

A: This depends crucially on where the park fees go. If they go to the central government treasury, they represent a leakage from the local economy. Leverages reduce local income, production, and employment multipliers by shifting benefits to other parts of the country. On the other hand, if the park authority spends entry fees to hire workers and purchase goods and services in the local economy, it creates local linkages and can create local income multipliers.

Q: How does the current LEWIE-LITE model's multiplier estimates reflect these differences in park fees?

A: When the model calculates the multiplier effect of an additional dollar of tourist spending, it assumes that a share goes to park entry fees. This share is equal to the share of park fees in total spending by the average tourist. In the case of BINP, most park entry fees are sent to the central government (the Uganda Wildlife Authority). This results in smaller local multiplier effects. The tourist spending multipliers make sense if the goal of the project is to increase tourist spending by bringing in more tourists who pay park fees or encouraging tourists to stay longer (if park fees are collected daily).

Q: Can the current LEWIE-LITE model be used to calculate multiplier effects of tourist spending net of park fees?

A: Yes. The dashboard provides an adjustment factor to calculate all multipliers net of park fees simply by multiplying them by the adjustment factor. It might make sense to do this if the goal of a project is to encourage tourists to spend more money per day while at

the protected area, but without any change in park entry fees. The adjustment factor is $1/(1-pfs)$, where pfs is the share of park fees in average tourist spending.

Q: Apart from park entry fees, what can make local multipliers higher or lower?

A: Multipliers are created as cash cycles through local economies. They tend to be higher in relatively isolated economies in which more of what households and businesses spend money on is supplied locally. In places that are integrated with outside markets, multipliers tend to be smaller because cash leaks out of the local economy through trade. Multipliers also depend critically on local production capacity. If production is limited, for example, in rugged mountainous areas like BINP, businesses and households, by necessity, rely more on trade with outside markets. At BINP, more of the food tourists consume and the workers that lodges hire are brought in from other parts of the country. In Uganda, local production is greater at QENP and money thus circulates more at QENP than BINP, creating larger multipliers at QENP.

Q: Can the model be used to come up with practical policy options?

A: Yes and no. It is important to distinguish what the model does from what policy makers do with it. In its current form, the dashboard offers some examples of potential impacts of changes in tourism patterns which could arise from certain policy options. It can inform but not develop practical policies.

Q: Can the model tell us what skills would be needed to raise wage earnings for local workers, who should be targeted, and whether this would help poor households move into more skilled and better-paying jobs? Can it tell us whether there are structural reasons why local workers are unable to access higher-paying jobs?

A: These are questions of policy and program design, and they go beyond what this LEWIE-LITE model can provide. The dashboard presents simulations of local economic impacts of changes in wage earnings of different worker groups. How one increases wages for local workers is a matter of program design. The model does not tell us how to design a job training program, who to target, or why some labor groups are unable to access higher-paying jobs. However, it does tell us how higher wages are likely to benefit the local economy and its different sectors, workers, and social groups.

Q: Is it possible to simulate local economy impacts of specific employment programs?

A: Yes and no. The key to modeling impacts of specific policies is figuring out what is simulated in each case. For example, if an employment program provides local workers with skills to get jobs in tourism so that their wages increase, the model will predict the local economy impacts of this program. If the choice is between two employment programs, one must specify how each program would affect employment and earnings of the worker group in question so that the model can simulate the local economy impacts of each. This might require modifying the existing model or using a more comprehensive LEWIE modeling approach.

Q: Can the model be used to estimate impacts of “buy local” policies that create more benefits for local farmers?

A: Yes and no. The dashboard shows us the local economy benefits of increasing local farmers’ sales. This could be the result of connecting tourism facilities (for example, lodges and restaurants) with farmers, making farmers more productive, changing crop choices, changing the quality of what they produce, or—as is most certainly the case—all of these things. The model does not tell us how to design and implement programs to change the demand and supply of local farm goods, like connecting farmers with lodges and restaurants or providing them with access to new technologies. Again, these are policy design questions that would require additional work to model. This is similar for the local economy benefits of increasing sales of nonfarm goods and services.

