

RESEARCH PROPOSAL

CASH TRANSFERS TO COMMUNITIES TO
STOP THE POACHING CRISIS

October 2024



Research consortium



African Parks is an international NGO that protects habitats and wildlife. African Parks manages 22 protected areas in 12 countries in Africa. Through long-term agreements, African Parks provides effective park management to ensure the protection of biodiversity by creating lasting ecological, socio-political and economic impact.

100WEEKS

100WEEKS is an international NGO that provides at a big scale cash transfers, trainings and savings groups to people living in extreme poverty. Cash programs are proven to be the most innovative and effective approach to tackling poverty. The 100WEEKS program enables people to cover their basic human needs and empowers them to start their own businesses, break the cycle of poverty and create a better future for themselves and their communities. Informed by face to face and mobile surveys, donors get updates about the impact of their grants and donations. 100WEEKS now works in five countries and has reached close to 10.000 people, indirectly reaching 60.000 people (average family size is 6).



Wageningen University and Research is world's best university in agriculture and forestry. A highly qualified team of researchers from the Wildlife Ecology and Conservation Group and from the Development Economics Group of Wageningen University will lead the proposed research.

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Executive summary

This is a research proposal for a unique randomized controlled trial to test the hypothesis that direct cash transfers to communities living around wildparks contribute significantly to reducing poaching of wildlife and destruction of habitats.

Wildlife is decreasing at an alarming speed worldwide because of poaching, population growth, smaller habitats and pollution. The 2024 Living Planet report from the WWF states that since 1970 the average size of wildlife populations has fallen by a staggering 73%. Extreme poverty is a major cause of the disappearance of wildlife. Poverty drives people to desperate measures, forcing them to choose between survival and conservation. When they do not benefit from a wildpark they do not see why they should protect it. Current conservation methods only partially achieve their intended purposes. Innovative and bold new solutions are needed to create sustainable sources of income as alternatives to poaching and deforestation.

That is why two years ago, African Parks and 100WEEKS started a bold experiment that could radically innovate conservation strategies. They decided to tackle the root of the problem, poverty, in an innovative way. Around Nyungwe National Park in Rwanda, 100WEEKS and African Parks have been running a pilot project simply giving cash and training to 220 families living around the park. Now at the end of their 100 weeks program, results are astonishing, for poverty and wildlife conservation. Cash transfers to local communities could be a game-changer, creating a sustainable future where people and wildlife can coexist.

To scale this approach globally, we need rigorous scientific proof. A randomized controlled trial (RCT) is essential to making a lasting impact. In a RCT, one group receives a treatment (the treatment group), and one group receives nothing (control group). Because both groups are comparable, differences in results are caused by the program. African Parks provides the living lab for the RCT. The treatment in this proposed RTC is the 100WEEKS program. A highly qualified team of researchers from the Wildlife Ecology and Conservation Group and from the Development Economics Group of Wageningen University together with PhD researchers from the University of Rwanda, is responsible for the design of the RCT, data collection and analysis.

To research the effect of the program on the park, nature and wildlife will be monitored by rangers and researchers. To research people's relationship with the park, sociologists from Wageningen University & Research, in cooperation with Rwandan universities, will do qualitative in-depth research in communities around the national park. The program's effect on economic development will be researched using quantitative and qualitative methods. Research results will be published in leading academic journals and shared with the wider conservation sector.

To make this unique research possible 100WEEKS will implement its Cash+ program with 2100 families living around Nyungwe National Park, lifting more than 12.000 people out of poverty (average family size is 6). Wageningen University has fundraised 1,4 million Euro to design the RCT and conduct the research. To implement the 100WEEKS program with 2100 families, 2,6 million Euro needs to be fundraised.

When the research proves cash transfers are effective to protect wildlife, a very strong case is made to scale up cash-based programs worldwide to conserve the most beautiful habitats and wildlife for the future of mankind.

1. Research overview

Global biodiversity is imperilled, with growing concerns that we are in the midst of a sixth extinction crisis. Conventional efforts to conserve biodiversity are trying to meet this challenge, while also often alienating local residents, leading to calls for transformative change (Büscher and Fletcher 2020). At the same time, conservation commonly exacerbates human-wildlife conflict (HWC) between local residents and protected animals, while current efforts to address this (e.g., via compensation schemes for livelihood losses) have proven largely ineffective (Ravenelle and Nyhus 2017). One prominent response to these problems has been conservation organizations' promotion of market-based instruments (MBIs) intended to address poverty alleviation alongside conservation goals (van Kooten & Bulte 2000). These include payments for environmental services (PES) programmes (which incentivize conservation by paying resource users to conserve nature rather than convert their land to more destructive uses.) Yet mounting evidence suggests that most MBIs have only partially achieved their aims, leading to growing demands for change (Fletcher 2023).

To address these issues, we propose to develop and test an innovative funding mechanism we call 'conservation basic income' (CBI). This proposal builds on a substantial body of research demonstrating that cash transfer programs (CTPs) introduced in many low-income societies have been proven to be effective for poverty reduction and enhancing human wellbeing (World Bank 2018). At the same time, PES programmes have been introduced in many of the same contexts to support environmental protection. Both CTPs and PES generally demand behavioral change of programme recipients via 'conditionality'.^[1] Yet the necessity of such requirements has been questioned by proponents of 'universal basic income' (UBI), who advocate provision of an unconditional payment. However, neither UBI proposals nor CTPs usually address environmental protection alongside poverty alleviation.

Others, meanwhile, have questioned whether unconditional payments can achieve conservation gains in the absence of behavioral change requirements (Wilebore et al. 2019). Empirical evidence is mixed concerning the environmental impacts of existing unconditional CTPs not explicitly linked to conservation aims, with some programmes indicating positive impacts and others the reverse (Alix-Garcia et al. 2013; Wilebore et al. 2019; Dyngeland et al. 2020; Ferraro & Simorangkir 2020; Malerba 2020; Rønningstad, S. H., & Jelsness 2020; Malan et al. 2023). Yet research suggests that unconditional programmes can often achieve gains similar to those from conditional programmes (Hanlon et al. 2012). Such programs would reduce external oversight on communities and instead help to build more sustainable self-derived resource use, leading to better conservation outcomes.

Our proposal builds on all this experience to introduce and test a composite instrument providing income support for community members living in or near important conservation areas to test the extent to which such a mechanism has potential to redress rural poverty and biodiversity loss simultaneously. Along this line, the conditions around the parks allow to study human-wildlife-conflicts along the mosaic of socio-economic settings and structures of buffer zones in an unprecedented way.

The focus of this research will be the Great Lakes region in Eastern Africa, an important global biodiversity hotspot. Within this region we focus specifically on two national parks Rwanda, one of the continent's most-densely populated countries. Nyungwe National Park (NNP) in the southwest will be our main research site, supported by a second case study focused on Volcanoes National

Park (VNP) in the northwest. The project entails a partnership between researchers at WUR and the University of Rwanda, the civil society organization (CSO) 100WEEKS, and African Parks a South-Africa based NGO that manages NNP on behalf of the Government of Rwanda, with support from several other local partners. 100WEEKS is a Netherlands-based INGO that provides unconditional cash transfers to women in low-income communities in Rwanda, Uganda, Kenya, Ghana and Ivory Coast. For the last eight years, 100WEEKS has implemented 100WEEKS programs near Volcanoes National Park and a pilot project, together with African Parks, around NNP.

While the pilot intervention has been fully unconditional, the new NNP intervention will be divided between: 1) payments offered as an explicit incentive for conservation outcomes to which payment is attached; and 2) payments offered without any direct conditionality. Comparative investigation of the two interventions' outcomes will thus allow us to test the central question of whether unconditional payments achieve measurable conservation gains in addition to livelihood benefits.

Our approach is not only unique from conceptual and practical socio-economic perspectives, but also because it integrates this with research from qualitative (sociological) and quantitative (economic and ecological) approaches to study biodiversity protection and mitigation of human-wildlife conflict from multiple perspectives simultaneously. Research carried out by i.a. five Rwandan PhD students around the same setting provides an unprecedented opportunity to gain insights needed to design innovative and effective programs to protect wildlife and their habitats in a sustainable way involving the local population.

