Darwin Initiative Innovation Annual Report

Darwin Initiative Project Information

Project reference	DARVN017
Project title	Testing experimental development economic programmes to protect Virunga's biodiversity
Country/ies	DRC
Lead Partner	Chancellor, Masters and Scholars of the University of Oxford
Project partner(s)	Virunga Foundation
Darwin Initiative grant value	197,598 GBP
Start/end dates of project	01-Apr-2023 – 31-Dec-2024
Reporting period (e.g. Apr 2023 – Mar 2024) and number (e.g. Annual Report 1, 2, 3)	Apr 2023-March 2024; Annual Report 1
Project Leader name	Stefan Dercon
Project website/blog/social media	https://www.csae.ox.ac.uk/from-farms-to-jobs-job-creation-to-preserve-natural-ecosystems-in-eastern-drc
Report author(s) and date	Ashley Pople (30 April 2024)

1. Project summary

Farming is a leading cause of natural habitat and biodiversity loss in Africa. As economies in the region undergo structural changes, new job opportunities that are less land-intensive could potentially draw farmers out of agriculture. This shift could decrease pressure on natural habitats, protect biodiversity, and alleviate poverty. Our project brings together conservation professionals and development economists to test how improving access to off-farm jobs can support farmers living around Virunga National Park (VNP) through a randomized control trial (RCT).

The project is based on observations that farmland expansion driven by subsistence farming in Sub-Saharan Africa (SSA) is a major driver of habitat and biodiversity loss.[1] Based on our baseline survey and pilot conducted in 2022, we note that many young farmers in the region aspire to have careers outside of farming, in sectors with a smaller land footprint than agriculture. While the number of off-farm jobs is rising, these opportunities are often not directly accessible to farmers living around national parks. These barriers are true in the context we study.

VNP is the oldest and among the most biodiverse protected areas in SSA. It will celebrates its 100th birthday in April 2025. VNP has an exceptional diversity of landscapes, ranging from the glaciers of the Ruwenzori to grassy savannahs, rainforests, montane forests, dry forests and a numerous aquatic habitats (high altitude marshes, lakes, swamps, rivers, hot springs), as well as the lava of two active volcanoes (Nyiragongo and Nyamulagira). It is home to over 700 species of birds (more than in all continental Europe) and 218 species of mammals (a record in SSA as well). Many of these species are endemic to the region. They include *Gorilla beringei beringei*, *Chrysochloris stuhlmani* and *Lophuromys medicaudatus*, all endemic to a small sector of the Albertine Rift. Species such as *Pelomys hopkinsi*, which is very probably present in the park, are

[1] Vijay, V., & Armsworth, P. R. (2021). Pervasive cropland in protected areas highlight trade-offs between conservation and food security. *Proceedings of the National Academy of Sciences*, 118(4), e2010121118.
Meng, Z., Dong, J., Ellis, E. C., Metternicht, G., Qin, Y., Song, X. P., ... & Xiao, X. (2023). Post-2020 biodiversity framework challenged by cropland expansion in protected areas. *Nature Sustainability*, 6(7), 758-768.

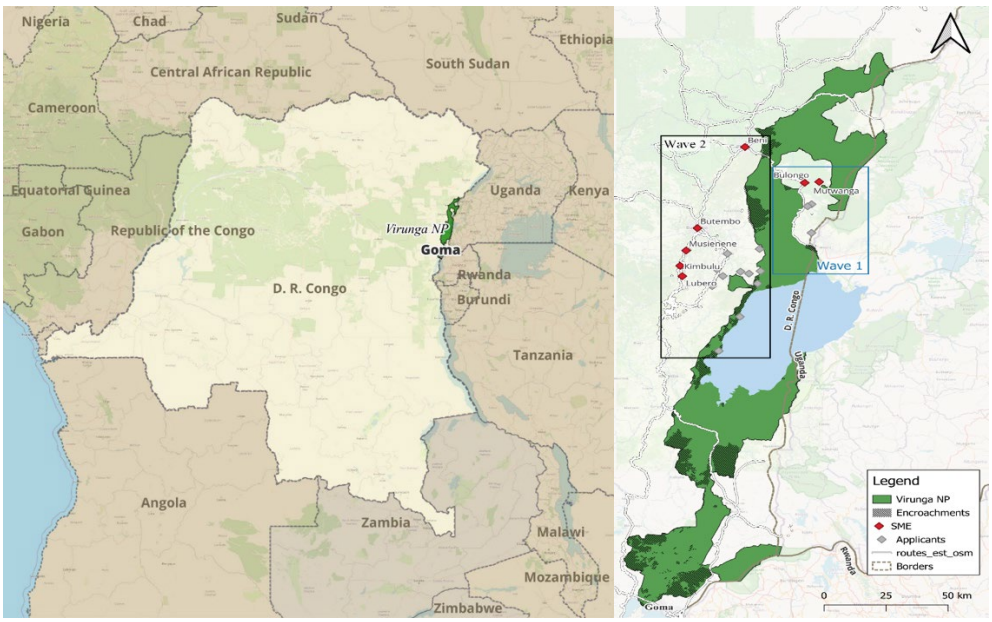
extremely rare and endemic to the papyrus swamps of the region. *Malacomys verschureni* is only known from five specimens worldwide.

Primates, with 21 species, are an important conservation target. They include species typical of the Congo Basin, such as the Dent's mona monkey *Cercopithecus (mona) denti*, more widespread savannah species and, above all, a group of species endemic or almost endemic to the Albertine Rift, such as the golden monkey *Cercopithecus (mitis) kandti*. VNP is also the only protected area in the world to have three Great Ape taxa: the mountain gorilla *Gorilla beringei beringei*, the eastern lowland gorilla *Gorilla beringei graueri* and the eastern chimpanzee *Pan troglodytes schweinfurthi*.[2]

Five million people are estimated to live directly around VNP. Farming is the primary livelihood for up to 94% of most neighbouring communities, according to a large census our team organized in 2021. Over 10% of VNP is illegally encroached with farming. Farming is an activity by default, rather than by choice. Our partner, Virunga Foundation, has invested over $100 million since 2015 to promote non-agricultural business development and job creation around Virunga National Park (VNP) in the eastern DRC – a context where 95% of the population lives in extreme poverty. Over 1600 microenterprises are now connected to VNP's grid offering around 10,000 direct jobs to neighbouring communities. However, barriers like limited job experience, lack of connections, and migration costs have prevented many farmers from accessing these opportunities – these barriers are well-documented in the development economics literature.

Our objective is to experimentally test interventions that make job markets more inclusive and improve access to off-farm jobs for farmers most negatively affected by conservation efforts in North Kivu. In late 2021 and early 2022, we conducted a large-scale pilot of two job market interventions with 360 participants living around Virunga National Park. Building on this pilot, we design a randomised control trial. Specifically, we ask whether we can persistently draw young farmers out of agriculture in areas in North Kivu where agricultural activity conflicts with biodiversity conservation led by the Virunga National Park (VNP) and study the possible implications for land use. In a randomised control trial, we test whether offering young farmers a subsidised three-month internship in microenterprises in nearby cities can induce them to migrate and take up non-agricultural work. We compare the effects of this policy incentive to a short-term daily work scheme, which does not require farmers to move away from their villages. A third group of farmers receive nothing in the study. We also cross-randomise a short environmental education session across all three arms. We measure whether these incentives increase non-agricultural employment and reduce demand for agricultural land, thereby protecting natural habitats and biodiversity.

Figure 1: Map of study location



[2] Languy, M., & de MERODE, E. (2006). Virunga. Survie du premier parc d'Afrique. Lannoo

2. Project stakeholders/partners

The collaboration between Virunga National Park (VNP) and our team stemmed from a demand from the park in 2018. VNP approached Prof. Stefan Dercon to lead an academic sounding board which aimed at bringing academic expertise, mostly in social sciences, to guide the projects from the park. Following two meetings in 2018 and 2019, Stefan Dercon spent two weeks in Virunga for a series of meetings. The idea of experimenting innovative approach to foster employment emerged with Sebastien Desbureaux who was leading the Monitoring & Evaluation team at the time. Gracieux Mutaka, Ashley Pople and Natsuno Shinagawa joined the team to design a pilot study - a pilot of what became this Darwin Initiative project was launched in 2020 and 2021. The results of the pilot were discussed in July 2022 with the Chief Warden and Director of the park, Emmanuel de Merode. The decision was taken to implement an experiment at scale. Richard Nikema started on the project in summer 2023 as part of his PhD.

