

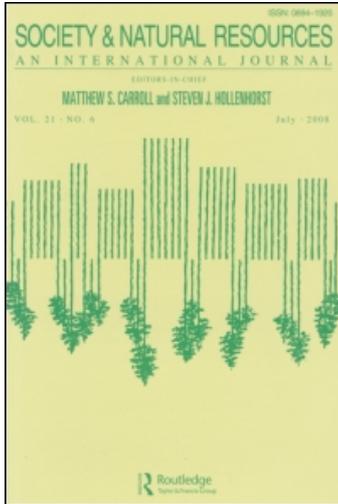
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### Linking Development Interventions to Conservation: Perspectives From Partners in the International Gorilla Conservation Programme

Adrian Martin<sup>a</sup>; Eugene Rutagarama<sup>b</sup>; Maryke Gray<sup>b</sup>; Stephen Asuma<sup>b</sup>; Mediatrice Bana<sup>b</sup>; Augustin Basabose<sup>b</sup>; Mark Mwine<sup>b</sup>

<sup>a</sup> School of International Development, University of East Anglia, Norwich, United Kingdom <sup>b</sup>

International Gorilla Conservation Programme, Kigali, Rwanda

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# Linking Development Interventions to Conservation: Perspectives From Partners in the International Gorilla Conservation Programme

ADRIAN MARTIN

School of International Development, University of East Anglia,  
Norwich, United Kingdom

EUGENE RUTAGARAMA, MARYKE GRAY,  
STEPHEN ASUMA, MEDIATRICE BANA,  
AUGUSTIN BASABOSE, AND MARK MWINE

International Gorilla Conservation Programme, Kigali, Rwanda

*The disappointing performance of integrated conservation and development projects has been partly blamed on the lack of linkage between the development intervention and the expected conservation outcome, resulting in projects that rarely achieve the sought-after “win-win” outcomes. While this study replicates findings about the difficulties of establishing successful linkages, it also seeks to go beyond problem identification, by evaluating responses initiated within a long-term conservation initiative, the International Gorilla Conservation Programme, that has since 1991 worked with communities as part of its efforts to protect mountain gorillas and their habitats. The principal lesson that emerges from interviews with IGCP partner organizations relates to the benefits of a “conservation logic” in which conservation and development outcomes are linked through mutual dependence but also contractual conditionality.*

**Keywords** Albertine Rift, community conservation, conservation enterprise, Democratic Republic of Congo, integrated conservation and development, protected areas, Rwanda, Uganda

The belief that conservation and poverty alleviation should be addressed in tandem has proved appealing to a wide range of stakeholders because of the promise of conservation effectiveness while avoiding the moral hazard of being anti-poor. However, the performance of integrated conservation and development projects (ICDPs) has widely been reported as disappointing (Brandon and Wells 1992; Wells et al. 1999;

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Address correspondence to Adrian Martin, School of International Development, University of East Anglia, Norwich, NR4 7TJ, United Kingdom. E-mail: [Adrian.martin@uea.ac.uk](mailto:Adrian.martin@uea.ac.uk)

Hulme and Murphree 2001; Wells and McShane 2004). The case for pursuing conservation through development has included arguments that development interventions reduce dependence on park resources (Cavendish 2000; Masozera and Alavalapati 2004); incentivize conservation-oriented behavior (Ferraro 2001); enable local people to integrate longer term concerns into their decision making (Moseley 2001); and spread goodwill toward the park (Barrow and Murphree 2001). In light of poor performance, these reasons and their underlying assumptions have come under more critical scrutiny. Regarding subsidies for agriculture, one of the most common development interventions used in ICDPs, there is, at best, no clear logic to explain why such interventions should lead to conservation (Brandon and Wells 1992; Salafsky and Wollenberg 2000); at worst, such interventions could incentivize forest clearance by making agriculture a more profitable land use relative to forest (Wunder 2001; Ferraro 2001; Ferraro and Simpson 2005).

