

Biodiversity Challenge Funds Projects Darwin Initiative, Illegal Wildlife Trade Challenge Fund, and Darwin Plus Half Year Report

Note: If there is any confidential information within the report that you do not wish to be shared on our website, please ensure you clearly highlight this.

Submission Deadline: 31st October 2023

Project reference	DARNV017
Project title	Testing experimental development economic programmes to protect Virunga's biodiversity
Country(ies)/territory(ies)	DR. Congo
Lead partner	University of Oxford
Partner(s)	Virunga Foundation
Project leader	Stefan Dercon
Report date and number (e.g. HYR1)	HYR1
Project website/blog/social media	https://www.csae.ox.ac.uk/from-farms-to-jobs-job-creation-to-preserve-natural-ecosystems-in-eastern-drc

Outline progress over the last 6 months (April – Sept) against the agreed project implementation timetable (if your project has started less than 6 months ago, please report on the period since start up to end September).

Although we are not looking for specific reporting against your indicators, please use this opportunity to consider the appropriateness of your M&E systems (are your indicators still relevant, can you report against any Standard Indicators, do your assumptions still hold true?). The guidance can be found on the resources page of the relevant fund website.

Our research project is on track as per the agreed project implementation timetable. In the section below, we list our initial project milestones and progress to date.

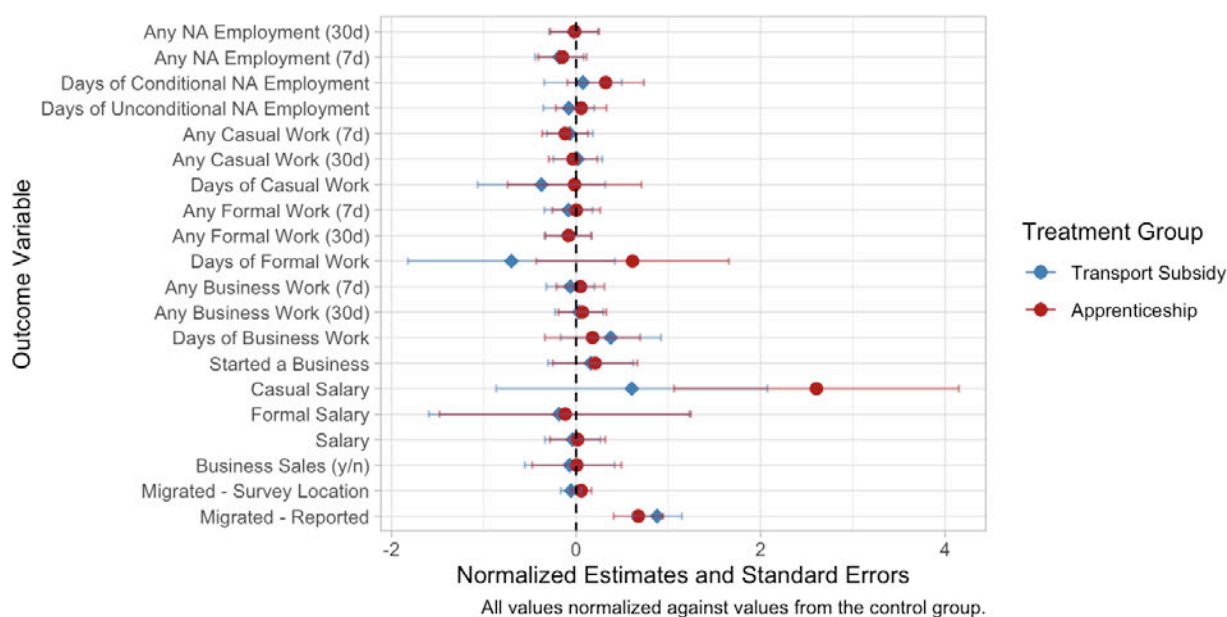
1. The results of the pilot conducted in 2021 inform the design of the next phase of the RCT (finished)

Over the first six first months of the project, we analysed the data of the pilot we organized prior to this ongoing Darwin project. This pilot was conducted with 360 farmers and 240 small- and medium-sized enterprises (SMEs) and followed a largely identical format to the larger study that we proposed to Darwin. This pilot was funded by small grants from John Fell Fund and Wellspring.