The three formal partners of the on-going Darwin Initiative project are Oxford University (through the Centre for the Studies of African Economies), Virunga Foundation and INRAE / Université de Montpellier (through the Centre for Environmental Economics – Montpellier). The project management team is composed of Professor Stefan Dercon (Oxford), Dr. Ashley Pople (Oxford and World Bank), Gracieux Mutaka Shashi (Virunga Foundation), Natsuno Shinagawa (Virunga Foundation), Dr. Sebastien Desbureaux (INRAE) and Richard Nikiema (INRAE). Online management meetings have taken place on a monthly basis to discuss progress and difficulties. More frequent meetings took place between Ashley Pople, Gracieux Mutaka, Sebastien Desbureaux and Richard Nikiema.

Sébastien Desbureaux visited Virunga three times over the last 12 months (April 2023, October – November 2023, February – March 2024) to work on the design of the project and work with Marakuja Asbl : a local data collection firm hired by Oxford University to implement midline and endline surveys. Richard Nikiema was supposed to come in April 2024. His visit was cancelled because of the volatile security situation in Goma.

Results were discussed during a virtual sounding board in March 2023. All project members and the Director of the park attended this meeting. All activities are implemented along with the representatives of civil society in each village.

3. Project progress

3.1 Progress in carrying out project activities

Output 1: *The results of the pilot conducted in 2021 inform the design of the next phase of the RCT.*

1.1 Organization of a 1-day workshop with key stakeholders of the pilot (sample of beneficiaries, representatives of the civil society, sample of entrepreneurs, staffs involved in the pilot)
1.2 Results of the workshop are shared and discussed with VNP senior management.
1.3 Results are synthetized in a brief document.

All three activities have been successfully completed. Results from the large-scale pilot conducted with 360 farmers and 240 small- and medium enterprises (SMEs) were first discussed with the field staff and civil society representatives who played a key role in the implementation of the pilot and conducted monthly monitoring visits to the SMEs. Moreover, the results and the approach to scaling up were discussed extensively with Virunga's Head of Community Engagement (Methode Bagurubumwe Uhoze), the Chief Warden of the Central Sector of the park (Sekibibi) and of the Northern Sector (Eric Kiteka). The results were presented in VNP's annual research sounding board with VNP staff and senior management, including the Director of VNP, Emmanuel de Merode. All decisions relating to project scale up have been cleared by the Director of VNP, so to ensure that they align with the Park's priorities and assessment of the security situation. Finally, these results were summarized in a short document.

The pilot was instrumental in shaping how we screen jobseekers, the design of our casual work intervention (as opposed to a bus ticket subsidy, as originally envisaged) and the decision to provide a bonus to SME owners to motive them to invest time in training the intern. Moreover, the pilot built the capacity of all partners to scale the project to the requisite sample size needed for a rigorous impact evaluation.

Please refer to “Appendix 5 - Virunga Senior Management Sounding Board PPT” delivered at the annual research sounding board. “Appendix 5 - Agenda for Annual Research Sounding Board held in 2023” provides the agenda. See “Appendix 5 - Pilot Write Up” for a summary of pilot lessons learnt. See “Appendix 5 - Communication with Park Director” for proof of ongoing communication with the Director of VNP on key decisions taken on project implementation. See “Appendix 5 - Communication with VNP Staff on lessons learnt from the pilot”.

Output 2: *Implementation of a RCT promoting access to off-farm jobs to decrease the loss of natural habitat in VNP.*

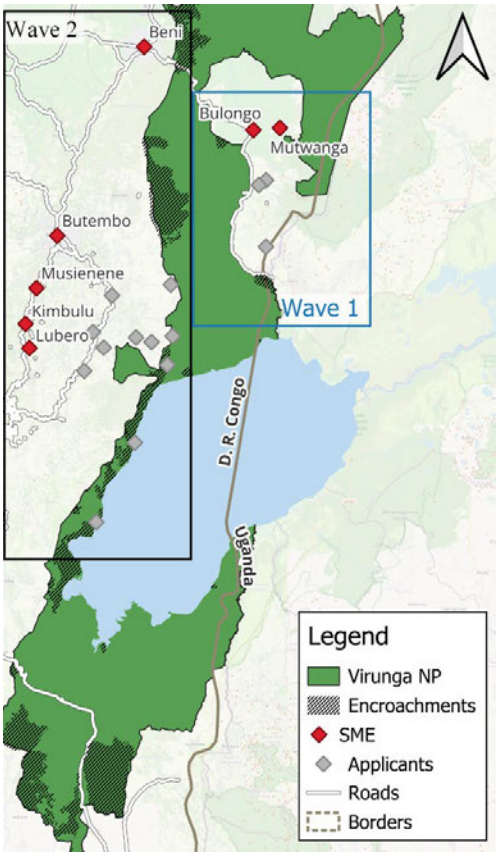
2.1 The programme is advertised through local radio stations.
2.2 All applications are screened.
2.3 1800 eligible applications are randomly selected (by respecting gender equality) ; and randomly assigned to three groups: beneficiaries of the internship programme, beneficiaries of a casual work intervention, and control group
2.4 1200 microenterprises are selected by phone among Virunga Energies clients, and randomly assigned to two treatment arms: those who will have an intern, control group.
2.5 The 600 interns (300 females) start the programme for a period of three months. They receive a monthly visit by a field staff.
2.6 The 600 beneficiaries of the casual work intervention (300 females) work on non-agricultural projects around their villages for up to 10 days.

The RCT has been implemented in two phases to account for changes in security conditions in the eastern DRC. The first phase commenced in April 2023 and the interventions took place between July and November 2023, followed by the midline and now endline survey. The second phase commenced in March 2024 and the interventions will take place between April and July 2024. The programme was implemented in 14 villages in the surrounds of Virunga National Park with 1) high rates of encroachment and 2) which are nearby key ecological areas.

The villages from wave 1 are located next to the ecological corridor linking Queen Elizabeth National Park in Uganda and VNP. This corridor is extremely narrow (about 5kms) and is one the last remaining direct corridor between the east African savannas and the Congo rainforest.

The villages from wave 2 are all surrounding Mount Thsiabirimu which is home to a subpopulation of Eastern lowland gorillas (Gorilla beringei graueri) which is endemic to the DR Congo and listed as Critically Endangered.

Figure 2: Zoom study location



In these villages the main activity is agriculture. Prior to launching the project, the project team contacted community leaders, particularly civil society, to explain the project and provide training on data collection for the application process and baseline survey. State authorities were also contacted for the safety of activities.

Activity #1: An information campaign was then launched to call young unemployed farmers aged 18 to 32 to apply for a three-month internship programme. An application reception center was opened in each village to receive young farmers interested in participating in the program. The advertisement campaign encouraged women in particular to apply, given the low female labour force participation rates in the region. To submit the application, applicants could request the assistance of the project staff to fill in the form. At the time of submitting the application, applicants were invited to complete the baseline survey with a duration of 30 minutes after submitting their application, which covers their past and present work experience, agricultural activity and socio-economic characteristics. In total, 2039 people applied to participate in the programme across both phases.

Activity #2: All 2039 applications were screened. Applicants were deemed eligible if they were between 18 and 32 years old, farming was their primary livelihood and they cultivated lands in or around Virunga National Parks. Among these 2039 applicants, 1606 were eligible. Among the 1606 eligible applications, 37.36 percent are female.

Activity #3: Of the eligible applicants, we randomly sampled 1,324 participants to participate in our study, ensuring at least a third are women. We sampled 300 participants in the first phase and 1024 participants in the second phase. The sample is slightly lower than initially predicted, as we received fewer applications than expected in the second phase of the study. We randomly assign 500 participants in the internship arm and 495 participants in the pure control arm, so to maximise our ability to detect treatment effects in the main part of the project. 329 participants were assigned to the casual work intervention.

Activity #4: We match selected jobseekers to our sample of 373 SMEs based on their sectoral preferences (57 at phase 1 and 316 at phase 2). We identify small and medium-sized enterprises (SMEs) in the towns of Lubero, Kimbulu, Musienene, Beni and Butembo and conduct a short survey with them to identify their interest and eligibility in participating in the programme. A

significant share of theses businesses operate by using electricity provided by Virunga. We exclude SMEs who are unable to offer interns a substantial number of hours of work per week. We identified fewer SMEs than expected in our regions of interest; therefore, we are unable to randomize them into a pure control versus treatment arm.