This article contributes to this strand of ICDP literature that poses critical questions about the mechanisms for establishing linkages between development interventions and conservation objectives. The article goes beyond the existing critique by seeking to learn from recent efforts to improve upon the disappointing performance of early ICDP efforts. It addresses the question of the potential for conservation and development programs to learn from past experience and design initiatives that better link conservation and development objectives. In answering this question, we generate derivative questions about monitoring and scale: First, how can strong monitoring and information systems improve linkage between conservation and development objectives? Second, is community-level integration of conservation and development objectives facilitated by management systems that are integrated at landscape scale?

We address these questions through a case study of the International Gorilla Conservation Programme (IGCP), which operates in and around four national parks. Three contiguous parks make up the Virunga Massif forest block: Parc National des Virunga (PNVi) in Democratic Republic of Congo (DRC); Parc National des Volcans (PNV) in Rwanda; and Mgahinga Gorilla National Park (MGNP) in Uganda. The fourth is 30 km to the north, the Bwindi Impenetrable National Park (BINP) in Uganda. These parks protect remaining fragments of montane rainforest considered of high conservation priority due to their species richness and endemism (Plumptre et al. 2003). PNVi and PNV were formed in 1925 and 1929, respectively. MGNP and BINP were given forms of protective designation in the early 1930s, but only became national parks in 1991, leading to loss of resources for some local people and resentment (Hamilton et al. 2000; Blomley 2003; Adams and Infield 2003). The protection of mountain gorillas, despite the difficult circumstances of poverty and conflict, is widely regarded as a conservation success, albeit a fragile one (Kalpers et al. 2003; McNeilage et al. 2006).

## Methods

Given that we are interested in *responses* to the early disappointment with ICDPs, we mostly concentrate our analysis on IGCP initiatives introduced since 2000. This analysis takes an institutional approach, interpreting individual behavior as a response to the human-made constraints that frame their decisions (Parsons 2007). The institutions of interest here are formal public and private organizations and less

formal norms and customs. We pay particular attention to those institutional settings that constrain economic rules of the game and that may be considered as determinants of economic decision making.

The research was led by an independent researcher from the University of East Anglia alongside IGCP co-investigators. The IGCP team members served roles both as research respondents and as investigators, an arrangement requiring measures to avoid bias. First, all primary data collection (interviews) was undertaken by the academic researcher, not by IGCP staff members. Second, during data analysis, the data from non-IGCP respondents were always available for comparison with those of IGCP respondents, thus allowing reflection on different perceptions of the same phenomena.

The main data collection method was qualitative interviews carried out in 2008 with 62 purposively selected representatives from key implementation partners. There were two main reasons for targeting IGCP's partners: First, previous research had already surveyed local people but not conservation professionals (e.g., Blomley 2003; Baker 2004; Plumpton et al. 2004), and second, these stakeholders have a depth of experience that we expected to shed light on the research questions. Respondents included members of IGCP itself, members of the three park authorities, including directors, chief wardens, wardens, and rangers, and representatives from a range of partner nongovernmental organizations (NGOs) and community-based associations. Interviews were qualitative, beginning with respondents describing in detail their role in community conservation work and then identifying and exploring their perceptions of strengths and weaknesses of IGCP's community-based operations. Data analysis was largely inductive, as befits a case-study approach. Following an initial reading of interview transcripts, a system of coding was employed to organize the data and ultimately to identify emergent lessons and to abstract data associated with these.

## Results

### *Is It Possible to Design Community Development Initiatives That Are Sufficiently Well Linked to Conservation Objectives to Enable Win-Win Outcomes?*

While using a variety of descriptive terms, respondents frequently referred to what we call the "conservation logic" of a project: that component of project design that should in principle promote conservation-oriented behavior. For example, one of IGCP's development interventions has been the provision of water tanks. Some of these projects have a conservation logic because the new water source provides an acceptable alternative to people who previously entered the forest to collect water. Some, however, have a less discernable conservation logic, where the community never relied on entering the park for water in the first place. In the latter case, the water facility may be an excellent development project and desirable in its own right—but it may not have a conservation outcome. Our analysis of IGCP practice identifies three principal forms of conservation logic. The first of these we find to be weak when operating in isolation. The second and third are potentially stronger, but in practice will also benefit from use in combination.