What we have learnt: In a descriptive sense, there was high take up by participating farmers of both the transport subsidy and the internship program. For farmers receiving the transportation subsidy, 74 out of 91 respondents (81%) reported that the bus ticket helped them to obtain employment; Fifty-eight out of 96 apprentices (60%) reported completing the internship. Women were more likely to turn down the internship, but men and women were similarly likely to collect the transportation subsidy.

To evaluate the effects of these programs, we compared outcome variables collected through a small survey of the internship group and the transport subsidy group relative to the control group. Differences across the outcome variables were compared across groups holding constant an individual respondent's gender, age, number of children, marital status, number of household members, and level of education, as well as their farming status within the park at baseline. These results are extremely indicative, as our pilot was not statistically powered to detect any statistically significant impacts. The figure below plots the treatment effect of being in either the transport subsidy or internship group, relative to the control group. Again, these results should be interpreted cautiously due to the small sample size of the pilot.

We find statistically significant evidence that the pilot program led to changes in earned and expected wages, migration, agricultural assets, social networks, and skills for farmers. The pilot did not, however, suggest changes in non-agricultural employment (on the intensive or extensive margins), job searching trends, agricultural activity, or overall wellbeing. A 9-page summary of all analyses is provided as in Appendix 1 (attached).



We discussed these results with two key field staff who helped us implementing the pilot (César N. and Olivier M.), the team of enumerators who met the participants over three rounds of surveys and monitoring visits. We also discussed the results with Virunga's top management, including the Chief Warden, and during the Park's annual research sounding board (see attached presentation). The lessons learnt from the pilot were instrumental in aiding us in refining the design of the main RCT. Due to the ongoing security crisis in the North Kivu Province where we operate, travelling by road became more complicated.

2. Implementation of a RCT promoting access to off-farm jobs to decrease the loss of natural habitat in Virunga NP (VNP) (ongoing)

We decided to organize the RCT in three phases due to the change in security conditions in Eastern Congo after the submission of our grant application. We implemented a first phase with 300 participants (out of targeted 1800 participants) from July to November 2023. This sample includes 100 interns (our main intervention) and 100 daily-workers (our secondary lighter touch intervention).

Virunga invested in its environmental education teams in early 2023. At no cost, we believed there was an important synergy to work with them. As part of our experiment, the Environmental Education team of Virunga was able to offer a 2-hour long environmental education session to 50% of our participants. This new intervention was cross-randomized with the planned job interventions so that we have six different treatment groups of approximately equal size:

1. Participants with a 3-months internship
2. Participants with a 3-months internship and the environmental education session
3. Participants hired as daily workers for 10 days
4. Participants hired as daily workers for 10 days and the environmental education session
5. Participants with no job intervention
6. Participants with no job intervention and the environmental education session

As we theoretically anticipate that accessing a non-agricultural job (and therefore, increasing income) could lead to an increase in the demand for lands (which is negative for the environment), we aim at measuring if the environmental education intervention can limit this possible « rebound » effect.

We provide further details on the implementation of this first phase below.

Implementation of the first phase: Recruitment of farmers

In the first area (Mutwanga, Rwenzori sector), we advertised a 3-months fully subsidized internship program in a small firm located in a nearby town. The eligibility criteria targeted young people (18 to 32 years old) for whom farming is a key source of livelihood, and who have lands in or outside the parks. The advertisement was emphasizing that women were particularly encouraged to apply. Interested candidates were invited to come to apply in a dedicated location (e.g., a school) over a 12-days period. First, applicants were asked to fill up a form summarizing the conditions to participate in the program: Applicants could request the assistance of staff to fill up this form if needed. Asking people to come to apply in person — as opposed to organizing a census — served to screen motivated candidates (a key lesson from the pilot). Second, applicants were asked to answer a 30-minutes long questionnaire that covers her or his present and past work experience, her or his agricultural activities and questions regarding her or his socio-economic status.

During the first wave 1, we received 699 applications from three towns (Lume, Masambo, Kasindi). Among these 699 applicants, 548 were eligible.¹ Please see the Appendix at the end of the document with a description of our sample.

Recruitment of the firms

We recruited firms among the clients registered as business with Virunga Energy. In Mutwanga, VE is the main electricity provider. 91 businesses were clients of VE in May 2023 in Mutwanga, at the start of this experiment. We contacted these SME over the phone. 78 were still operating a business in May 2023 and 91% reported being potentially interested in participating in the program. By the start of the programme, 57 SMEs confirmed their participation, offering a total of 100 intern positions. These are operating in one of the 8 sectors for which we ask candidates to provide their ranked preferences. These stated preferences were used to match interns to SMEs. Please see the Appendix for a description of the firms.