Activity #5: 79 interns (26 women) in phase 1 participated in the internship programme between August and November 2023. Our field staff conducted monthly visits to confirm their presence in the SME. 400 interns (167 women) in phase 2 will be invited to commence their internship in April and May 2024.

Activity #6: 78 farmers (28 women) in phase 1 participated in the casual work programme between August and November 2023. 227 farmers (90 women) in phase 2 will be invited to commence their casual work programme in May and June 2024. Participants who started working completed their full hours. Note that this treatment arm was formally amended from the labelled cash transfer intervention at the start of the grant period due to security reasons.

Please refer to “Appendix 4 – Baseline Survey - Wave 1” and “Appendix 4 – Baseline Survey - Wave 2” for recruitment information.
Please refer to “Appendix 4 – SME Confirmation Participation - Wave 1” for SME confirmations at phase 1.
Please refer to “Appendix 4 – SME Confirmation Participation - Wave 2” for SME confirmations at phase 2.
Please refer to “Appendix 4 – Confirmation of Placement of Interns in SME - Wave 1” for interns' participation at phase 1.

Output 3: *Monitoring of VNP’s habitats and wildlife in the area of intervention.*

3.1 Aerial census are conducted by Virunga staffs in the project areas to monitor encroachments.
3.2 Satellite images are analyzed by Virunga staffs in the project areas to monitor encroachments (Planet Basemap data and Sentinel 1)
3.3 Foot patrols and camera traps allow to estimate species presence and abundance.

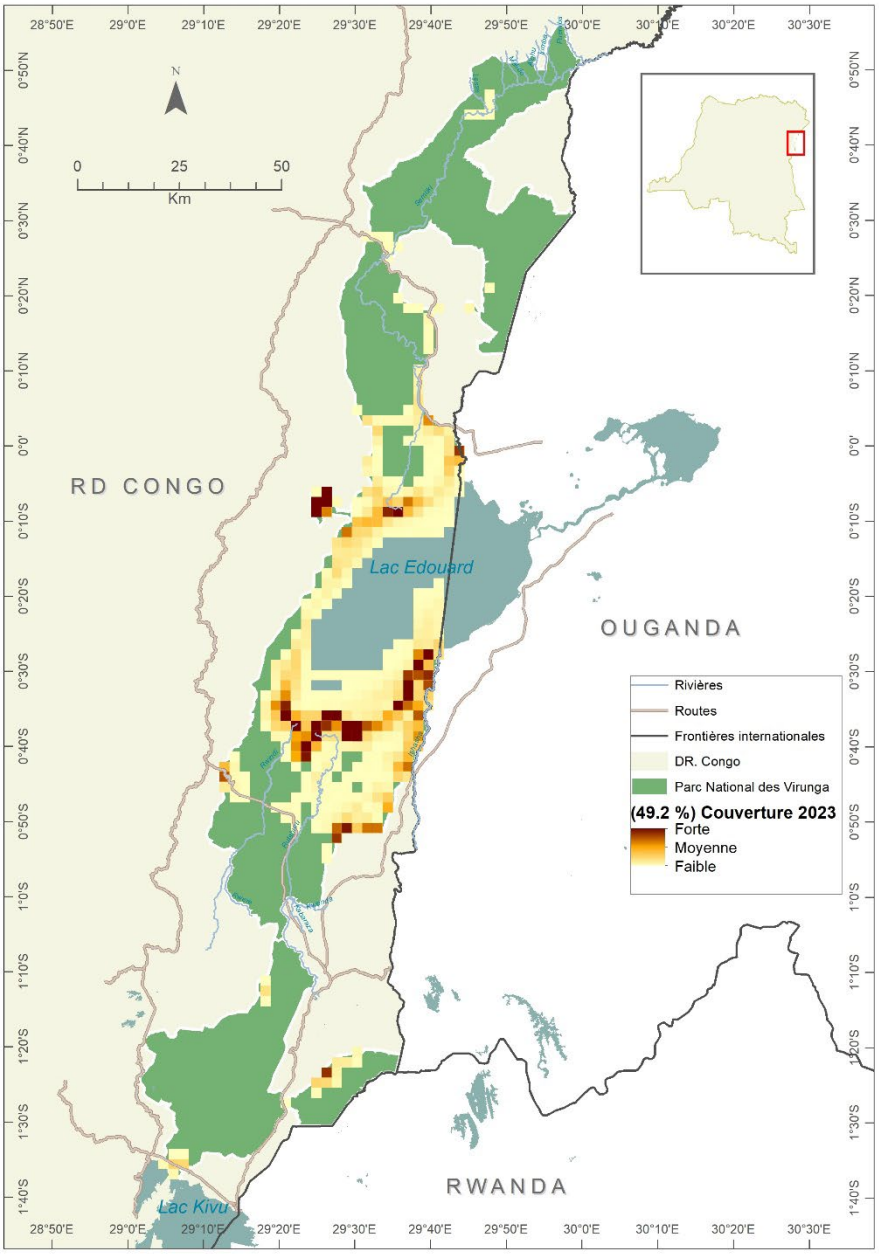
All activities from output 3 were conducted by the Conservation Department of VNP and its “Airwing” (aviation) department along our activities.

Activity #1: Aviation data have for the period have not been compiled for the moment and will be included in the forthcoming report.

Activity #2: Planet base map data were analyzed to map encroachments. These analyzes are mapped in Figures 1 and 2 (dashed areas). In this region of the park, encroachments have remained stable since the start of the project.

Activity #3: In the northern sector of VNP, park rangers have conducted 1,082-foot patrols in 2023, covering a distance of 9901 kilometres.

Figure 3: Patrol coverage in 2023 (source: M&E Department VNP)



Wildlife monitoring activities are particularly important in Tshabirimu where two families of Eastern lowland gorillas are followed on a daily basis. In 2023 and Q1 2024, 1,000 patrols were organized in the Tshabirimu sub-sector, 89% of them being gorilla monitoring patrols.

Figure 4: Kavanga (infant) and Espoir (juvenile) (Source: Benoit Ishara, VNP monitoring programme)

In Tshabirimu, the average patrol covered 11kms and lasted 8 hours in 2023 and Q4 2024. They covered 10,000km and lasted 16,133 hours. These patrols led to 4,000 “contacts” of gorillas in 2023 and 1,000 in Q1 2024. During these patrols, other mammals were observed, including Hamlyn's, Lhoest, Mitis and Guereza monkeys.

VNP is working with GRACE’s gorilla sanctuary (www. gracegorillas.org), located in North Kivu as well, on the possible reintroduction of four individuals from the sanctuary in Tshabirimu. As part of the project, monitoring patrols were completed with research activities on feeding habits led by Benoit Ishara (who is in charge of Lowland Gorilla monitoring) with the help of two primatologists (Damien Caillaud and Liz Williamson). Important community engagement activities are happening, and our Darwin project is part of them.

Output 4: *Quantitative impact evaluation of the RCT on people and nature.*

4.1 A baseline survey is organized when eligible people apply to the programme, prior to randomization
4.2 A midline survey is organized with the 1800 participants three months after the start of the job programme (corresponding for the intern to the final week of the internship).
4.3 An endline survey is organized with the 1800 participants six months after the start of the job programme.

Activity #1: We successfully completed a baseline survey with 2039 applicants, of whom 1324 form our study sample.

Activity #2: A midline survey was successfully conducted with 283 participants within one month of the end of the internship or three months after the start of the job programme in phase 1. We took many measures to minimize attrition – with a good degree of success (now only 6 percent). We intend to complete the midline survey for phase 2 in August 2024.

Activity #3: An endline survey is scheduled to commence in mid-May 2024 for Phase 1 and January 2025 for Phase 2.

Please refer to “Appendix 4 – Baseline Survey - Wave 1” for phase 1 recruitment information.
Please refer to “Appendix 4 – Baseline Survey - Wave 2” for phase 2 recruitment information.
Please refer to “Appendix 4 – Midline Survey - Wave 1” for midline survey information.
Please refer to “Appendix 4 - Endline Survey - Wave 1” for endline implementation survey

Output 5: *Results are summarized and shared with different audiences.*

5.1 Data are analyzed.
5.2 Results are summarized in a working paper and submitted to a peer-review journal.
5.3 Results are summarized in policy briefs.
5.4 Results are shared with VNP staffs and key stakeholders during two meetings after the midline and after the endline.

These activities are currently in progress, and we expect to complete them by the end of the project. We have already analysed baseline data collected during both phases and the midline data collected during phase 1, as well as administrative data collected during the implementation of the interventions (i.e., monthly reports on interns or attendance registry for casual workers). The endline survey for phase 1 is under implementation at present. We plan to conduct the midline and endline for phase 2 in late August 2024 and February 2025.