2. Detailed research description

2.1 Background and history

In recent decades, the global conservation movement has increasingly embraced market-based instruments (MBIs) as a basis for interventions in pursuit of biodiversity protection (Büscher et al., 2014). While the specifics of MBIs vary (Pirard, 2012), they tend to share a common logic: to harness economic markets as a means to attach sufficient monetary value to cover the opportunity costs of alternative land use and thereby incentivize conservation over resource extraction. They are also widely promoted to 'internalize' environmental (and social) costs previously externalized from economic markets so that these can be managed as part of the production process. In this way, MBIs can reconcile economic development and environmental protection by harnessing conservation as a form of income generation. A substantial body of research investigating the impact of MBIs in sites in various countries indicates that despite decades of implementation and development they have, with exceptions, only partially achieved their intended aims (Dunlap and Sullivan, 2020). Moreover, many MBIs evolve into forms of state-based appropriation and redistribution antithetical to their original aims (Fletcher and Büscher 2017).

Meanwhile, a parallel body of research has documented the global rise of cash transfer programmes (CTPs) to encompass at least 720 million people in 130 countries (World Bank 2018). Beginning in the 1990s, CTPs were introduced as a corrective to problems produced by neoliberal interventions associated with structural adjustment policies (SAPs) widely promoted in low-income societies in the 1980s. Initially, international institutions like the World Bank and IMF that had

championed SAPs were skeptical (Peck and Theodore, 2015). Increasing evidence of CTPs' effectiveness documented by such procedures eventually convinced the World Bank to reverse its position, after which it became one of the most enthusiastic promoters of CTPs for development (Peck and Theodore, 2015). Consequently, CTPs proliferated dramatically in the first decades of the twenty-first century, introduced by regimes from across the political left-right-spectrum (Pena, 2014). Notwithstanding their enthusiastic embrace of conditional CTPs, the World Bank and other international institutions have remained skeptical of unconditional programs. This is despite the research showing that in most cases unconditional programs are equally – or at least nearly – as effective in achieving the same positive outcomes as conditional ones (Hanlon et al., 2010; Standing, 2017). Consequently, critics have argued that conditionality is unnecessary and should therefore be eliminated (Hanlon et al., 2010; Standing, 2017).

A particular variant of unconditional CTP is commonly termed 'universal basic income' (UBI). Various small-scale projects resembling UBI offer evidence for its wider potential. Moreover, as Standing asserts, "Cash transfer schemes that at present are overwhelmingly targeted at 'the poor' have the potential to prepare the way for basic income" (2017: 220). In recent years, several new UBI pilot studies have been implemented in high income countries like Canada, Finland and the Netherlands as well as lower income countries including Kenya, India and Namibia (Bregman, 2017; Standing, 2017).

Building on past research, Fletcher and Büscher (2020) propose a fully unconditional payment scheme able to cover recipients' basic needs as a conservation basic income. Since advancement of the original proposal, subsequent research has investigated the extent to which conservation professionals are sympathetic to the idea (Sheehan & Martin-Ortega 2023) and what it might cost to implement it as a concerted global strategy (de Lange et al. 2023). A concrete proposal for a CBI intervention in Zimbabwe has also been developed but never implemented (Nature Needs More 2018). Another has been outlined but not yet implemented for Indonesia (Mumbunan et al. 2021). While various unconditional CTPs and UBI projects already exist, the mechanism proposed here—specifically linking unconditional payments to conservation aims—is the first of its kind.

Moreover, while there is a wealth of research conducted in Rwanda exploring issues around land and food security (Ansoms, 2009; 2010), these studies are only rarely connected to actual conservation issues and research (Clay, 2018). Moreover, they do not generally evaluate the related human-wildlife conflict (HWC) and related consequences for people, which results from protected land bordering densely populated areas of human activity. Therefore, research focusing on the interlinked issues around land, food security, local wellbeing, and biological conservation in the country is needed. This is especially the case now that Rwanda has committed to extend conservation territories under the new Global Biodiversity Framework calling for inclusion of 30% of land mass by 2023. In a country with severe poverty, high biodiversity-protection ambitions, and a constrained agricultural sector, such initiatives need to be implemented without creating extra hardships for the rural population (Martin et al. 2014a).

Yet the project has important implications far beyond this specific case. Africa's Great Lakes region combines immense global conservation significance with immense conservation challenges. The region harbors an extraordinary wealth of species, including the iconic mountain gorilla and numerous less known endemics. Yet multiple pressure arises from high human population density, extreme poverty, and urgent development needs. While tourism centered on nature offers an economic lifeline and injects valuable funds, broader political instability poses a complex and often

challenging backdrop. Consequently, lessons learned in this particularly challenging context can be brought to bear in many other conservation spaces throughout the world as well.

2.2 Conceptual framework

The research design of the project is grounded in a specific theory of change informed by a political ecology perspective (Robbins 2019). Based on extensive research in many different contexts, this perspective asserts that poverty frequently forces people to overexploit resources (e.g., Painter & Durham 1995; Vandermeer & Perfecto 2013). Consequently, the provision of alternative income may reduce pressure on local resources and biodiversity and favour more sustainable practices. Our research will test whether this theory of change is supported by the interventions under investigation.

This research design is based on a set of alternative hypotheses concerning the relationship between income support and conservation outcomes. Hypothesis 1, grounded in political ecology research (e.g., Vandermeer & Perfecto 2013), holds that impoverished people overconsume local resources mainly due to lack of sustainable alternatives, hence provision of basic income should favour less reliance on the consumption of local biodiversity. Hypothesis 2, supported by an alternate body of research (e.g., Stem et al. 2003; Wilebore et al. 2019), suggests instead that provision of unconditional income will enable impoverished people to increase resource exploitation (e.g., through purchase of equipment, hiring labourers, etc.). Our study will assess which hypothesis is best supported by the interventions' outcomes, and consequently under which conditions (if any) provision of unconditional income enhances conservation outcomes in conjunction with poverty reduction.