*1. Income-Demand Function.* This conservation logic is widely employed, but we find little evidence that it links development to conservation in practice. At its heart is the assumption that income growth leads to reduced demand for natural resources,

as popularized through influential international documents such as the Brundtland report (WCED 1987). We propose that this is a weak form of conservation logic due to the assumptions made by proponents. We list three assumptions here and then proceed to explain why they are problematic.

- First, it builds on an untested assumption that people have a finite need for “inferior goods” gathered from forests. If projects can help people to meet this required resource level from activities outside the park, demand will decline. So, for example, if people earn enough money to buy meat in markets, they will not need to go poaching.
- Second, it assumes that people are time-constrained and have to allocate and prioritize their labor. When out-of-park activities are subsidized, they will therefore switch their time allocation away from in-park activities.
- Third, for the preceding two assumptions to hold, it must also be assumed that substitution between resources is possible. If you don’t poach, you buy meat at a market; if you don’t collect bamboo from the forest, you buy alternative poles at a market. Markets enable people to specialize in out-of-park activities such as agriculture and use the derived income to purchase substitutes for forest-based resources.

One relevant example of the income-demand conservation logic is the “fuel ladder hypothesis,” which states that rising income reduces demand for “lower order” fuels such as forest wood, and increases demand for “higher order” fuels such as charcoal, gas, or electricity (Barnes and Floor 1996; Arnold et al. 2003). The switch is based on the perceived inferiority of wood fuel. Where income generating opportunities improve, it makes less sense to allocate labor time to forest collection and better sense to purchase alternatives in local markets. The weakness with this conservation logic is that the assumptions don’t always hold. The poorest people living around the Virunga massif are not the only ones to use forest resources and demand is not entirely dependent on wealth. For example, the quality of some bush meat is noted, and likewise bamboo is sometimes observed to be a superior roofing material. In other words, some forest resources behave like “normal” rather than “inferior” goods. Furthermore, in this area, markets for both resources and labor are imperfect, a problem for resource and labor switching anticipated by Ferraro (2001). Overall, we must be aware that the relationship between poverty and resource use can vary substantially, even across relatively small geographical areas. For example, respondents consistently reported that poaching around the Volcanoes National Park in Rwanda is largely (though not exclusively) undertaken by very poor people, and this is largely for the subsistence economy. In this area, we can be fairly confident that bush meat behaves as an inferior good. Across the border in DRC, however, less is known about the profile of poachers, and demand for bush meat is also affected by stronger markets owing to the number of soldiers in the parks and the vicinity of a large town (Goma).

2. *Physical Dependence.* Some forms of income-generating activities are tied to successful conservation. As a rule of thumb, if income from an activity would decline as a direct result of forest degradation (e.g., beekeeping or ecotourism), it falls into this category. The level of dependence can vary considerably. Ecotourism, for example, relies on fairly strong protection of ecosystem functions and services, and may even rely upon biodiversity itself, or upon the achievement of the principal goal (in this case gorilla conservation). Beekeeping on the other hand may be less

vulnerable to changes in the natural flora at the local scale (Steffan-Dewenter et al. 2002), unless marketing is contingent on some form of protective eco-certification.

The use of this type of conservation logic may only aid the design of effective projects where sufficient income can be derived from the conservation-dependent activity, that is, where the benefits are enough to tip the balance between choosing to behave in ways that degrade the park and ways that conserve it. Beekeeper associations interviewed in DRC and Rwanda report that interventions to assist with quality control and marketing have led to higher prices (currently \$2 per kilogram) for refined honey sold through cooperatives. A typical beekeeper in the Rwandan *Forum des Apiculteurs des Volcans* (FAV) was reported to have 6 traditional hives producing an average of 10 kg per year each. The addition of a single modern hive can add another 40 kg per year, making a total return of \$200. This is believed to be reducing the demand for collection of wild honey, which park authorities consider a threat to the forest. In DRC we found a more mixed picture, owing to the difficulties of sustaining economic enterprise amid the looting and population movement arising from continued war (fortunately, the situation has improved during 2009).