Results will first be summarized and disseminated with VNP staff upon completion of the midline survey in phase 2. We will then revise our results and disseminate these results more broadly upon completion of the endline surveys.

3.2 Progress towards project outputs

Output 1: *The results of the pilot conducted in 2021 inform the design of the next phase of the RCT.*

SMART indicators:

1. *Workshop with stakeholders (1 meeting with representatives of the civil society, entrepreneurs, parks' staff and project team)*
2. *Discussion with VNP top management (1 meeting)*

Please refer to Section 3.1 above for a summary on this output and indicators.

Output 2: *Implementation of a RCT promoting access to off-farm jobs to decrease the loss of natural habitat in VNP.*

SMART indicators:

1. *Eligible population are informed of a job-access programme (number of radio advertisments, number of posters in eligible villages).*
2. *600 (300 women) consented eligible participants benefit from a subsidized internship programme.*
3. *600 (300 women) consented eligible participants benefit from a casual work intervention.*
4. *600 (300 women) consented eligible participants are kept as control group.*

699 farmers (205 women) applied for the three-month internship programme in Phase 1, of whom 548 farmers (172 women) were deemed eligible. 1340 farmers (546 women) applied in Phase 2, of whom 1059 farmers (430 women) were deemed eligible.

Of the eligible applicants, 100 farmers (33 women) in Phase 1 and 400 farmers (167 women) in Phase 2 were randomly selected and invited to participate in the internship programme. 79 participants (26 women) started the internship programme in Phase 1, of whom 62 interns (22 women) completed the internship three months later. The internship programme in Phase 2 will only commence in late April 2024.

102 eligible applicants (34 women) in Phase 1 and 227 eligible applicants (90 women) in Phase 2 were randomly selected and invited to participate in the casual work programme. 78 farmers (28 women) commenced and finished the casual work programme in Phase 1. The casual work programme in Phase 2 will only commence in May 2024.

98 eligible applicants (32 women) in Phase 1 and 397 eligible applicants (160 women) in Phase 2 were assigned to the control group in support of the randomised control trial.

Please refer to "Appendix 4 – Baseline Survey - Wave 1", "Appendix 4 – Baseline Survey - Wave 2" and "Appendix 5 – Preliminary Results".

Output 3: *Monitoring of VNP's habitats and wildlife in the area of intervention.*

SMART indicators:

1. *# Aerial census conducted around the areas targeted by the programme 3, 6 and 12 months after the start of the job programme.*
2. *# Satellite image analysis in the areas targeted by the programme 3, 6 and 12 months after the start of the job programme.*

Please refer to Section 3.1 above.

Output 4: *Quantitative impact evaluation of the RCT on people and nature.*

SMART indicators:

1. *1800 baseline surveys are organized (a few weeks before the start of the intervention).*

2. *1800 midline surveys are organized (2.5 months after the start of the programme = in the last two weeks of the internship programme).*
3. *1800 endline surveys are organized (6 months after the start of the programme = 3 months after the end of the internship).*

699 baseline surveys were completed Phase 1 and 1340 surveys in Phase 2. 281 midline surveys were organized in the month immediately following the end of the internship programme in Phase 1. The midline survey for Phase 2 is scheduled for August 2024. An endline survey is scheduled to commence in mid-May 2024 for Phase 1 and January 2025 for Phase 2.

In addition, we collected monitoring surveys to track the take up and drop out from our job programmes. 100 monitoring surveys were conducted at the start of the internship in Phase 1 and 400 in Phase 2. Subsequent monitoring surveys indicated which interns are still working in the SME, as they were conducted by field staff visiting the SME:

- 79 monitoring surveys were conducted at the end of the first month of the internship programme in Phase 1. These surveys for Phase 2 are expected at the end of May 2024.
- 68 monitoring surveys were conducted at the end of the second month of the internship programme in Phase 1. These surveys for Phase 2 are expected at the end of June 2024.
- 63 monitoring surveys were conducted in the last month of the internship programme in Phase 1. These surveys for Phase 2 are expected at the end of July 2024.

Please refer to “Appendix 4 – Monitoring Interns Survey Month 1 - Wave 1”, “Appendix 4 – Monitoring Interns Survey Month 2 - Wave 1” and “Appendix 4 – Monitoring Interns Survey Month 3 - Wave 1” for intern presence confirmation.

Output 5: *Results are summarized and shared with different audiences.*

SMART indicators:

1. *A working paper summarizing preliminary results is shared in open access within 9 months of the end of the job programme.*
2. *A paper is submitted for peer-reviewed publication within 12 months of the end of the job programme.*
3. *Policy briefs in different formats summarizing results within 12 months of the end of the job programme.*
4. *Two meetings with VNP and stakeholders are organized to share the results.*

These activities are currently in progress, and we expect to complete them by the end of the project.

3.3 Progress towards the project outcome

Outcome: *An evidence-based innovative strategy decreases threats on natural habitats, protects biodiversity and decreases poverty in Virunga National Park. Results are scalable to other contexts.*

Indicator 1: *Beneficiaries of the job-market intervention saw their non-agricultural employment status improving three and six months after the start of the programme (salaried job and casual employment outside farming, disaggregation by gender. Baseline will be measured during the pre-intervention survey. Effect measured through an Intent-to-Treat estimator)*

By the end of Year 1, we have only collected midline data for the first phase of the project with a sample of 300 participants. Therefore, our sample is too small to measure meaningful effects or to disaggregate these effects by Therefore, in this section, we present preliminary results where we compare the means across our treatment arms for the relevant indicators and test the difference in means across the groups. By the end of Year 2, we expect to have all the data needed to conduct rigorous statistical analysis to estimate intent-to-treat effects, as outlined in our pre-analysis plan.

One month after the end of the internship as measured by the midline survey in Phase 1, we find that 70 percent of interns report having a non-agricultural job in the last 30 days. Moreover, interns are 30 percentage points more likely to report a non-agricultural job in the last 30 days relative to the control group and this difference is statistically significant at the 1 percent level. Relative to the control group, the casual work group is also 10 percentage points more likely to engage in casual work in the last 7 days. Relative to the casual work group, the internship group is 20 percentage points less likely to have engaged in casual work in the last 30 days (difference significant at the 5 percent level) and 30 percentage points more likely to engage in non-agricultural employment in the last 30 days (difference significant at the 1 percent level).

Please refer to "Appendix 5 - Preliminary Results" for preliminary results.

Indicator 2: *Poverty decrease among programs' participants three and six months after the start of the programme (multidimensional poverty including: reported non-agricultural incomes, food consumption).*

We expect to have all the data needed to estimate intent-to-treat effects on poverty outcomes by the end of Year 2. We collect several variables to measure the effects of our intervention on poverty, including non-agricultural income, food security (as proxied by the Food Consumption Score widely used by the World Food Programme) and assets. We also measure subjective wellbeing in the form of Cantril's Ladder of Life Satisfaction, which is widely used in Gallup World Poll surveys.

At midline, we observe that the internship group show improvements in non-farming income (+9) in the month after the internship programme, relative to the control group (control mean of 9.2). This difference is statistically significant at the 5 percent level. We do not observe any differences in food security at this stage.

Indicator 3: *Participation in the interventions decrease the demand for farmlands inside and outside the park (area farmed by beneficiaries, area farmed by the family of the beneficiary, area of farmlands owned by the beneficiary. Baseline will be measured during the pre-intervention survey. Effect measured through an Intent-to-Treat estimator).*

Drawing on the midline results for a sample of 300 farmers in Phase 1, we observe that the internship group is spending fewer days farming in the last 30 days and cultivated less farmland (a difference of five squares of 25mx25m) relative to the control group. Similarly, the casual work group also cultivate less farmlands relative to the control group (a difference of 6.9 hectares). However, these differences are not statistically significant, which is unsurprising given the small sample size.

Indicator 4: *Increase in wildlife observation in targeted areas of VNP one year after the end of the programme (diversity of species and abundance).*

This indicator will only be measured after the end of the programme; therefore, it is not relevant at this stage.

Indicator 5: *Lessons learnt are of interest for different audience, as measured by academic citations, attendance at specific events, audience of podcast and blogs (measured one and three years after the end of the programme).*

This indicator will only be measured after the end of the programme; therefore, it is not relevant at this stage.