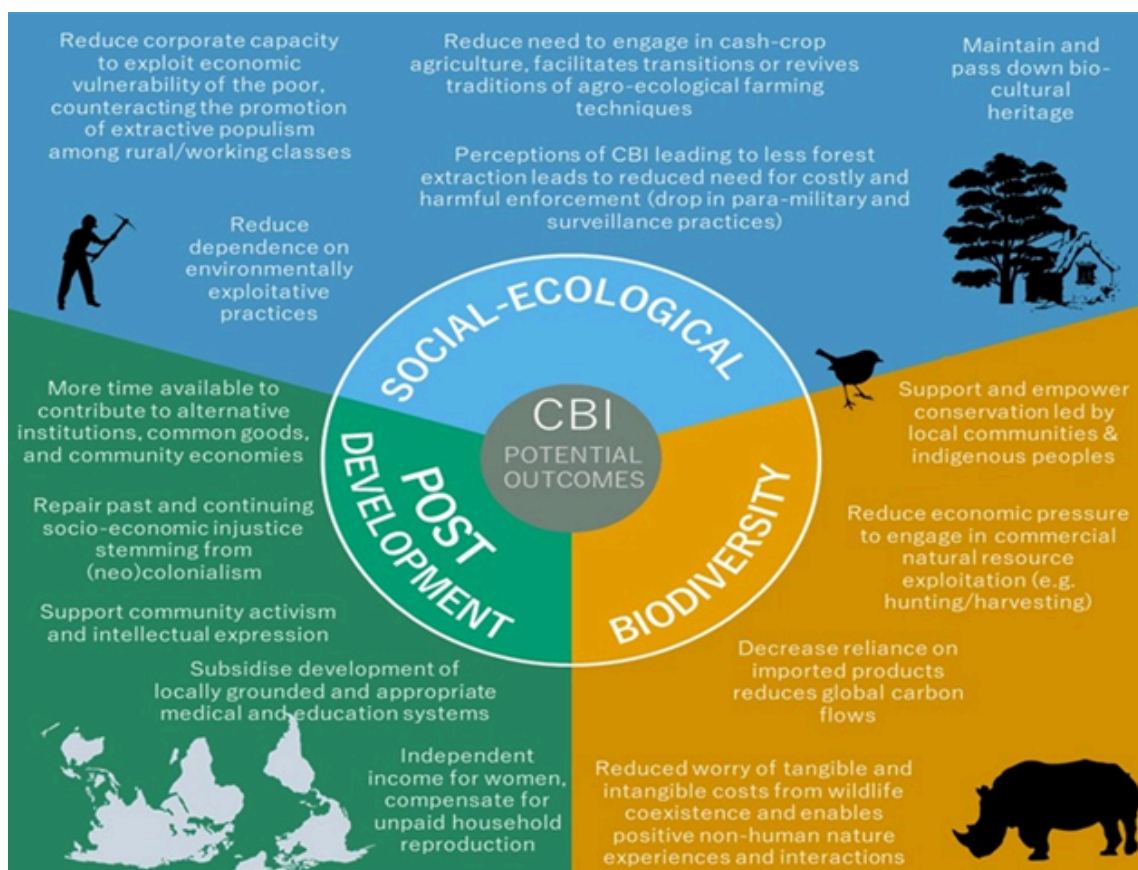


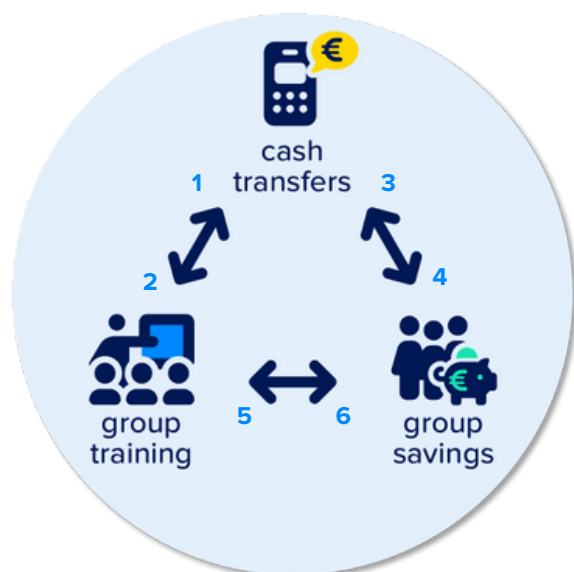
Figure 1: Potential CBI Outcomes (source: De Lange et al. 2023)

In addition to probing the root causes of unsustainable resource use, a political ecology perspective asserts the need to integrate justice into natural resource governance. From this perspective, in addition to its potential conservation benefits, CBI can be understood as an instrument of justice in its own right, allowing marginalized people to access a fair share of the collective societal wealth (Ferguson 2015), as well as to serve as reparations for historical injustices (Büscher & Fletcher 2020) and/or as support for a life of dignity and self-determination (Standing 2017).

2.3 The 100WEEKS Cash+ program

The 100WEEKS Cash+ program is a thorough and multifaceted strategy designed to support people living in extreme poverty. The program enables beneficiaries to take care of basic human needs, ending survival stress. It encourages them to establish alternative income streams, initiate small enterprises, and enhance agricultural methods. The 100WEEKS Cash+ model is composed of three mutually reinforcing components:

1. Weekly cash transfers to meet basic necessities and offer seed funding for business and agricultural investments. In most countries beneficiaries get 8 Euro per week.
2. Weekly training in financial literacy, entrepreneurial skills, life skills, better agricultural practices and conservation sensitisation.
3. Weekly self-help savings group meetings (Village Savings and Loan Association), complemented with dedicated coaching for continual guidance and support.



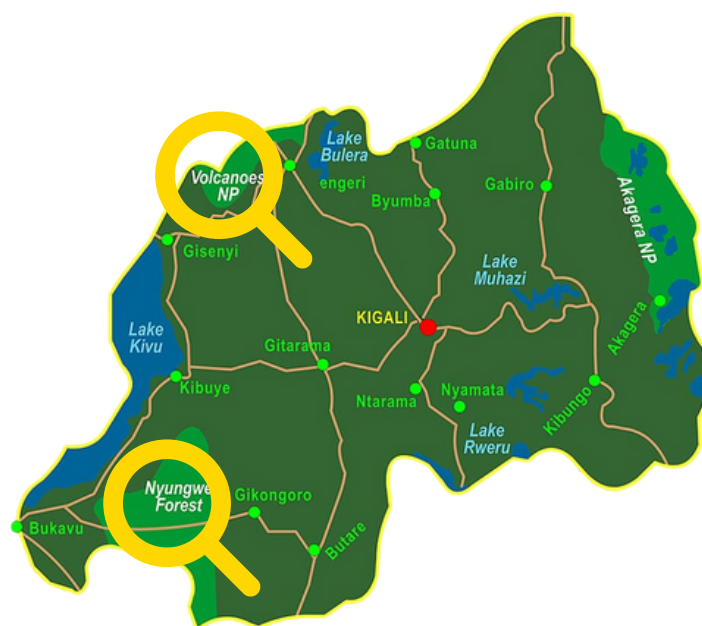
1. Cash leads to less survival stress, leaving more mental space for training.
2. Training leads to a smarter usage of cash.
3. Cash is needed for savings.
4. Savings lead to investments, leading to more cash.
5. Financial trainings lead to higher savings and loans because beneficiaries understand the concept of interest better.
6. Savings groups create a trusted and safe context for training.

Our core belief is that people can lift themselves out of poverty on their own when given the chance and the tools to do so. The cash transfers and the promise of having this financial security for almost 2 years, take away the survival stress within families, making them stronger, both physically and mentally. During the first months of the cash transfer program beneficiaries cater for their families' basic needs, improving nutrition, water and sanitation. This improves their physical and mental health. Then they pay back old debts and invest in basics like repairing their house, buying new clothes, a matras and table. With the cash transfers they can send their children to school. Beneficiaries build social capital by participating in the weekly group meetings. They start to participate (again) in community activities. "Now I am someone, I dare go to church again", as one women put it. The 100WEEKS program gives them back their dignity.

Supported by the training sessions on personal leadership, financial literacy and basic entrepreneurial skills, beneficiaries feel empowered and take their first steps towards developing businesses and other sources of income. Their flourishing businesses or other income generating activities increase their purchasing power and ensure that they do not fall back into poverty once the cash transfers stop at the end of the 100 weeks program. They have lifted themselves out of poverty sustainably and are more resilient to shocks. The assets beneficiaries have bought in combination with increased social capital helps them not to have to resort to negative coping strategies - like eating their last seeds or selling their tools- when they are affected by an external shock like a bad harvest or sickness. Around 80% of the beneficiaries is still out of poverty two years after the program has ended (measured with the multi-dimensional poverty index). Around 40% of the beneficiaries is ready for their first micro-credit at the end of the program.

2.4 Location of the project

The project focuses on two national parks within Rwanda, yet it also takes fully into account the wider context of the Great Lakes region, as the parks border Burundi, Uganda and the Democratic Republic of Congo (DRC). The past has shown that the two areas in which the parks are located are socially, economically and politically of importance for the well-being and stability of the entire region. Moreover, many development donors are looking for interventions in the Great Lakes region that address the conservation-development-security nexus generally (Marijnen, 2017). While focused on Rwanda, the project will therefore generate impact within the wider region and beyond, also due to close interactions with researchers and policy makers both nationally and internationally.