Implementation of the internship programme

The internship programme started on 14 August 2023 and ended on 14 November 2023. Among the initial 100 people selected to immigrate to Mutwanga, 80 candidates were present to start the programme. These 80 interns were matched to 48 SME. Among these 48 SME, 24 were no longer active, did not work full time or refused female interns. Thus, we reassigned 34 interns who were affected to these SME to the other SMEs who were willing to take on board more interns. By the end of the internship, 23 SMEs were still part of the program and

¹ The eligibility criteria can be summarised as followed. First, the candidate must consent to participate to the study. Second, s/he must be between 18 and 32 years old. Third, s/he must accept the conditions of the experiment which means : consent to the fact that all candidates can't be selected and to answers questions relative to her/his employment situation even if s/he is not selected. If s/he is selected, the candidate consent to be available for the next three months, and to migrate to Mutwanga. Fourthly, the candidate primary livelihood must be agriculture or livestock farming which is related to the aim of the study. Fifthly, s/he must not be currently hired in a full time job. Sixth, he must not be currently studying.

had trained apprentices.

While the internship programme was ongoing, the casual work programme of 10 days was rolled out in phases for a third of our sample, where we had similar take up rates as the internship programme.

Implementation of the environmental education sessions

The sessions started on 2 August 2023 and ended on 5 August 2023 *before* the start of the internship programme. In total, of the 158 candidates assigned to the environmental education sessions, 130 attended (82%).

A second and third waves of the programmes are planned to start in Q1 2024.

3. Monitoring of VNP's habitats and wildlife in the area of intervention (ongoing)

3.1 Aerial census was conducted by Virunga National park in the project areas to monitor encroachments → An aerial census was conducted in the savannah sector of VNP in July 2023 in partnership with the neighboring park of Queen Elizabeth NP in Uganda. Results are not yet available.

3.2 Satellite images are current under analysis by Virunga staff in the project areas to monitor encroachments (Planet Basemap data and Sentinel 1) → Satellite images are analyzed every six months. In August 2023, 656 km² of VNP's area was encroached due to illegal farming.

3.3 Foot patrols and camera traps allow to estimate species presence and abundance → On average, 298-foot patrols took place every month in VNP in 2023. 1764 person/day was allocated on these foot patrols monthly to cover 1432km. 38 patrols were deployed in areas where illegal farming is particularly a problem.

4. Quantitative impact evaluation of the RCT on people and nature (ongoing)

A midline survey was collected between 23 November and 20 December 2023. The data is currently being cleaned and analysed in R, alongside the admin data collected during the implementation of the interventions.

5. Results are summarised and share for different audiences (not started)

2. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

Despite a challenging security situation, the project is largely on track and our first phase of the RCT has been successfully implemented.

Prior to accepting the grant, we made one major change to the study, where we replaced the original "bus ticket" intervention with a short-term job on construction sites (e.g. fence construction in support of the reintroduction of the Eastern Lowlands Gorillas). This was due to the increasing insecurity in the region.² We are working closely with the security team of the

² The M23 rebellion was dormant for ten years in the DR. Congo. After taking over one city in 2022 (Bunagana), they dramatically expanded their territory in December 2022 – January 2023. All these cities are located about 100-200km south of our area of intervention. As of early April 2023, M23 is retreating from most of the areas they originally conquered. A peacekeeping force composed of troops from neighbouring countries are deployed in these areas. The Virunga Foundation is continuing its activities.

Virunga National Park to identify regions safe enough to implement the internship and short-term casual employment interventions. Travels are coordinated with VNP's security teams to prevent any risk associated with individual travel.

We also requested a shift in the budget allocation between the first and second year to reflect the fact that we would need to implement the interventions in smaller, consecutive waves, so to mitigate any security concerns. Recruitment for our next wave will only commence at the end of January 2024, once the national elections scheduled for late December 2023 settle down. The internship programme will commence in March, with follow up surveys scheduled shortly thereafter. Thus, we will request a shift in a small portion of the budget from this FY to the next FY to account for the slightly delayed data collection. However, the rest of the activities are on track to be completed by the end of the next FY.