3.4 Monitoring of assumptions

Assumptions relating to the outcome

Assumption 1: *Participation in the programme will facilitate access to non-farming employment.*

> **Comments:** As indicated in Section 3.3, the job interventions facilitate access to non-farming employment at midline for a subset of the sample. This assumption will be further verified upon completion of Phase 2 with a larger sample size.

Assumption 2: *Access to non-farming employment will contribute to poverty reduction.*

> **Comments:** We expect to have all the data needed to estimate intent-to-treat effects on poverty outcomes by the end of Year 2. For now, we observe at midline for a subset of our sample that the internship group show improvements in non-farming income (+9) in the month after the internship programme, relative to the control group (control mean of 9.2). This difference is statistically significant at the 5 percent level. We do not observe any differences in food security at this stage.

Assumption 3: *An increase in non-farming employment will decrease demand for farmlands inside and around VNP.*

> **Comments:** As indicated in Section 3.3, the job interventions reduce the amount of cultivated land relative to the control group for a subset of the sample at midline, although this difference is not statistically significant. This assumption will be further verified upon completion of Phase 2 with a larger sample size.

Assumption 4: *Decreased demand for farmlands inside and around VNP will have a positive impact on the number of habitats.*

> **Comments:** We will verify this assumption upon completion of the endline survey in Phase 1 and 2.

Assumptions relating to outputs

Assumption 1 (Output 1): *Beneficiaries and stakeholders of the pilot are available to engage in the discussion with the team.*

> **Comments:** We successfully held several discussions with various stakeholders of the pilot, ranging from civil society representatives to senior management of VNP. We extracted important lessons from the pilot that directly shaped the implementation of the RCT.

Assumption 2 (Output 2): *Enough people are interested in participating to an experimental job programme.*

> **Comments:** As indicated in Section 3.2, the high application rates and take up of the job interventions suggest that there is a high demand for such interventions in a region where non-agricultural employment opportunities are limited.

Assumption 3 (Output 3): *Aerial census is conducted accordingly to the plan, despite numerous logistical constrains and insecurity.*

> **Comments:** Aviation data have for the period have not been compiled for the moment and will be included in the forthcoming report.

Assumption 4 (Output 3): *Clouds-free satellite images are available.*

> **Comments:** This assumption remains true.

Assumption 5 (Output 4): *Potential participants are willing to participate to a research-informed programme.*

Comments: As indicated in Section 3.2, we experienced high participation rates for our baseline survey and low attrition rates during our first midline survey (6 percent).

3.5 Impact: achievement of positive impact on biodiversity and poverty reduction

Through this project, we envisage that "the biodiversity of Virunga National Park is protected and people are thriving". Through our randomised control trial, we will be able to measure the direct impact of our programme on poverty alleviation for participating farmers in the short term. We will also measure changes in their demand for agricultural land and thus their impact on natural habitats. We will further verify the impact on biodiversity conservation using other data sources, as noted in Section 3.1.

With VNP as an implementation partner, there is a clear pathway to scale from RCT to a fully-fledged policy programme. As a British-registered charity, the Virunga Foundation signed a public-private partnership with the Congolese authorities in charge of nature conservation (ICCN) to manage VNP, with the Director of the Park acting as both CEO of VF and the Provincial Director of ICCN. We have engaged the Director (Emmanuel de Merode) and the leadership team during the design, pilot and now scale up phase of the project. The Director of the Park is particularly interested in the results, as he aims to create over 100,000 jobs in the coming decade, so that the Park becomes an engine for green growth in North Kivu. VNP has already delivered green electricity to 12,000 customers in 1,500 SMEs since 2016 and spent $5 million to support entrepreneurship programmes. The park is particularly interested in understanding how to move farmers outside the park and support the growth of these SMEs.

Beyond Virunga, the interdependency of socio-economic development and natural habitat preservation has highlighted the need to find an effective approach; yet such knowledge remains limited. This current project has the potential to inform a broader range of actors working in this field, including the ICCN in the DRC government, and the wide range of global organisations, such the World Bank, FCDO and EU, who are interested to find more economically sustainable ways of protection carbon sinks and biodiversity in poor and fragile places.

4. Project support to the Conventions, Treaties or Agreements

The project is implemented together with the Government entity in charge of National Parks of the DRC (ICCN). As such, our project is helping ICCN to make park's conservation inclusive and sustainable as detailed in its strategic documents (« Stratégie Nationale de la Conservation de la Biodiversité », 2022-2032).

5. Project support for multidimensional poverty reduction

This project prioritises areas where agricultural activities encroach conservation efforts undertaken by VNP and hence where reducing the demand for agricultural land is a priority to protect natural habitats and biodiversity. These areas have been identified in collaboration with VNP.

Within these areas, we target highly vulnerable and marginalised farmers, even within a population where 90+ percent of live below the poverty line on average. Participants are defined to be eligible if their primary livelihood was farming or livestock rearing, did not have a full-time non-agricultural job or in full-time education, between 18 and 32 years old and available to migrate to the nearby city to commence the internship programme within the next three months. Our baseline data indicates that our sample earn on average [redacted] per month and they work three days on average per week. These figures suggest that they earn less than [redacted] per day on average, indicating a high level of poverty. The average proportion of cultivated land is 0.24 ha.

Moreover, those farming within the park are also more subject to the forces of armed groups. Therefore, any efforts to draw these farmers out of farming into non-agricultural employment should boost their income and wellbeing. We test this hypothesis through the RCT.

Please refer to “Appendix 4 – Baseline Survey - Wave 1”, “Appendix 4 – Baseline Survey - Wave 2” and “Appendix 5 – Preliminary Results”.

6. Gender Equality and Social Inclusion (GESI)

Our project intends to increase non-agricultural employment access to both men and women in the eastern DRC. Congolese women experience lower development outcomes then men, driven by a limited access to schooling and higher monetary poverty (see Gender Development Index for the DRC). Of the 3291 adult farmers recorded in the pilot census within VNP in 2021, 58% are women, highlighting the importance of farm activities for women in North Kivu. Meanwhile, women represent a minority of employees within microenterprises (about 15% and less than 2% of SME owners).

There was strong interest from women to participate in our programme, with 37% of applications submitted by women across both phases. We randomised eligible applicants into our three treatment arms, stratifying by gender and ensuring that women comprise at least a third of our sample (41% in phase 2). Moreover, implementation staff were asked to provide additional support to female participants, for instance by addressing any concerns raised by SME owners. As a result, women were slightly more likely to complete the internship programme compared to men (67% of women compared to 60% of men).

We intend to disaggregate our results by gender once we have collected data on our entire sample. Thus, this project will be an opportunity to explore the barriers to non-agricultural jobs for women (e.g., discrimination, gender-specific selection of sectors).

Please quantify the proportion of women on the Project Board[3].	33%
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women[4].	0 The Virunga team (comprised of one woman and one man) 1 The Oxford team (comprised of one woman and one man)

GESI Scale	Description	Put X where you think your project is on the scale
Not yet sensitive	The GESI context may have been considered but the project isn’t quite meeting the requirements of a ‘sensitive’ approach	
Sensitive	The GESI context has been considered and project activities take this into account in their design and implementation. The project addresses basic needs and vulnerabilities of women and marginalised groups and the project will not contribute to or create further inequalities.	
Empowering	The project has all the characteristics of a ‘sensitive’ approach whilst also increasing equal access to assets, resources and capabilities for women and marginalised groups	X
Transformative	The project has all the characteristics of an ‘empowering’ approach whilst also addressing	

[3] A Project Board has overall authority for the project, is accountable for its success or failure, and supports the senior project manager to successfully deliver the project.

[4] Partners that have formal governance role in the project, and a formal relationship with the project that may involve staff costs and/or budget management responsibilities.

	unequal power relationships and seeking institutional and societal change	

7. Monitoring and evaluation

Our primary tool to monitor and evaluate the impact of the project is a state-of-the-art impact evaluation methodology – a randomised control trial (RCT). Our key hypothesis is that offering a non-agricultural job will lead to higher non-agricultural employment and migration, and thus reduce agricultural activity and demand for agricultural land. This will in turn reduce the impact of these agricultural activities on natural habitats and biodiversity. We survey our sample within one month and approximately six months after the end of the internship. Through these surveys, we measure i) non-agricultural employment status, ii) agricultural activity, iii) demand for agricultural land (at both the individual and household level) and iv) migration, among other variables capturing poverty and potential mechanisms. To analysis our survey data, we follow a pre-analysis plan registered through the AEA Trial Registry under ID AEARCTR-0009480 (https://www.socialscienceregistry.org/trials/9480). The survey data is complemented by an aerial census, satellite imagery, patrol and camera trap data to measure changes in wildlife and natural habitats in the area of our interventions.