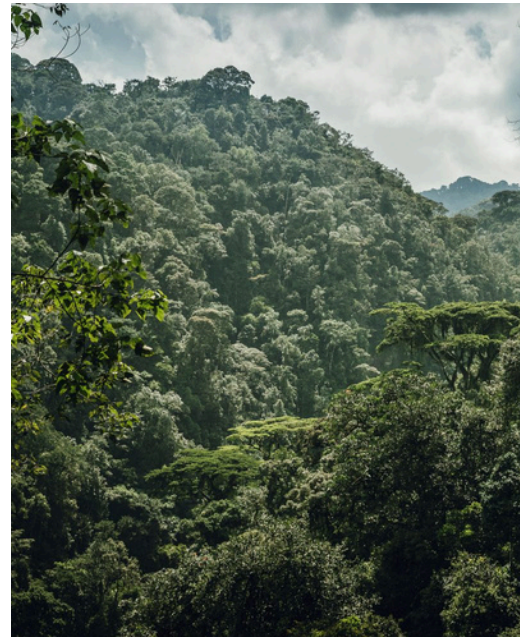


Map 1: RCT Research Sites

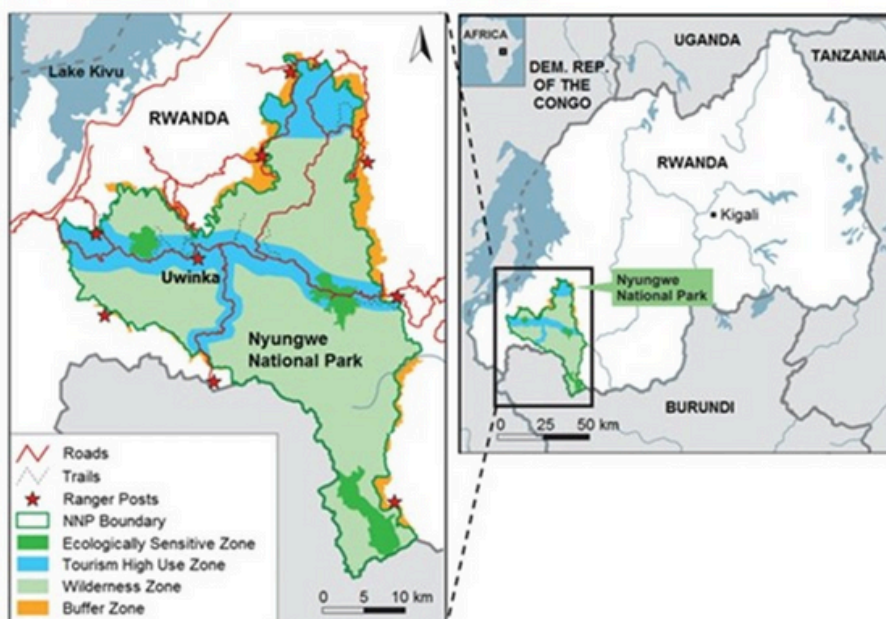
2.5 Nyungwe National Park

Nyungwe National Park (NNP), our primarily research site, is in southwestern Rwanda. With an extension of 1.013 km², it encompasses a rainforest at an elevation of between 1.600 and 2.950 m. It is one of the largest African mountain forests, internationally renowned for its biodiversity and endemism (Imanishimwe et al. 2018). The fauna includes 13 primates including Eastern chimpanzee (*Pan troglodytes schweinfurthii*) and the little-known Hamlyn's monkey (*Cercopithecus hamlyni*) as well as 310 bird species of which 29 are endemic to the Albertine Rift. The flora comprises 1068

plant species including an estimated 68 endemics. The park is adjacent to Kibira National Park in Burundi. Nyungwe National Park (NNP), our primary research site, is in southwestern Rwanda. With an extension of 1,013 km², it encompasses a rainforest at an elevation of between 1,600 and 2,950 m. It is one of the largest African mountain forests, internationally renowned for its biodiversity and endemism (Imanishimwe et al. 2018). The fauna includes 13 primates including Eastern chimpanzee (*Pan troglodytes schweinfurthii*) and the little-known Hamlyn's monkey (*Cercopithecus hamlyni*) as well as 310 bird species of which 29 are endemic to the Albertine Rift. The flora comprises 1,068 plant species including an estimated 68 endemics. The park is adjacent to Kibira National Park in Burundi. The park was established in 2005 but has been under protection since 1933 when it was first gazetted as a reserve under the colonial government. It is surrounded by two districts in the southern province (Nyamagabe and Nyaruguru) and three districts in the western province (Karongi, Nyamasheke, and Rusizi). The periphery is densely populated by subsistence farmers as well as larger scale private tea and timber plantations. Land is constrained with an average holding of less than 0.5 ha (Gross-Camp et al. 2015).



In 1984 a buffer zone around parts of the reserve was established by the Rwandan government in conjunction with the Swiss as a response to rapid deforestation. In the first years after subsequent park establishment, snares and tree cutting were the most prominent illegal activities. To address this, by 2014, 69 rangers were deployed to 11 ranger posts around the park. Despite this, poaching (of mostly small game), gold mining, bamboo and tree cutting, illicit beekeeping, forest fires, and human-wildlife conflict continue to threaten park resources (Imanishimwe et al. 2018). Research suggests that the main underlying causes of community members engaging in illicit resource extraction within the park are food insecurity and poverty (Gross-Camp et al. 2015).



Map 2: Nyungwe National Park (source: Miller et al. 2020)

In acknowledgement of this, longstanding efforts have sought to implement development projects in surrounding communities in support of conservation objectives. This includes a PES programme that ran for two years (2011-2012) but proved largely unsuccessful and hence was discontinued (Martin et al. 2014b). Park tourism (mostly for chimpanzee trekking and birdwatching) is also small yet growing source of revenue for some communities through a revenue sharing arrangement with AP. Yet the benefits delivered by these initiatives have been limited thus far. Consequently, tensions between park management and local residents continued.

In 2020, African Parks was invited by the Government of Rwanda to sign a 20-year agreement to manage NNP. Since then, AP has worked to increase engagement with and development benefits to surrounding communities. As part of this effort, in 2022 AP partnered with 100WEEKS to develop a scoping study concerning the potential for unconditional cash transfers to support park conservation. This study, which is now nearly finished, encompasses 220 beneficiaries and their households and has produced tentative support for the initiative's effectiveness. The project proposed here aims to build on this initial study to more systematically test an expanded set of interventions.

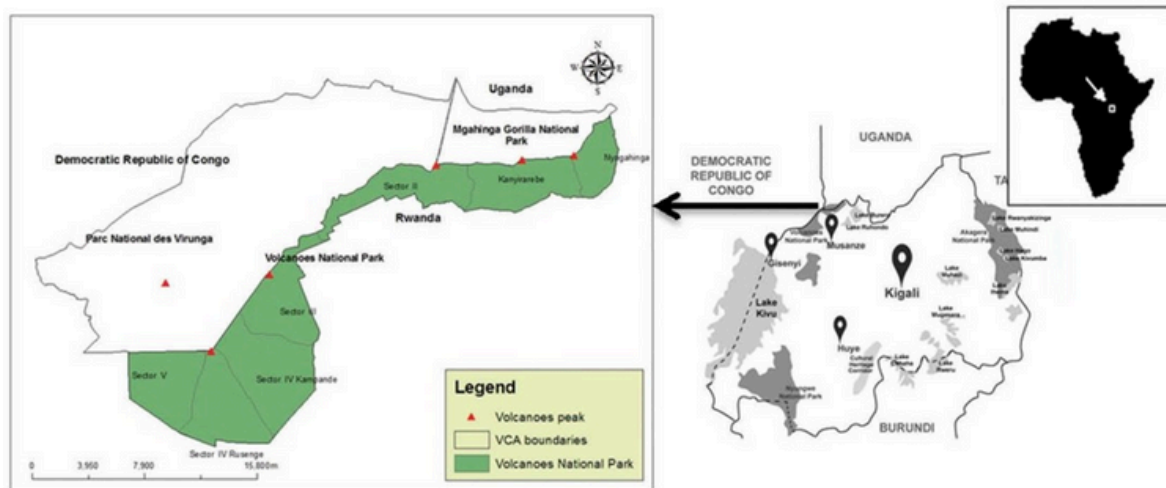
2.6 Volcanoes National Park

Volcanoes National Park (VNP), our secondary research site, is located in northwest Rwanda, adjacent to both Democratic Republic of Congo and Uganda, where contiguous national parks come together to form the Virungas Transboundary Conservation Area. The park is managed by the state agency Rwanda Development Board (RDB). VNP was Africa's first national park, established in 1925. It contains substantial biodiversity with high rates of endemism. By far its most well-known species are the endangered mountain gorillas (*Gorilla beringei beringei*). Originally 328 km² in extent, it was subsequently reduced to 160 km² due to incursion by local farmers. The volcanic soils are good for agriculture and the area adjacent to the park contains some of the highest population densities in Africa, exceeding 1000 people/km² (Sabuhoro et al. 2021). Local residents are mainly subsistence farmers, most of whom experience significant poverty and food insecurity compelling them to encroach on park resources to survive (Manunura et al. 2016). Common activities in this respect are wildlife poaching, collection of firewood, harvesting of bamboo for construction and handicraft production, beekeeping and grass cutting.

Human-wildlife conflict also occurs due to crop raiding by park animals (baboons, buffaloes). Meanwhile, tourism to visit the mountain gorillas in VNP generates substantial revenue for the Rwanda government, more than US\$ 113 million per year as of 2022, thus forming the backbone of the overarching national tourism sector (RDB 2022). A revenue sharing agreement is intended to deliver 5% of these proceeds to local communities but given the high population most people receive little benefit from this (Manunura et al. 2016).



For nearly two years, 100WEEKS has been administering a cash transfer programme to 1720 women in 86 communities adjacent to the park. The goal is to address poverty. As an unconditional transfer, this initiative has no direct connection to VNP. Yet a further set of communities has already been identified for a next phase of the intervention that can serve as a retroactive control group to approximate an RCT assessing the current intervention's impact on participants' use of park resources. This will be used to provide external validity to the NNP study at the heart of the project.