APPENDIX C.

Calculation of Multipliers

The various income and production multipliers are derived from the social accounting matrix (SAM) and SAM multiplier matrix generated from the data collected around QENP and BINP. As an example, tables C.1 and C.2 show the SAM and resulting SAM multiplier matrix from QENP. In table C.1, the columns show expenditures of farm and nonfarm businesses, male and female skilled and unskilled labor, household groups, park expenditures and community revenue sharing spending, and spending outside the local economy. The rows show income from the same local economy actors.

TABLE C.1

Social Accounting Matrix of the Economy in and Surrounding QENP

	AGRICU	TOURISM	NONAGR.	FISH	LMUSK	LMSK	LFUSK	LFSK	K	POOR	NONPOOR	RESTAURANTS	LODGES	TOURISTS	PROT.AREA	COMREVSH	G	ROW	TOTAL EXPENDITURES
Agricultural	28212836	936194	119644250	460476	0	0	0	0	0	8446183	134466981	3138610	3266632	0	87226	10438	0	0	298669826
Tourism	0	0	0	0	0	0	0	0	0	0	0	0	602747	10552691	0	0	0	0	11155438
Nonagricultural	39040465	1930322	155827637	1359289	0	0	0	0	0	5905493	196768294	1469000	4439747	3232163	1326537	322851	0	0	411621797
Fish	2287527	62413	15166173	75270	0	0	0	0	0	0	2760845	505640	526264	0	0	0	0	0	21384132
LMUSK	29280348	219426	14201632	717280	0	0	0	0	0	0	0	97632	354899	0	3536	178491	0	0	45053244
LMSK	31720377	219426	10586671	53132	0	0	0	0	0	0	0	256284	981636	0	393	20876	0	0	43838795
LFUSK	0	303624	8520979	8855	0	0	0	0	0	0	0	79326	241633	0	498529	92899	0	0	9745846
LFSK	0	63787	0	0	0	0	0	0	0	0	0	67122	558777	0	100702	0	0	0	790388
K	65967928	2392529	50097214	1322545	0	0	0	0	0	140156	4877271	2118750	5009280	0	0	0	0	0	131925673
Poor	0	0	0	0	1678151	831952	699958	49161	3272357	0	0	0	0	0	0	0	0	1290353	7821933
Nonpoor	0	0	0	0	43375093	43006844	9045889	741226	128653316	0	0	0	0	0	0	0	0	17909299	242731667
Restaurants	0	0	0	0	0	0	0	0	0	0	7982528	0	0	1434138	0	0	0	0	9416667
Lodges	0	0	0	0	0	0	0	0	0	0	0	0	0	29946784	0	0	0	0	29946784
Tourists	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48293551	48293551
Protected area	0	0	0	0	0	0	0	0	0	0	0	0	0	3127775	0	0	0	0	3127775
ComRevSh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	625555	0	0	0	625555
G	1525018	200677	8707132	146113	0	0	0	0	0	3120	3096331	155375	896770	0	0	0	0	0	14730536
ROW	21858593	2527575	73560253	1607238	0	0	0	0	0	155549	11183547	635625	2278678	0	245128	0	14730536	0	128782723
Total expenditures	219893093	8855973	456311942	5750197	45053244	43838795	9745846	790388	131925673	14650502	361135798	8523364	19157064	48293551	2887606	625555	14730536	67493203	0

Source: World Bank 2023 ([Dashboard](#) for LEWIE-LITE model of Queen Elizabeth National Park).