To track outputs and activities, we collect administrative data throughout the intervention lifecycle to measure application, take up and drop out rates and qualitative reasons underlying these trends so to inform future design of such interventions. Our field team surveys interns on a monthly basis during the three-month internship programme to confirm that they are indeed still working at the firm and track the types of tasks assigned to them.

All partners are actively engaged in overseeing the RCT. The University of Oxford and INRAE/ Université de Montpellier (through the Centre for Environmental Economics – Montpellier) are responsible for ensuring the integrity of the trial, designing survey instruments and collecting the data via a locally-based enumerator team. Virunga Foundation is primarily responsible for implementing the two job interventions (internship and casual work), but the team has also led the application process, baseline survey and ongoing monitoring activities throughout the implementation of the interventions.

8. Lessons learnt

The first year of implementation of the project has generated many lessons learnt. We first adopted three key lessons from the large-scale pilot conducted in 2022. We learnt that a short application process was a necessary step to ensuring that only motivated young farmers were invited to participate in the job programmes, thereby maximising take up and optimal use of scarce resources. We replaced the bus ticket subsidy intervention with a local casual work programme due to high rates of insecurity and limited effects pertaining to the bus ticket subsidy. Lastly, we now provide a small bonus to SME owners if the intern is still working in an SME three months after the end of the internship programme, with the view to incentivise them to invest in the interns.

We successfully implemented the randomised control trial with 20 percent of beneficiaries in year 1 (phase 1), except for the endline due to commence in May 2024. This first phase provided critical learning opportunities – such as piloting all survey instruments and testing the implementation process – before scaling up to a much larger sample size. It highlighted the importance of engaging local communities, including community leaders, in advertising the programme to young farmers and subsequently tracking them for follow-up surveys. The high rates of applications and take up of the job interventions are indicative of the demand for such programmes in the region.

Lastly, we recognised the importance of adequately screening small and medium enterprises (SMEs) before inviting them to participate in the internship programme. Only a quarter of SMEs initially identified to participate in phase 1 were able to participate fully. Some SMEs only have seasonal work demand and others did not have enough work to employ an intern fully for the duration of the internship programme. Hence, we deployed a more extensive screening tool

during phase 2 in order to assess whether SMEs were capable of offering interns at least 5 days of work per Week, with approximately 6 hours of work per day.

Phase 2 of the project will reveal lessons in scaling up the project to a larger population of farmers.

9. Actions taken in response to previous reviews (if applicable)

Not applicable.

10. Risk Management

Prior to the start of the programme, the security situation deteriorated in Eastern DRC. This change of context was discussed with the Darwin team and the activities were slightly modified prior to the start of the grant. The most important change was the replacement of a secondary treatment arm. We initially intended to provide a « transportation voucher » to a subset of participants not selected in the internship programme. This voucher would have lowered the cost of job-search for participants as job opportunities are located kilometres away from their place of residence. The new security condition means that travelling has become more dangerous. Therefore, we saw it as unethical to encourage participants to move on their own without any type of supervision. Consequently, this secondary treatment was replaced by a local short-term job opportunity.

Over the last 12 months, no new risks were identified as our field partner, Virunga, has a longstanding experience working in this movable security condition. The latest version of the risk register remains the one we initially submitted.

11. Sustainability and legacy

Community representatives who are helping us to implement the programme are extremely supportive of the approach. Likewise, park rangers operating in the Northern Sector of the park, where the activities are implemented, value the community-engagement approach of such programme. In the first wave of implementation, 700 persons came to apply to the programme for only 100 available positions. As detailed in the previous sections, a majority of selected participants did start and finish the programme. This highlights that a demand for such programme exists. We will know whether our « job programme » has lasting impacts once endline data are collected. This is scheduled for Year 2 of the project.

In addition, internal capacities within Virunga have been strengthened. This is notably the case for Gracieux Virunga, who started as a M&E officer during the pilot of the programme, and who is now in charge of the entire implementation of field activities. In October 2024, Gracieux Mutaka is scheduled to spend one month in Montpellier to work with Sébastien Desbureaux on the analysis of the impact of the project. In addition, Richard Nikiema (a citizen of Burkina Faso) started working on the project as an intern during his master programme. He is now a PhD student. Both Gracieux and Richard are co-authors on the academic paper.

Senior management at Virunga National Park eagerly await results from this project to determine whether to scale up the interventions within the Park.

On a financial side, this Darwin Initiative grant allowed Sébastien Desbureaux to secure additional funding through the French's Agence Nationale de la Recherche as part of his Assistant Professor position (Chaire de Professeur Junior). Sébastien was able to provide an additional [redacted]) to support the implementation of the new treatment arm (see Section 10), and to organize the visit of Gracieux Mutaka in Montpellier.

12. Darwin Initiative identity

Darwin Initiative has been displayed on all institutional and external communication about the project, such as the project webpage here. It is well known among the Virunga National Park senior management and staff that Darwin Initiative is the primary funder of the project. Future publications and policy-facing messaging, including on social media, will include reference to the Darwin Initiative and/or the Biodiversity Challenge Fund.

13. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	No
Have any concerns been reported in the past 12 months	No
Does your project have a Safeguarding focal point?	Yes Ashley Pople: [redacted] Gracieux Mutaka Shashi: [redacted]
Has the focal point attended any formal training in the last 12 months?	Yes 1-day World Bank training on following safeguards, according to World Bank standards 9 April 2024
What proportion (and number) of project staff have received formal training on Safeguarding?	Past: 16.6% [1] Planned: 0

Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses.

Security in North Kivu has been the most prominent safeguarding challenge throughout the project. The team has mitigated this concern in the following ways:

1. First, we amended the project to adjust one of the treatment arms prior to commencing the project. We had initially planned to provide a bus ticket subsidy to one third of our sample. However, with the change in the security situation, this situation placed our population under undue risk without the support of Virunga National Park's security team. We now provide this group the opportunity to participate in casual work in the vicinity of their villages on a VNP's project.
2. Second, we regularly check in with the security team of VNP to assess the security situation. This team has played a critical role in advising us which regions are sufficiently safe for rolling out each phase of the project.
3. Third, in the latest roll out of our project, some individuals in the village questioned whether we were connected to the militia group and thus refused to participate in our project. We aimed to mitigate this concern by providing detailed information about the nature of the project and working in collaboration with local village leaders.

Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so, please specify.

We will continue to monitor the security situation in our study region on a regular basis, in partnership with the VNP's security team. If we believe that there are new, significant security risks to our study sample participating in the interventions, we will inform them through our field team who are visiting the study sites regularly. Similarly, we will not proceed with data collection under a high-risk scenario.

Please describe any community sensitisation that has taken place over the past 12 months; include topics covered and number of participants.

In such a volatile security environment, the success of our project rests our community engagement strategy. After selecting the project area, the project team reached out to community leaders, including civil society, to explain the project. State authorities were also contacted for the safety of the activities. These community leaders were instrumental in recruiting and then subsequently keeping track of our sample. We also hire civil society representatives as enumerators to collect all our survey data, so to ensure trust. Lastly, as part of our programme, we deliver an environmental education session to half of our sample. The session teaches the benefits of conserving the park and sustainable practices. We cross-randomise this environmental education session with half of our sample so that we can test the impact of providing this information on behaviours.
Have there been any concerns around Health, Safety and Security of your project over the past year? If yes, please outline how this was resolved. Please refer to the first section above on safeguarding challenges faced and addressed.

14. Project expenditure

Table 1: Project expenditure <u>during the reporting period</u> (1 April 2023 – 31 March 2024)

Project spend (indicative) since last Annual Report	2023/24 Grant (£)	2023/24 Total Darwin Initiative Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)	[redacted]			
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Others (see below)				
TOTAL	**66,168**	**66,168**		

A change request was submitted and approved in December 2023. The reported project expenditure aligns with the revised budget that was approved.

Table 2: Project mobilised or matched funding during the reporting period (1 April 2023 – 31 March 2024)

	Secured to date	Expected by end of project
Matched funding leveraged by the partners to deliver the project (£)	[redacted]	No more additional funds are expected by the end of the project.

	[redacted]	
Total additional finance mobilised for new activities occurring outside of the project, building on evidence, best practices and the project (£)	None at this stage.	

15. OPTIONAL: Outstanding achievements or progress of your project so far (300-400 words maximum). This section may be used for publicity purposes

We intend to submit material here in Year 2, given that Year 1 was largely a development and research phase.