Map 3: Volcanoes National Park (source: Manunura et al. 2018)

3. Objectives of the research

First and foremost, in the short term, the project will contribute to the efficacy of efforts to integrate biodiversity conservation and development efforts within our specific field sites, where this remains a pressing challenge. In the medium term, the CBI intervention will likely be expanded to many more communities in our sites of intervention. Moreover, the project has potential to scale significantly beyond our specific cases in the long term. African Parks currently manages 22 parks in 12 countries, and is interested in the possibility of expanding CBI interventions to these others as well. Also, they plan to expand operations to 10-20 additional parks in the next decade, and CBI may be introduced into these too. Moreover, we are in discussion with conservationists in several sites worldwide (e.g., Indonesia, Nepal, Pakistan, Peru, Cambodia) who are also exploring CBI and will look to our project for insight. Finally, many conservation organizations and projects throughout the world struggle to address poverty alongside biodiversity protection, so our project offers a model and lessons for many further interventions too. Consequently, our project holds potential to dramatically transform how conservation is undertaken, financed and assessed on a global scale.

Capacity building within Rwanda is another central project objective. This will occur at several levels. First, through training of the PhD candidates who will conduct the main research. Second, through training of a body of research assistants and local students who will contribute to the research. This will occur through partnership with a government wildlife management college located near NNP (IPRC Kitabi), whose students will comprise the recruitment pool for these assistants. We will also offer training to and with college staff. We will provide opportunities for Master level students at the University of Rwanda to conduct research in conjunction with the project as well. Our overarching aim is to establish a research hub at the University of Rwanda that we hope will endure beyond the life of this project and continue to provide opportunities for collaboration on future projects. This will be in support of the Center of Excellence in Biodiversity and Natural Resource Management at the University of Rwanda, located in Huye, that welcomes such initiatives and will provide a local repository for the data collected.

3.1 Research activities & individual research projects

Primary research for the project will be carried out by 6 PhD candidates (one economist, two ecologists, two sociologists, and one economist/ecologist hybrid incorporating on remote sensing techniques to link natural and social science domains) working in concert, under the supervision of WUR staff experts together with local academics from Rwanda in the different fields. This will allow for comparison, cross-fertilization, capacity building and integration of the different approaches. Results will allow an unprecedented synthesis of insights concerning the project process and outcomes, connecting the different disciplines that are central to effective conservation. These results will then be fed back into the project through collaboration with the implementing partners, for use in management of the cash transfer interventions and planning for follow-up projects that we hope will continue to support and develop the initiative in the future. Altogether, our project will have major impacts with multi-level capacity building, with wide ranging implications for an interdisciplinary approach to improve human lives in concert with nature protection.

We aim to hire all PhDs originating from and based in Rwanda, utilizing local university contacts and related networks to assist in recruitment. To achieve transdisciplinary integration, all PhDs will be supervised by a team cross-cutting multiple graduate schools. Given the project's focus on women, we will also aim to hire as many women as possible. The full team will be hosted by the Center of Excellence in Biodiversity and Natural Resource Management at the University of Rwanda, in Huye, which will serve as a national hub for the research project. This is also a secondary campus of the University of Rwanda where the School of Economics is located.

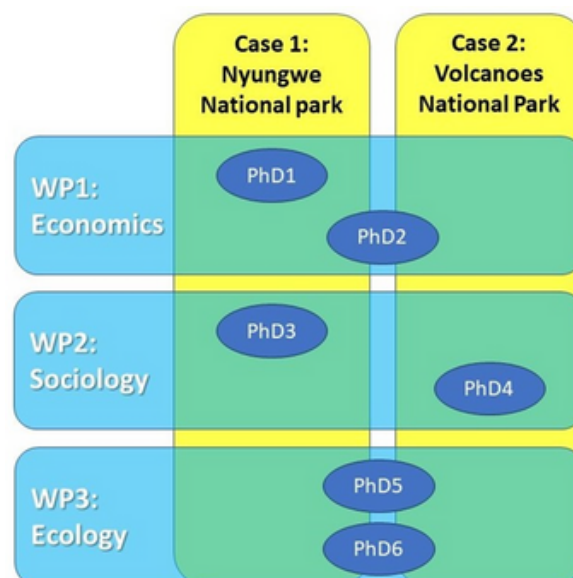


Figure 2: PhD distribution

All PhDs will address our central research questions within a wider focus and context. They will be divided among our three main investigative work packages according to their specific focus (WP1: Economics; WP2: Sociology; WP3: Ecology). The specific PhD projects are as follows:

PhD 1: Cash Transfer Intervention near Nyungwe National Park

This project will look at the livelihood and conservation outcomes of the intervention bundle near NNP, and propose a general village-level model to conceptualise and calibrate the impacts of outside interventions on local incomes and resource use.

PhD 2: Cash Transfer Intervention near Volcanoes National Park & Remote Sensing

This project will look at the livelihood and conservation outcomes of the intervention bundle near VNP, and propose a general village-level model to conceptualise and calibrate the impacts of outside interventions on local incomes and resource use.

PhD 3: Conservation Politics around Nyungwe National Park

This project will use ethnographic methods to investigate local residents' relationship with NNP and its resources, and how this has changed over time. It will also focus specifically on how the new cash transfer intervention in the area influences all of this, and to what extent conditionality within the programme shapes social and environmental outcomes.

PhD 4: Conservation Politics around Volcanoes National Park

This project will use ethnographic methods to investigate local residents' relationship with NNP and its resources and how this has changed over time. It will also explore how the unconditional cash transfer intervention has influenced this in a context of transboundary conflict and contestation over endangered gorilla conservation.

PhD 5: Human-Wildlife conflict around Nyungwe and Volcanoes National Parks

This project will investigate human-wildlife conflict focusing on animal diversity and on movement and behaviour of selected mammals (mainly primates) in the two parks along the buffer zone structures and community characteristics, taking into account the cash transfer interventions.

PhD 6: Consequences of cash transfer and patrols on illicit activities in Nyungwe and Volcanoes National Parks

This project will look at the nature, distribution and consequences of illicit activities in relation to the CBI and other interventions implemented to support forest conservation. We will analyse extensive georeferenced patrol data and illegal activity records to pinpoint hotspots, understand temporal trends, and uncover factors driving illegal activities.

3.2 Expected results and outcomes

The project will deliver concrete benefits for both conservation and human development. This will include measurable improvements in livelihood support and food security for participants in the cash transfer programme, reduction of human-wildlife conflict between participants and protected animals, reduction of local pressure on park resources, and increased protection for local biodiversity. Anticipated outputs include at least 15 open access academic articles detailing various aspects of the individual research components as well as syntheses that combine findings and their implications. We will also produce a series of at least 5 policy-oriented briefs and white papers for broader dissemination. These will be accessible via a dedicated project website. Numerous presentations to academic audiences, regional practitioners and policymakers will help disseminate project findings. Moreover, the findings from this pilot study, if supportive of the CBI mechanism, will guide future rounds of interventions in the region and elsewhere. Based on all of this, another overarching project output is intended to be a set of general guidelines for effective CBI implementation, also distributed open access.

3.3 Research questions

The central research questions to be investigated in the project are:

Can provision of (un)conditional income support in rural communities in the Global South achieve meaningful gains in both social development and ecosystem health? Under what circumstances can such a mechanism function most effectively?”

These main questions will be addressed through a series of transdisciplinary sub-research questions focused on the different aspects of the research to be conducted (see further below):

Sub RQ 1: Does provision of CBI deliver meaningful gains in human development and well-being?

Sub RQ2: How does provision of CBI influence participants’ relationships with the national park, fellow community members, and the surrounding environment?

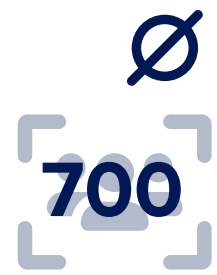
Sub RQ3: Does provision of CBI demonstrate significant benefits for biodiversity conservation?

4. Methods and approaches

Our transdisciplinary research integrates quantitative and qualitative components. The aim is to combine: 1) economic research entailing a randomized control trial (RCT) testing the extent to which conditionality influences livelihood and environmental outcomes in communities around Nyungwe National Park; 2) sociological research concerning this and the existing VNP project’s process and social and political impacts; and 3) ecological research assessing these project’s conservation consequences. Quantitative measures in both economic and ecological registers will thus be complemented by long-term ethnographic study by researchers embedded within target communities to develop rich qualitative understanding of how local people perceive the intervention and its impact on the community. Combined, this research will provide in-depth assessment of the potential for CBI to transform conservation policy and practice to address the current biodiversity crisis while simultaneously addressing rural poverty. To our knowledge, in relation to either PES or CTPs, such integrative research has not been attempted previously. Hence, the integrative approach developed via this project is innovative and will offer lessons for related research.