Since the start of the grant, we have successfully implemented the first wave of the programme and collected our first round of follow up surveys. The most unexpected challenge was the high drop off of SMEs who could take on interns during this first wave, as explained above. We were able to adapt in real time and place all interested interns into a job. Nevertheless, prior to commence future waves, we intend to visit each SME in person to confirm that the SME is indeed operating and able to hire full-time interns.

3. Have any of these issues been discussed with NIRAS and if so, have changes been made to the original agreement?

Discussed with NIRAS: Yes

Formal Change Request submitted: Yes

Received confirmation of change acceptance Yes

Change request reference if known: Unknown

4a. Please confirm your actual spend in this financial year to date (i.e. from 1 April 2023 – 30 September 2023)

Actual spend: £0

4b. Do you currently expect to have any significant (e.g. more than £5,000) underspend in your budget for this financial year (ending 31 March 2024)?

Yes No Estimated underspend: £ [REDACTED]

4c. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a re-budget Change Request as soon as possible. There is no guarantee that Defra will agree a re-budget so please ensure you have enough time to make appropriate changes if necessary. Please DO NOT send these in the same email as your report.

NB: if you expect an underspend, do not claim anything more than you expect to spend this financial year.

Staffs were relocated from the park HQ to the nearest large city (Goma); and movements on roads are more regulated. Nevertheless, since the resurgence of the M23 rebellion, all the efforts of the Congolese State and Army are focused on ending the M23 rebellion. A direct consequence is that petty crimes have increased in other parts of eastern Congo, notably on roads. Individual travellers have become easy targets for road bandits. This new context means that it was risky to provide a subsidy to 600 people to encourage them to travel by themselves to find a job.

5. Are there any other issues you wish to raise relating to the project or to BCF management, monitoring, or financial procedures?

No other issues to be raised at this stage.

If you are a new project and you received feedback comments that requested a response, or if your Annual Report Review asked you to provide a response with your next half year report, please attach your response to this document.

All new projects (excluding Darwin Plus Fellowships and IWT Challenge Fund Evidence projects) should submit their Risk Register with this report if they have not already done so.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but **should also be raised with NIRAS through a Change Request. **Please DO NOT send these in the same email.****

Please send your **completed report by email** to BCF-Reports@niras.com. The report should be between 2-3 pages maximum. **Please state your project reference number, followed by the specific fund in the header of your email message e.g. Subject: 29-001 Darwin Initiative Half Year Report**

Appendix

DESCRIPTION OF OUR SAMPLE

Among the 548 eligible applications, 31.39 % are female and 23 years old on average (see Table 1 below). Most applicants are single. 40.88 % report at least one child. Given the criteria of our experiment, eligible candidates are not currently studying or hired in a full-time job.

Workers' labor market outcomes (see Table 2 below): The unemployment rate among eligible applicants is greater than 90%. This result is not surprising, given that the program is designed to target farmers. As such, it is not surprising that the majority of them had no salaried activity in the 30 days prior to the survey. During the last seven days, they worked on average two days (including agricultural activities, casual employment and self-employment) and they earned on average USD\$13.29/month. This indicate that they earn less than USD\$0.44 per day on average which is lower than 1.90 \$/day and indicate a high proportion of poverty. However, the candidates report a high reservation wage of USD\$57.3, which can reflect the fact that candidates have a high expectation of income compared to what firms can offer. This in turn influences the opportunity cost to leave farming for a salaried job. Most of the time, they do not have a previous job (78% of workers). When they do, the majority (77%) in the same location where they live and farm.

The farmers do not have strong social networks to find a non-agricultural job in the cities. Approximately, 55% of the applicants know someone living in Mutwanga. Given that these farmers likely face high budget constraints, we provided an initial salary payment upfront to support interns to settle into their role in the town.

29% of applicant had a casual job during the last 30 days. These casual jobs are more profitable than salaried job but are less stable. Indeed, for each day of work, eligible applicants with a casual job earned on average USD\$5.57 but during the last 7 days, they only work on average 1 day – mostly in commerce, welding and garage sectors.

Worker's agricultural activities (see Table 3): Regarding farming activities, 93.5% of applicants report farming as their main livelihood. The average proportion of cultivated land is 0.33 ha. Most of them declared farming activities during the last 30 days (97.67%) and mainly exploit farmland belonging to their households. During the last 7 days, they worked 4 days on average.