Annex 1: Report of progress and achievements against logframe for Financial Year 2023-2024

Project summary	Progress and Achievements April 2023 - March 2024	Actions required/planned for next period
Impact The biodiversity of Virunga National Park is protected, and people are thriving	Through our randomised control trial, we will be able to measure the direct impact of our programme on poverty alleviation for participating farmers in the short term. We will also measure changes in their demand for agricultural land and thus their impact on natural habitats. We will further verify the impact on biodiversity conservation using other data sources.	[redacted]
Outcome An evidence-based innovative strategy decreases threats on natural habitats, protects biodiversity and decreases poverty in Virunga National Park. Results are scalable to other contexts.		
Outcome indicator 0.1 Beneficiaries of the job-market intervention saw their non-agricultural employment status improving three and six months after the start of the programme (salaried job and casual employment outside farming, disaggregation by gender. Baseline will be measured during the pre-intervention survey. Effect measured through an Intent-to-Treat estimator)	One month after the end of the internship as measured by the midline survey in Phase 1, we find that 70 percent of interns report having a non-agricultural job in the last 30 days. Moreover, interns are 30 percentage points more likely to report a non-agricultural job in the last 30 days relative to the control group and this difference is statistically significant at the 1 percent level. Please refer to "Appendix 5 - Preliminary Results" for preliminary results.	By the end of Year 1, we have only collected midline data for the first phase of the project with a sample of 300 participants. Therefore, our sample is too small to measure meaningful effects or to disaggregate these effects by gender. By the end of Year 2, we expect to have midline data for Phase 2 and endline data for both phases, which will enable us to conduct rigorous statistical analysis to estimate intent-to-treat effects as outlined in our pre-analysis plan.
Outcome indicator 0.2 Poverty decreases among programs' participants three and six months after the start of the programme (multidimensional poverty including: reported non-agricultural incomes, food consumption).	One month after the end of the internship as measured by the midline survey in Phase 1, we observe that the internship group show improvements in non-farming income (+9) in the month after the internship programme, relative to the control group (control mean of 9.2). This	Same as above. We collect several measures to proxy for poverty, including income, food security, assets and subjective wellbeing.

	difference is statistically significant at the 5 percent level. Please refer to “Appendix 5 - Preliminary Results” for preliminary results.	
Outcome indicator 0.3 Participation in the interventions decrease the demand for farmlands inside and outside the park (area farmed by beneficiaries, area farmed by the family of the beneficiary, area of farmlands owned by the beneficiary. Baseline will be measured during the pre-intervention survey. Effect measured through an Intent-to-Treat estimator).	One month after the end of the internship as measured by the midline survey in Phase 1, we observe that the internship group is spending fewer days farming in the last 30 days and cultivated less farmland (a difference of five squares of 25mx25m) relative to the control group. Similarly, the casual work group also cultivate less farmlands relative to the control group (a difference of 6.9 hectares). However, these differences are not statistically significant, which is unsurprising given the small sample size. Please refer to “Appendix 5 - Preliminary Results” for preliminary results.	Same as above
Outcome indicator 0.4 Increase in wildlife observation in targeted areas of VNP one year after the end of the programme (diversity of species and abundance).	This indicator will only be measured after the end of the programme; therefore, it is not relevant at this stage.	Data will be collected in Year 2.
Outcome indicator 0.5 Lessons learnt are of interest for different audience, as measured by academic citations, attendance at specific events, audience of podcast and blogs (measured one and three years after the end of the programme).	This indicator will only be measured after the end of the programme; therefore, it is not relevant at this stage.	Data will be collected in Year 2.
Output 1: The results of the pilot conducted in 2021 inform the design of the next phase of the RCT.		
Output indicator 1.1 1. Workshop with stakeholders (1 meeting with representatives of the civil society, entrepreneurs, parks’ staff and project team) 2. Discussion with VNP top management (1 meeting)	Both the workshop and multiple discussions have taken place. Results from the pilot were first discussed with the field staff and civil society representatives who played a key role in implementing the partners. We also engaged Virunga’s Head of Community Engagement and the	Activities are complete.

	Chief Wardens of the Northern and Central Sectors. Lastly, the pilot results were presented during the annual research sounding board with VNP staff and senior management, including the director of the park. Please refer to "Appendix 5 - Virunga Senior Management Sounding Board PPT" delivered at the annual research sounding board. "Appendix 5 - Agenda for Annual Research Sounding Board held in 2023" provides the agenda for that event. See "Appendix 5 - Pilot Write Up" for a summary of pilot lessons learnt. See "Appendix 5 - Communication with Park Director" for proof of ongoing communication with the Director of VNP on key decisions taken on project implementation. See "Appendix 5 - Communication with VNP Staff on lessons learnt from the pilot".	
Output 2: Implementation of a RCT promoting access to off-farm jobs to decrease the loss of natural habitat in VNP.		
1. Eligible populations are informed of a job-access programme (number of radio advertisements, number of posters in eligible villages). 2. 600 (300 women) consented eligible participants benefit from a subsidized internship programme. 3. 600 (300 women) consented eligible participants benefit from a casual work intervention. 4. 600 (300 women) consented eligible participants are kept as control group.	1. 699 farmers (205 women) applied for the three-month internship programme in Phase 1, of whom 548 farmers (172 women) were deemed eligible. 1340 farmers (546 women) applied in Phase 2, of whom 1059 farmers (430 women) were deemed eligible. 2. Of the eligible applicants, 100 farmers (33 women) in Phase 1 and 400 farmers (167 women) in Phase 2 were randomly selected and invited to participate in the internship programme. 79 participants (26 women) started the internship programme in Phase 1, of whom 62 interns (22 women) completed the internship three months later. The internship programme in Phase 2 will only commence in late April 2024. 3. 102 eligible applicants (34 women) in Phase 1 and 227 eligible applicants (90 women) in	The implementation of the job interventions for Phase 2 will take place between April and July 2024.

	Phase 2 were randomly selected and invited to participate in the casual work programme. 78 farmers (28 women) commenced and finished the casual work programme in Phase 1. The casual work programme in Phase 2 will only commence in May 2024. 4. 98 eligible applicants (32 women) in Phase 1 and 397 eligible applicants (160 women) in Phase 2 were assigned to the control group in support of the randomised control trial. Please refer to "Appendix 4 – Baseline Survey - Wave 1", "Appendix 4 – Baseline Survey - Wave 2" and "Appendix 5 – Preliminary Results"	
Output 3: Monitoring of VNP's habitats and wildlife in the area of intervention.		
1. # Aerial census conducted around the areas targeted by the programme 3, 6 and 12 months after the start of the job programme 2. # Satellite image analysis in the areas targeted by the programme 3, 6 and 12 months after the start of the job programme.	1. Aviation data have for the period have not been compiled for the moment and will be included in the forthcoming report. 2. Planet basemap data were analyzed to map encroachments. These analyses are mapped in Figures 1 and 2 (dashed areas). In this region of the park, encroachments have remained stable since the start of the project. 3. In the northern sector of VNP, park rangers have conducted 1,082 foot patrols in 2023, covering a distance of 9901 kilometres.	Aviation data will be compiled in Year 2 and planet basemap data reanalysed to track encroachment of the park.
Output 4: Quantitative impact evaluation of the RCT on people and nature.		
1. 1800 baseline surveys are organized (a few weeks before the start of the intervention). 2. 1800 midline surveys are organized (2.5 months after the start of the programme = in the last two weeks of the internship programme).	1. 699 baseline surveys were completed Phase 1 and 1340 surveys in Phase 2. 2. 281 midline surveys were organized in the month immediately following the end of the internship programme in Phase 1.	Endline survey for Phase 1 will be conducted in May and June 2024. The midline survey for Phase 2 is scheduled for August 2024, followed by the endline survey in January 2025.