4.1 Design of the Randomized Controlled Trial (RCT)

The main quantitative analysis is based on a comparison of outcomes for participants in treatment villages to households from control communities, and by comparing local market products as well as forest patches nearby treatment villages to patches nearby control villages around Nyungwe National Park. Treatment groups will be divided between those receiving conditional and unconditional payments and between those who will get the full 100WEEKS Cash+ program and those who will only receive cash. Control in the RCT will be provided by similar communities not receiving project payments. The design of the RCT will look as follows:



1. 700 families get the complete 100WEEKS program including unconditional cash. Illegal activities in the park thus do not result in the removal from the program.
2. 700 families get the full 100WEEKS program, including conditional cash: illegal activities in the park result in the removal from the program.
3. 700 families get the program without training and savings groups, including only conditional cash: illegal activities in the park result in the removal from the program.
4. 700 families do not get the 100WEEKS program, but will be measured during the same period of time as a control group. These families will receive the full 100WEEKS program after the research has ended.

The implementation of the RCT will look as follows:

- Together with our partner African Parks we will construct a sample frame of villages to be included in the study. These are villages in the direct vicinity of the National Park or buffer zone (<2 km), at the lowest level of organization. These villages typically consist of 30-60 households.
- We will randomly assign these villages from the sample frame to either of the treatment groups or control group;
- Within treatment villages, 100WEEKS will select beneficiaries to participate in the project, based on requirements with respect to demographics and poverty status. We expect to select a few clusters with a substantial amount of households in the treatments arms.
- We will collect baseline data among all study participants (treatment and control group);
- After completion of the intervention (that is, after the 100 weeks intervention) we will collect midline data, and one year later we will collect endline data. These are data to be used for the livelihoods impact analysis, but certain household variables related to consumption of forest resources will also enter the analysis of impacts on conservation outcomes. Data for other conservation variables will be collected continuously, throughout the intervention and beyond, by our partner African Parks.

4.2 Power analysis

The minimum detectable effect size (MDE) that we are interested in picking up is 0,2 SD of the outcome variables. These are small or medium-sized impacts, of interest to 100WEEKS and African Parks when deciding about upscaling the intervention. Adopting a power level of 80% (beta = 0.8), an intra-cluster correlation coefficient of 0.1 (rho=0.1), and a significance level of 5% (alpha = 0.05), then a conservative assessment suggests we need approximately 70 clusters or villages (n=70) in our RCT and 40 households (or women) per cluster (N=2800). This power analysis is based on

existing data from the ongoing 100WEEKS intervention in north Rwanda (multidimensional poverty index scores).

4.3 Internal validity

Finally, we are not concerned about spillover effects. Within-village general equilibrium effects may materialize via local fuelwood, food, labour and land markets, but these will be captured by the survey and market-level data. Within-village effects do not jeopardize the internal validity of the study as control households are not located in the same village. Between-village effects are expected to be small, and possibly to occur via charcoal markets (as some charcoal is trafficked between villages in response to price differentials). We will measure these spillover effects, if they occur, and control for them in the econometric analysis. (Note that we have geo-locations of all villages in the sample and can compute between-village distances and transport costs).

4.4 Robustness and External Validity

We will explore the robustness of the analysis by conducting a second impact analysis, based on independent data from another region of Rwanda. The basis of this observational study is an ongoing intervention of 100WEEKS in northern Rwanda, near the Volcanoes National Park. We will use econometric techniques to explore the livelihood and conservation impacts of a bundled intervention in this area that is similar, but not identical, to the bundle introduced by 100WEEKS near Nyungwe. As in Nyungwe, the bundle offered in the North consists of a training program and the creation of VSLAs. Unlike the intervention in Nyungwe, however, this bundle contains only an unconditional cash transfer.

The intervention in northern Rwanda is currently implemented in targeted communities, and for several groups the cycle of training and transfers has been completed. Importantly, treatment villages were selected in a non-randomized fashion, introducing the risk of selection bias. We have access to the “waiting list” that 100WEEKS will use when upscaling their intervention, and the women within these villages that will enrol in the program later. Villages on the waiting list, and target participants therein (500 women), will serve as the control group or counterfactual for our impact study. Villages on the waiting list are very similar to villages that received treatment. We will use various matching techniques to create a credible counterfactual, and among other things will use the 2022 census data for matching purposes.

The context of the 100WEEKS intervention in the north differs from the context at Nyungwe in various respects; most notably soil quality (better in the north) and population density (higher in the north). Moreover, the intervention in the north is based on unconditional transfers and the intervention near Nyungwe also contains conditionality (related to illegal forest use). One should therefore exercise care when combining the results from these two studies, and attributing differences in impact to specific factors. Nevertheless, there are important advantages of combining the Nyungwe RCT with a cross-section observational study;

- Comparing the results across contexts speaks to the robustness and external validity of our findings, or the extent to which cash transfers are able to generate livelihood and conservation impacts, even if specific pre-existing conditions or factors are different. Comparing the results across contexts speaks to the degree to which results are generalizable beyond the case of agro-ecological production systems near Nyungwe;

- Since we use a mixed-methods design, where quantitative approaches are combined with anthropological methods to enhance our understanding of underlying dynamics and mechanisms, we will hopefully be able to explore to what extent soil quality, population density and conditionality matter for the results that we find.

4.5 Transdisciplinary Investigation

Building on this M&E of the cash transfer interventions, our research concerning the intervention's effectiveness and outcomes will be guided by the three subRQs informing the project.

Investigation of each SRQ will constitute a particular work package (WP) led by one of our three research domains (economics, sociology, ecology) yet incorporating all others for transdisciplinary integration. A fourth WP will synthesize the first three in addressing our overarching RQs.

SRQ1: Does provision of CBI deliver meaningful gains in human development and well-being? (WP1: Economics)

This question will be addressed primarily through M&E and survey data associated with the RCT intervention and the observational study in the north. Economic research will use validated but customized survey instrument modules to measure poverty status, full income, cash income, consumption (expenditures), dietary diversity, economic activities, women empowerment, education of children, economic assets, and durable consumer goods. It will entail baseline and endline measurement of environmental and livelihood outcomes, random assignment of communities to alternative treatments (transfers, conditional or unconditional), and a theory-informed effort to understand how the intervention affects outcomes (e.g., through changes in energy use or land use). This will be complemented by ethnographic research qualitatively assessing programme participants' perceptions of the programmes' effect on their well-being and quality of life. Finally, ecological research will assess the extent to which participants are still driven to enter the forest illicitly for livelihood needs.

SRQ2: How does provision of CBI influence participants' relationships with the national park, fellow community members, and the surrounding environment? (WP2: Sociology)

This question will be answered primarily by ethnographic research entailing participant-observation and semi-structured interviews both in communities receiving payments as well as those included in the RCT control group. This research will also include focus groups, with different groups from the target communities to uncover how they talk and perceive the project. We will have groups with only men and only women, as well as mixed focus groups. We will also conduct oral histories, and life interviews to capture the long-term changes in the relations between people and the forest. Finally, ethnoecological research techniques (e.g., free listing, pile sorting, transect walking) will be used to explore how people understand the relation between themselves and different nonhuman species. This ethnographic research will be complemented by M&E survey data entailing questions concerning respondents' attitudes towards the park and its management, as well as their valuation of natural resources both inside and outside the park.