Note: LMUSK = Labor male unskilled workers; LMSK = Labor male skilled workers; LFUSK = Labor female unskilled workers; LFSK = Labor female skilled workers; K = Capital; ComRevSh = Community revenue sharing; LocalG = Local government; G = National government; ROW = Rest of the world (outside of the local economy)

TABLE C.2**Social Accounting Matrix Multiplier Model of the Economy in and Surrounding QENP**

	AGRICU	TOURISM	NONAGR.	FISH	LMUSK	LMSK	LFUSK	LFSK	K	POOR	NONPOOR	RESTAURANTS	LODGES	TOURISTS	PROT. AREA	COMREVSH
Agricultural	3.11	1.61	1.97	1.59	2.33	2.33	2.34	2.34	2.33	2.61	2.32	2.30	1.95	1.89	1.95	2.16
Tourism	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.24	0.00	0.00
Nonagricultural	2.90	2.29	3.68	2.31	3.21	3.21	3.21	3.21	3.21	3.19	3.21	2.83	2.68	2.70	3.20	3.45
Fish	0.15	0.12	0.16	1.12	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0.20	0.16	0.15	0.15	0.16
LMUSK	0.52	0.33	0.40	0.42	1.43	0.43	0.43	0.43	0.43	0.47	0.43	0.43	0.38	0.38	0.44	0.70
LMSK	0.52	0.31	0.37	0.29	0.41	1.41	0.42	0.42	0.41	0.45	0.41	0.43	0.40	0.38	0.37	0.43
LFUSK	0.05	0.08	0.07	0.05	0.06	0.06	1.06	0.06	0.06	0.06	0.06	0.06	0.06	0.08	0.27	0.21
LFSK	0.00	0.01	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.01	0.03	0.02	0.04	0.00
K	1.33	1.06	1.07	1.02	1.15	1.15	1.15	1.15	2.15	1.22	1.14	1.34	1.23	1.17	1.01	1.11
Poor	0.07	0.05	0.05	0.05	0.09	0.08	0.13	0.12	0.08	1.06	0.06	0.06	0.06	0.06	0.07	0.08
Nonpoor	2.37	1.74	1.85	1.73	2.96	2.98	2.93	2.94	2.97	2.14	2.99	2.21	2.04	1.97	2.05	2.37
Restaurants	0.05	0.04	0.04	0.04	0.07	0.07	0.06	0.06	0.07	0.05	0.07	1.05	0.05	0.07	0.05	0.05
Lodges	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.62	0.00	0.00
Tourists	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Protected area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	1.00	0.00
ComRevSh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.22	1.00

Source: World Bank 2023 ([Dashboard](#) for LEWIE-LITE model of Queen Elizabeth National Park).

Note: LMUSK = Labor male unskilled workers; LMSK = Labor male skilled workers; LFUSK = Labor female unskilled workers; LFSK = Labor female skilled workers; K = Capital; ComRevSh = Community revenue sharing; LocalG = Local government; G = National government; ROW = Rest of the world (outside of the local economy).

From the SAM matrix (table C.1), you can calculate the SAM multiplier model (table C.2) by balancing the SAM (in this case using the RAS method), converting it into a coefficient matrix, then subtracting it from the identity matrix and inverting the result. The SAM multiplier model captures the links among revenue, income, and expenditure flows of households and firms in the protected area. As an example, the income multiplier of \$2.03 of income generated in the local economy for every tourist dollar spent is calculated from the SAM multiplier model (table C.2) by looking at the column for “Tourists” (third from the right) and adding the multipliers for “Poor” households (0.06) and “Nonpoor” households (1.97). For a more detailed explanation of this process, see the open access training guide on social accounting matrices and multiplier analysis published by the International Food Policy Research Institute ([IFPRI 2009](#)).

However, there are limitations to the model. As a member of the family of fixed-coefficient linear multiplier models, the SAM model assumes that the supply response is perfectly elastic. This assumption describes an economic environment without scarcity surrounding the protected area. That is, there are always unused resources such as labor and capital sufficient to meet the new demands projected by our simulations. This model is also static and represents a single snapshot in time. If there is a dramatic change in the economy of the protected area, one would need to redo the model with new data after the shock.

Finally, a last assumption of the model is that prices do not change in response to an exogenous shock. The fixed-price assumption does not invalidate simulations if the shock is small relative to the size of the local economy (most changes in tourism demand occur gradually and at a less than 10 percent growth rate, leading to relatively small shocks to the local economy). For larger shocks, we would anticipate larger price changes, creating larger effects in output and factor markets that could not be captured in this framework. One would have to update data after a large price shock to estimate its impacts.