3. 1800 endline surveys are organized (6 months after the start of the programme = 3 months after the end of the internship).	3. An endline survey is scheduled to commence in mid-May 2024 for Phase 1 and January 2025 for Phase 2. In addition, we collected monitoring surveys to track the take up and drop out from our job programmes. 100 monitoring surveys were conducted at the start of the internship in Phase 1 and 400 in Phase 2. Subsequent monthly monitoring surveys indicated which interns are still working in the SME, as they were conducted by field staff visiting the SME. Please refer to "Appendix 4 – Baseline Survey - Wave 1" for phase 1 recruitment information. Please refer to "Appendix 4 – Baseline Survey - Wave 2" for phase 2 recruitment information. Please refer to "Appendix 4 – Midline Survey - Wave 1" for midline survey information. Please refer to "Appendix 4 - Endline Survey - Wave 1" for endline implementation survey.	
Output 5: Results are summarized and shared with different audiences.		
1. A working paper summarizing preliminary results is shared in open access within 9 months of the end of the job programme. 2. A paper is submitted for peer-reviewed publication within 12 months of the end of the job programme. 3. Policy briefs in different formats summarizing results within 12 months of the end of the job programme. 4. Two meetings with VNP and stakeholders are organized to share the results.	These activities are currently in progress, and we expect to complete them by the end of the project.	Data collected through the baseline survey and midline survey (Phase 1 only) have already been analysed. Data collected through the midline survey (Phase 2) and endline survey for both phases will be analysed in Year 2. We will then work on producing a working paper and submit it to a peer-reviewed publication. In addition, we will daft policy briefs and disseminate results via meetings with VNP and stakeholders. All these activities

		should be completed by end of Year 2.

Annex 2: Project's full current log frame as presented in the application form (unless changes have been agreed)

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
Impact: The biodiversity of Virunga National Park is protected and people are thriving			
Outcome: An evidence-based innovative strategy decreases threats on natural habitats, protects biodiversity and decreases poverty in Virunga National Park. Results are scalable to other contexts	0.1 Beneficiaries of the job-market intervention saw their non-agricultural employment status improving three and six months after the start of the programme (salaried job and casual employment outside farming, disaggregation by gender. Baseline will be measured during the pre-intervention survey. Effect measured through an Intent-to-Treat estimator) 0.2 Poverty decrease among programs' participants three and six months after the start of the programme (multidimensional poverty including: reported non-agricultural incomes, food consumption) 0.3 Participation in the interventions decrease the demand for farmlands inside and outside the park (area farmed by beneficiaries, area farmed by the family of the beneficiary, area of farmlands owned by the beneficiary. Baseline will be measured during the pre-intervention survey. Effect measured through an Intent-to-Treat estimator)	0.1 to 0.3 Post-interventions surveys 0.4 Patrol and camera trap data 0.5 Record of publication and policy briefs	1.1 Participation in the programme will facilitate access to non-farming employment 1.2 Access to non-farming employment will contribute to poverty reduction 1.3 An increase in non-farming employment will decrease demand for farmlands inside and around VNP 1.4 Decreased demand for farmlands inside and around VNP will have a positive impact on the number of habitats

	0.4 Increase in wildlife observation in targeted areas of VNP one year after the end of the programme (diversity of species and abundance) 0.5 Lessons learnt are of interest for different audience, as measured by academic citations, attendance at specific events, audience of podcast and blogs (measured one and three years after the end of the programme)		
Outputs: **1**. The results of the pilot conducted in 2021 inform the design of the next phase of the RCT	1.1 Workshop with stakeholders (1 meeting with representatives of the civil society, entrepreneurs, parks' staff and project team) 1.2 Discussion with VNP top management (1 meeting)	1.1 Attendance record 1.2 Attendance record	1. Beneficiaries and stakeholders of the pilot are available to engage in the discussion with the team
2. Implementation of a RCT promoting access to off-farm jobs to decrease the loss of natural habitat in VNP	2.1 Eligible population are informed of a job-access programme (number of radio advertisments, number of posters in eligible villages) 2.2 600 (300 women) consented eligible participants benefit from a subsidized internship programme 2.3 600 (300 women) consented eligible participants benefit from a casual work intervention 2.4 600 (300 women) consented eligible participants are kept as controls	5.5 Register of applications submitted to participate to the programme 5.6 to 2.4 Programme registry	2. Enough people are interested in participating to an experimental job programme.
3. Monitoring of VNP's habitats and wildlife in the area of intervention	3.1 # Aerial census conducted around the areas targeted by the programme 3, 6 and 12 months after the start of the job programme	3.1 and 3.2. VNP's M&E team	3.1 Aerial census is conducted accordingly to the plan, despite numerous logistical constraints and insecurity

	3.2 # Satellite image analysis in the areas targeted by the programme 3, 6 and 12 months after the start of the job programme		3.2 Clouds-free satellite images are available
4. Quantitative impact evaluation of the RCT on people and nature	4.1 1800 baseline surveys are organized (a few weeks before the start of the intervention) 4.2 1800 midline surveys are organized (2.5 months after the start of the programme = in the last two weeks of the internship programme) 4.3 1800 endline surveys are organized (6 months after the start of the programme = 3 months after the end of the internship)	4.1 to 4.3 Raw data and survey instruments	4. Potential participants are willing to participate to a research-informed programme
5. Results are summarised and share for different audiences	5.1 A working paper summarizing preliminary results is shared in open-access within 9 months of the end of the job programme 5.2 A paper is submitted for peer-reviewed publication within 12 months of the end of the job programme 5.3 Policy briefs in different formats summarizing results within 12 months of the end of the job programme 5.4 Two meetings with VNP and stakeholders are organized to share the results.	5.1 Working paper 5.2 Peer-reviewed publication 5.3 Policy brief	

Activities

1.4 Organization of a 1-day workshop with key stakeholders of the pilot (sample of beneficiaries, representatives of the civil society, sample of entrepreneurs, staffs involved in the pilot).

1.5 Results of the workshop are shared and discussed with VNP senior management.

1.6 Results are synthetized in a brief document.

*

2.1The programme is advertised through local radio stations.

2.2 All applications are screened.

2.3 1800 eligible applications are randomly selected (by respecting gender equality) ; and randomly assigned to three groups: beneficiaries of the internship programme, beneficiaries of a casual work intervention, and control group.

2.4 1200 microenterprises are selected by phone among Virunga Energies clients, and randomly assigned to two treatment arms: those who will have an intern, control group.

2.5 The 600 interns (300 females) start the programme for a period of three months. They receive a monthly visit by a field staff.

2.6 The 600 beneficiaries of the casual work intervention (300 females) work on a non-agricultural project in the vicinity of their villages for up to 10 days.

*

3.1 Aerial census are conducted by Virunga staffs in the project areas to monitor encroachments

3.2 Satellite images are analyzed by Virunga staffs in the project areas to monitor encroachments (Planet Basemap data and Sentinel 1)

3.3 Foot patrols and camera traps allow to estimate species presence and abundance

*

4.1 A baseline survey is organized when eligible people apply to the programme, prior to randomization

4.2 A midline survey s organized with the 1800 participants three months after the start of the job-programme (corresponding for the intern to the final week of the internship).

4.3 A endline survey s organized with the 1800 participants six months after the start of the job-programme.

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5.1 Data are analyzed.

5.2 Results are summarized in a working paper and submitted to a peer-review journal.

5.3 Results are summarized in policy briefs.

5.4 Results are shared with VNP staffs and key stakeholders during two meetings after the midline and after the endline.

Annex 3: Standard Indicators

Table 1 Project Standard Indicators

DI Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-A01	Number of people in eligible countries who have completed structured and relevant training	People	Men	90			90	303 (60 percent of men assigned to the job intervention arms, given current rates of take up and completion)
DI-A01	Number of people in eligible countries who have completed structured and relevant training	People	Women	50			50	195 (60 percent of women assigned to the job intervention arms, given current rates of take up and completion)
DI-BO9	Number of individuals/households reporting a decrease in unsustainable practices as a result of project activities	Number	Note: We propose to calculate this indicator as the number of individuals who reported a drop in the area of land cultivated relative to their baseline levels.	TBD (still waiting on data collection to be completed)				
DI-B10	Number of individuals/households reporting an adoption of livelihood improvement practices as a result of project activities	Number	We propose to calculate this indicator as the number of individuals who report an increase in non-agricultural employment relative to their baseline levels.	TBD (still waiting on data collection to be completed)				
DI-C18	Number of publications produced	Number		0				

DI Indicator number	Name of indicator	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-D09	Number of hectares where deforestation has been avoided through project support	Number	We propose to present the change in the number of hectares of farmland cultivated in the treatment group, relative to the control group.	TBD (still waiting on data collection to be completed)				

Table 2 Publications

We intend to list publications here in Year 2, given that Year 1 was largely a development and research phase.

Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the **correct template** (checking fund, type of report (i.e. Annual or Final), and year) and **deleted the blue guidance text** before submission?	YES
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	YES
Is your report more than 10MB? If so, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	YES
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 16)?	N/A
Have you involved your partners in preparation of the report and named the main contributors	YES
Have you completed the Project Expenditure table fully?	YES
Do not include claim forms or other communications with this report.	