SRQ3: Does provision of CBI demonstrate significant benefits for biodiversity conservation? (WP3: Ecology)

To address this question, we obtain proxies for conservation outcomes at three levels: (i) the household level (consumption of forest-based resources such as timber, fuelwood, charcoal, bushmeat, and forage/grass); (ii) the local market level (prices and quantities of these same forest-

based resources on the local village market), and (iii) the nearby forest patch. We are discussing with African Parks how to collect biodiversity data (all data collection in the park obviously needs full consent of African parks): camera traps and acoustic monitoring, data on the nature and prevalence of threats in and around the park (e.g., snares, tree cutting, mining) and directly test the behaviours underlying human-wildlife conflicts. Park authorities already systematically conduct standardized transect walks, where data on snares, carcasses, dung, human activity, etc is being collected digitally (on phone/tablet app) and published as summary data in their monthly newsletter. Based on an agreement with African Parks that is being finalised, we will have access to their full data bases with location and time specific information. In addition, we will have access to the parks' extensive set of camera traps and will expand on this, complemented by a network of automated acoustic monitoring systems with which we have long term experience. Furthermore, we will be discussing with African Parks how the research can include remote sensing approaches to quantify the habitat of the buffer zones and bordering park areas. We will be able to map these conflict-relevant data and determine the most likely underlying factors. Moreover, we will conduct direct observations and aim for behavioural interventions on selected key species, starting with olive baboons, determining how animal movement can be affected (conditional taste/location aversion). In addition, we aim at radio or GSP tagging individuals to follow their movements across space and time, applying our extensive expertise in this field. These ecological techniques will be complemented by both survey data and ethnographic entailing questions concerning resource use by those living around the park and other key stakeholders, to address the household and market levels of analysis and permit a synthesis of approaches.

4.6 Research Synthesis

The empirical work will be informed by a theoretical model. Building on Munyehirwe et al. (2022), we develop a village-level general equilibrium model where rural households allocate their time between resource extraction (for energy purposes), food production, and the production of “manufactures”. Markets for energy, food, manufactures and land clear locally. We will analytically solve for the village equilibrium and explore how that equilibrium “shifts” when a cash transfer program (or intervention bundle) is introduced. This will generate insights in winners and losers of the intervention (non-beneficiaries may lose out because of local inflation), and in aggregate production patterns. This theoretical model will be informed by empirical studies about the local general equilibrium effects of cash transfer programs (e.g. Angelucci and De Giorgi 2009; Cunha et al. 2019; Egger et al. 2021).

Key differences between the two empirical studies will be introduced in the model, and their implications will be explored analytically – differences in soil type enter through agricultural productivity and differences in population density enter through farm size. We will also calibrate the model, using information from the two empirical studies, to provide the basis for making “out of sample” predictions about the impact of a range of outside interventions on livelihood and conservation outcomes. We expect that the back-and-forth between theory and empirical results will yield insights in generalizable lessons about the impact of introducing cash transfer and training programs, or VSLAs, that will be useful for NGOs in general, and African Parks in particular, when considering the design and implementation of conservation and livelihood interventions.

Furthermore, the buffer zones around Nyungwe and Volcano National Park present unique opportunities to study the interaction between conservation, human activity, biodiversity and other park values. We will assess how the different buffer zones (plantations of different species (trees; bamboo vs. tea) affect animal movement patterns and access to resources. By focusing on problem species that raid local crops (baboons, vervets, chimpanzees, rodents) this will help clarify

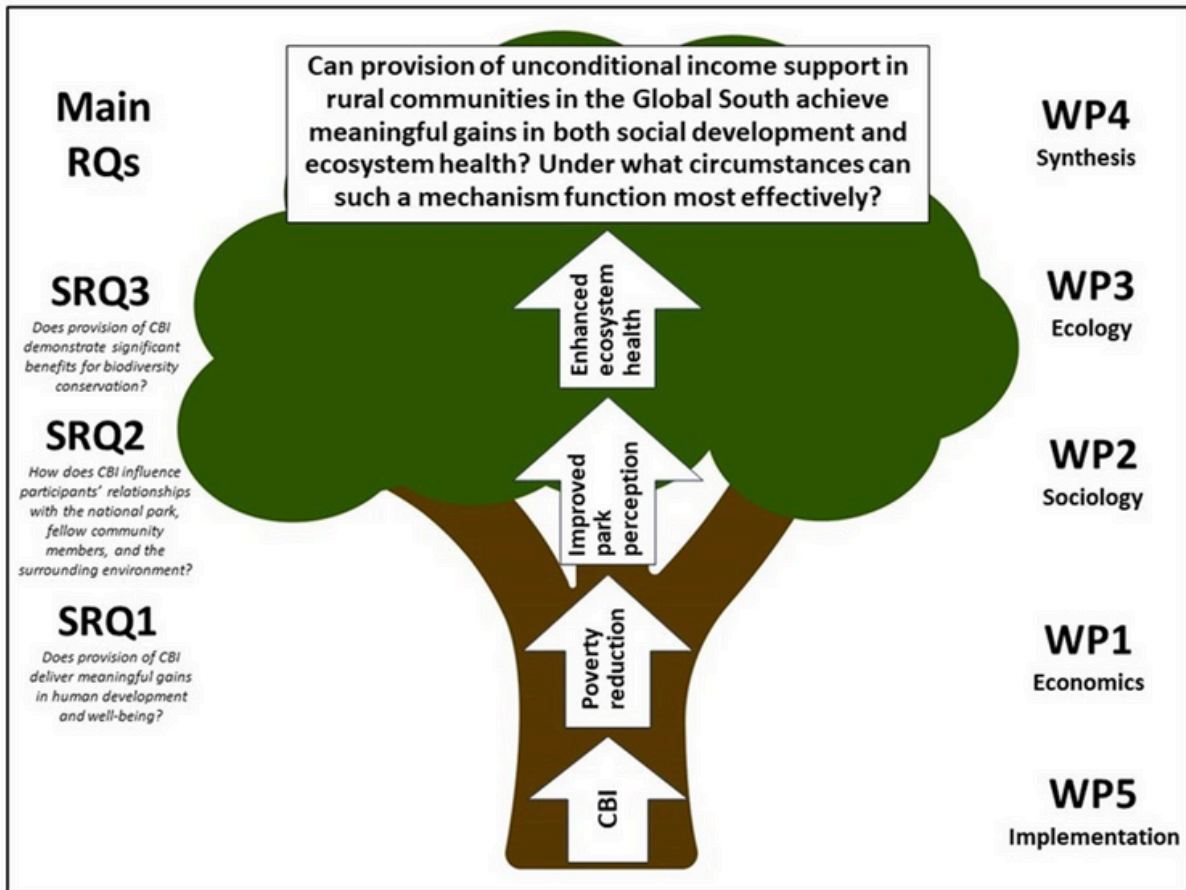


Figure 3: RCT Research Design

the role of the buffer areas in determining damage caused by animals. By integrating the answers, we can explore how choices around buffer zones and their design (e.g. species selection, spatial arrangement) can balance different objectives.

4.7 Time Frame

The project is planned to fit within 5 calendar years, beginning when funding is granted and finishing in December 2028. PhD candidates have been recruited so that they can collectively receive training at Wageningen University to be ready to conduct the research when the cash program starts. The 100WEEKS cash transfer program with communities living around Nyungwe National Park that serves as the central theme in this research project is scheduled to begin in May 2025 and finish April 2027.

5. Research budget

To conduct this unique research the consortium of 100WEEKS and Wageningen University & Research, supported by African Parks, are fundraising to cover all the costs involved in implementing the program and carrying out the research. The total budget of this randomised controlled trial is 4 million Euro.

The research costs are 1,4 million Euro which have been fundraised by Wageningen University & Research.

For the program implementation, a total amount of 2.6 million euros is needed. This is based upon the previously mentioned 3 treatment arms of each 700 participants.