Environmental outcomes (see Table 4): There are farmers who cultivate in the park. This prohibited practice represent 7% of cultivated farmland in our sample. Farmers who agree that rangers have a positive impact on population well-being are less likely to cultivate in the park.

Table 1: Statistics on Workers' characteristics

Statistic	N	Mean	St. Dev.	Min	Max
Age	548	23.248	3.958	18	32
Sex	548	0.686	0.464	0	1
Married	548	0.215	0.411	0	1
Kids	548	0.772	1.141	0	5
Food security	548	28.516	6.754	4	47
Life satisfaction	545	3.811	1.842	1	9
Self-efficacy	548	38.641	4.866	18	48
Victim of attacks	548	0.102	0.303	0.000	1.000
HH Members Victim of attacks	548	0.242	0.428	0.000	1.000

Table 2: Workers' labor market outcomes

Statistic	N	Mean	St. Dev.	Min	Max
Previous Jobs	548	0.223	0.416	0	1
N previous jobs	548	0.380	0.850	0	6
Previous business	548	0.163	0.369	0.000	1.000
Has farmed 7d	548	0.878	0.328	0	1
Has farmed 30d	548	0.967	0.178	0	1
Casual job 30d	548	0.292	0.455	0	1
Casual job 7d	548	0.182	0.387	0	1
Salaried job 30d	548	0.062	0.241	0	1
Salaried job 7d	548	0.013	0.112	0	1
Self employed 7d	548	0.135	0.342	0	1
Self employed 30d	548	0.179	0.384	0	1
Job satisfaction	548	2.753	1.970	1.000	10.000
Res. wage	548	57.384	53.918	0.000	500.000
Days of self employed	548	0.420	1.269	0	7
Days of casual job	548	0.462	1.208	0	7
Days of salaried job	548	0.026	0.313	0	6
Days of self employed conditional	74	3.108	1.899	0	7
Days of casual job conditional	100	2.530	1.666	1	7
Days of salaried job conditional	7	2.000	2.082	0	6
Salary conditional	5	19.544	17.769	2.000	45.000
Casual job salary conditional	100	5.588	6.710	0.600	45.000

Table 3: Statistics on worker's agricultural activities

Statistic	N	Mean	St. Dev.	Min	Max
Cultivated farmlands	548	5.212	5.141	0.500	48.000
Farmlands of the hh	548	5.455	5.283	0.000	48.000
Farmlands own	548	1.165	1.905	0.000	22.000
Fertilizers	548	0.046	0.209	0	1
Days of farming in hh field	548	1.854	1.667	0	7
Days of farming in own field	548	1.703	1.732	0	7
Days of farming in other field	548	0.443	0.773	0	4
Days of farming	548	3.381	1.897	0	7
Labour force in farmlands	548	3.215	2.884	0	25
Labour force from family in farmlands	548	2.442	2.258	0	15
Days of farming in hh field conditional	481	2.112	1.619	0	7
Days of farming in own field conditional	481	1.940	1.720	0	7
Days of farming in other field conditional	481	0.505	0.807	0	4
Days of farming conditional	481	3.852	1.511	0	7
Labour force in farmlands conditional	548	3.215	2.884	0	25
Labour force from family in farmlands conditional	548	2.442	2.258	0	15

Table 4: Statistics about environmental outcomes

Statistic	N	Mean	St. Dev.	Min	Max
Farmlands in the park	548	0.389	1.171	0	10
Disagree farming park	548	0.558	0.497	0	1
Agree ranger	548	0.839	0.367	0	1
Disagree charcoal park	548	0.794	0.405	0	1
Disagree timber park	548	0.810	0.392	0	1
Env perception index (sum)	548	3.002	1.067	1	4

Env perception index (mean)	548	0.750	0.267	0.250	1.000
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DESCRIPTION OF THE FIRMS

Thus, the sample of SMEs largely operate in agricultural transformation (42%) and welding and garage (21%) sectors. They have between 0 and 27 employees, with an average of 3 employee per SME. These SMEs are essentially young with the oldest company among them active since 1995. The majority of SMEs (87.72 %) started their activities after 2010 and 49.12% started after 2019, when VE introduced electricity to the region. The SMEs report an average wage of USD\$20/month for their employees and pay them on average every 3 months.