Item	Units	Unit cost	Total
Cash transfers	2100	€ 800,00	€ 1.680.000,00
Operating costs program implementation incl. registration and onboarding	2100	€ 75,00	€ 157.500,00
Staff costs program implementation	2100	€ 79,00	€ 165.900,00
100 weeks training for women and set up VSLA	2100	€ 94,00	€ 197.400,00
Baseline, regular monitoring, endline, post program surveys, data cleaning, analysis and visualisation	2100	€ 67,00	€ 140.700,00
Total costs excl. indirect costs	2100	€ 1.115,00	€ 2.341.500,00
Indirect Costs (10% total budget)	2100	€ 125,00	€ 262.500,00
Total costs		€ 1.240,00	€ 2.604.000,00

References

- Alix-Garcia, J., McIntosh, C., Sims, K. R., & Welch, J. R. (2013). The ecological footprint of poverty alleviation: evidence from Mexico's Oportunidades program. *Review of Economics and Statistics*, 95(2), 417-435.
- Angelucci, M. and G. De Giorgi. (2009). "Indirect Effects of an Aid Program: How Do Cash Transfers Affect Ineligibles' Consumption?" *American Economic Review* 99 (1): 486–508.
- Ansoms, A. (2009). *Faces of rural poverty in contemporary Rwanda: Linking livelihood profiles and institutional processes*. Universiteit Antwerpen, Faculteit Toegepaste Economische Wetenschappen.
- Ansoms, A. (2010). Views from below on the pro-poor growth challenge: The case of rural Rwanda. *African Studies Review*, 53(2), 97-123.
- Bregman, R. (2017). *Utopia for realists: And how we can get there*. New York: Bloomsbury Publishing.
- Büscher, B., Dressler, W., Fletcher, R. (Eds.). (2014). *NatureTM Inc.: Environmental Conservation in the Neoliberal Age*. University of Arizona Press, Tucson, AZ.
- Buscher, B., & Fletcher, R. (2020). *The conservation revolution: radical ideas for saving nature beyond the Anthropocene*. London: Verso Books.
- Clay, N. (2018). Seeking justice in Green Revolutions: Synergies and trade-offs between large-scale and smallholder agricultural intensification in Rwanda. *Geoforum*, 97, 352-362.
- Cunha, J., G. De Giorgi, and S. Jayachandran. (2019). "The Price Effects of Cash Versus In-Kind Transfers." *Review of Economic Studies* 86 (1): 240–81.
- de Lange, E., Sze, J. S., Allan, J., Atkinson, S., Booth, H., Fletcher, R., ... & Saif, O. (2023). A global conservation basic income to safeguard biodiversity. *Nature Sustainability*, 1-8.
- Dunlap, A., & Sullivan, S. (2020). A faultline in neoliberal environmental governance scholarship? Or, why accumulation-by-alienation matters. *Environment and Planning E: Nature and Space*, 3(2), 552-579.
- Dyngeland, C., Oldekop, J. A., & Evans, K. L. (2020). Assessing multidimensional sustainability: Lessons from Brazil's social protection programs. *Proceedings of the National Academy of Sciences*, 117(34), 20511-20519.
- Egger, D., J. Haushofer, E. Miguel, P. Niehaus, and M. Walker. (2021). "General Equilibrium Effects of Cash Transfers: Experimental Evidence from Kenya." *Econometrica* 90 (6): 2603–43.
- Ferraro, P. J., & Simorangkir, R. (2020). Conditional cash transfers to alleviate poverty also reduced deforestation in Indonesia. *Science Advances*, 6(24), eaaz1298.
- Fletcher, R. (2023). *Failing Forward: The Rise and Fall of Neoliberal Conservation*. Oakland, CA: Univ of California Press.
- Fletcher, R., & Büscher, B. (2017). The PES conceit: Revisiting the relationship between payments for environmental services and neoliberal conservation. *Ecological Economics*, 132, 224-231.
- Fletcher, R., & Büscher, B. (2020). Conservation basic income: A non-market mechanism to support convivial conservation. *Biological Conservation*, 244, 108520.
- Gross-Camp, N. D., Martin, A., McGuire, S., & Kebede, B. (2015). The privatization of the Nyungwe National Park buffer zone and implications for adjacent communities. *Society & Natural Resources*, 28(3), 296-311.
- Hanlon, J., Barrientos, A., & Hulme, D. (2012). *Just give money to the poor: The development revolution from the global South*. London: Kumarian Press.

- Imanishimwe, A., Niyonzima, T., & Nsabimana, D. (2018). Contribution of community conservation and ecotourism projects on improving livelihoods and sustainable biodiversity conservation in and around Nyungwe national park (NNP). *Journal of Tourism and Hospitality*, 7(363), 2167-0269.
- Malan et al. (2023). Evaluating the impacts of a large-scale voluntary REDD+ project in Sierra Leone. *Nature Sustainability*, In Press.
- Malerba, D. (2020). Poverty alleviation and local environmental degradation: An empirical analysis in Colombia. *World development*, 127, 104776.
- Munanura, I. E., Backman, K. F., Hallo, J. C., & Powell, R. B. (2016). Perceptions of tourism revenue sharing impacts on Volcanoes National Park, Rwanda: A Sustainable Livelihoods framework. *Journal of Sustainable Tourism*, 24(12), 1709-1726.
- Munanura, I. E., Backman, K. F., Sabuhoro, E., Powell, R. B., & Hallo, J. C. (2018). The perceived forms and drivers of forest dependence at Volcanoes National Park, Rwanda. *Environmental Sociology*, 4(3), 343-357.
- Munyehirwe, A., J. Peters, M. Sievert, E.H. Bulte and N. Fiala (2022). Energy efficiency and local rebound effects: Theory and experimental evidence from Rwanda. *Ruhr Economic Papers #934*.
- Marijnen, E. (2017). The 'green militarisation' of development aid: the European Commission and the Virunga National Park, DR Congo. *Third World Quarterly*, 38(7), 1566-1582.
- Martin, A., Gross-Camp, N., Kebede, B., & McGuire, S. (2014a). Measuring effectiveness, efficiency and equity in an experimental Payments for Ecosystem Services trial. *Global Environmental Change*, 28, 216-226.
- Martin, A., Gross-Camp, N., Kebede, B., McGuire, S., & Munyarukaza, J. (2014b). Whose environmental justice? Exploring local and global perspectives in a payments for ecosystem services scheme in Rwanda. *Geoforum*, 54, 167-177.
- Miller, A., Judge, D., Uwingeneye, G., Ndayishimiye, D., & Grueter, C. C. (2020). Diet and use of fallback foods by Rwenzori black-and-white colobus (*Colobus angolensis ruwenzorii*) in Rwanda: implications for supergroup formation. *International Journal of Primatology*, 41, 434-457.
- Mumbunan, S. et al. (2021). Basic Income for Nature and Climate: On the first Basic Income proposal to conserve nature and combat climate change on the largest tropical island on Earth. Depok, Indonesia: Research Center for Climate Change Universitas Indonesia.
- Nature Needs More. (2018). Basic Income Trial to Reduce Wildlife Poaching. Melbourne, AU: NNM.
- Peck, J., & Theodore, N. (2015). *Fast policy: Experimental statecraft at the thresholds of neoliberalism*. U of Minnesota Press.
- Pena, P. (2014). *The Politics of the Diffusion of Conditional Cash Transfers in Latin America*. Brooks World Poverty Institute Working Paper No. 201. University of Manchester.
- Pirard, R. (2012). Market-based instruments for biodiversity and ecosystem services: A lexicon. *Environmental science & policy*, 19, 59-68.
- Ravenelle, J., & Nyhus, P. J. (2017). Global patterns and trends in human–wildlife conflict compensation. *Conservation biology*, 31(6), 1247-1256.
- Rønningstad, S. H., & Jelsness, T. S. (2020). Poverty alleviation and deforestation in Brazil: empirical evidence from the Bolsa Escola/familia program: a difference-in-difference analysis of how increased income affects deforestation in Brazilian municipalities. Master's thesis, Norwegian School of Economics, Bergen.
- Rwanda Development Board (RDB). (2022). 2022 Annual Report. Kigali: RDB.

- Sabuhoro, E., Wright, B., Munanura, I. E., Nyakabwa, I. N., & Nibigira, C. (2021). The potential of ecotourism opportunities to generate support for mountain gorilla conservation among local communities neighboring Volcanoes National Park in Rwanda. *Journal of Ecotourism*, 20(1), 1-17.
- Sheehan, C., & Martin-Ortega, J. (2023). Is conservation basic income a good idea? A scoping study of the views of conservation professionals on cash giving programmes. *Biological Conservation*, 279, 109914.
- Standing, G. (2017). *Basic income: And how we can make it happen*. London: Penguin UK.
- Stem, C. J., Lassoie, J. P., Lee, D. R., Deshler, D. D., & Schelhas, J. W. (2003). Community participation in ecotourism benefits: The link to conservation practices and perspectives. *Society & Natural Resources*, 16(5), 387-413.
- van Kooten, G.C., and E.H. Bulte. (2000). *The Economics of Nature: Managing Biological Assets*. London: Blackwell.
- Vandermeer, J., & Perfecto, I. (2013). *Breakfast of biodiversity: The political ecology of rain forest destruction*. New York: Food First Books.
- Wilebore, B., Voors, M., Bulte, E. H., Coomes, D., & Kontoleon, A. (2019). Unconditional transfers and tropical forest conservation: Evidence from a randomized control trial in Sierra Leone. *American Journal of Agricultural Economics*, 101(3), 894-918.
- World Bank. (2018). *The State of Social Safety Nets 2018*. Washington, DC: World Bank Group.