IGCP and its predecessor, the Rwandan-based Mountain Gorilla Project, played a key role in the introduction of gorilla tourism in the region. Against considerable opposition, it was argued that the generation of income should be an important part of the strategy to prevent the conversion of forest to agriculture (Weber and Vedder 2001). The argument for income generation was largely about changing government attitudes to forests, but also about raising the income of forest-adjacent populations. With the latter in mind, IGCP initially helped to advocate for revenue sharing in Uganda, and later in Rwanda. The Ugandan scheme was piloted in 1994 and then a less generous scheme was institutionalised within the Uganda Wildlife Statute in 1996, distributing approximately US\$47,000 in 1996, rising to US\$71,000 in 2006. In Rwanda, a similar scheme launched in 2005, distributing US\$29,000 that year and US\$136,500 the following year. While ecotourism's sustainability is indeed dependent on park conservation, the authorities in Rwanda who operate this scheme report two concerns about this conservation logic. First, the selection of projects to fund with this money is driven by district officials who select social infrastructure projects such as roads and health care centers. The concern expressed with such projects is that they are less valued by the poorest than by others in the community. More significantly, perhaps, beneficiaries are not always aware of the link between these projects and tourism and conservation. Where this link is not well understood, there can be no perception that income is dependent on conservation, and therefore the only available conservation logic is the basic income-demand one. Second, the park authority is concerned that the decisions made by local government do not always ensure distribution of benefits to the poor, and thus the income-demand conservation logic is itself undermined.

Previous studies have tended to conclude that this type of conservation logic is most likely to link and integrate conservation and development (Brandon and Wells 1992; Salafsky and Wollenberg 2000). IGCP's experience with beekeeping, as well as with water provision and tourism enterprises, suggests that this logic is a necessary but often not a sufficient form of linkage, as we now discuss.

*3. Contractual Obligation.* Contracts that make benefits contingent upon performance are increasingly used as conservation tools and there is a considerable current research effort to understand the effectiveness of contracts in systems of

payments for ecosystem services (Wunder et al. 2008; Milne and Niesten 2009). When projects are not physically dependent on biodiversity conservation, or when it is difficult to communicate such dependence, it is possible to introduce some contingency to the provision of support, such that a form of dependence is established. For example, IGCP has supported mushroom culture, an activity that is not physically dependent on forest conservation but, in principle, could be made so through a contract that made support contingent upon performance of certain conservation duties. Contracts can be formal; for example, IGCP's support for the ecotourism lodges includes environmental obligations in a legal contract. They can also be informal, as in the objectives contained in a strategic plan developed with the FAV beekeepers' association. A contract can be defined as anything that clearly establishes *why* the benefit is being provided and *what* is expected in return for this provision.

The lesson from IGCP's experience is that "physical dependence" and "contractual obligation" can be combined to improve development–conservation linkage. Many of IGCP's community enterprises are either partly dependent on conservation of intact ecosystems (e.g., beekeeping), or wholly dependent on conservation (e.g., ecotourism). However, dependence of an activity on biodiversity conservation is often backed up by explicit forms of contingency: You will receive this development support *if and only if* you agree to provide this support for conservation. For example, support for beekeeping outside the forest is contingent on beekeepers removing hives from inside the park, ceasing collection of wild honey, and excluding active poachers (though not ex-poachers) from being beneficiaries. Community tourism lodges provide a similar example. Ecotourism is clearly dependent in the long term on the conservation of mountain gorillas and their habitats, but this logic is—for example, in the case of the Nkuringo eco-lodge—backed up by a formal contract that contains provisions such as the requirement for all parties to endeavor to conserve the forest. What should also be apparent is that these two forms of conservation logic are also aligned with the income–demand logic because all of these initiatives seek sustainable enhancement of income. The limitation of introducing contingency is that it requires monitoring in order to support its enforcement. We now consider the broader contribution that monitoring data makes to IGCP's ability to link conservation and development using the mechanisms discussed.

### ***How Can Monitoring Systems Support Improved Linkage Between Conservation and Development Objectives?***

IGCP supported the design and introduction of ranger-based monitoring (RBM) in DRC in 1997 and in Rwanda and Uganda in 1998. While it is primarily a tool to monitor wildlife and to support law enforcement, it has recently been used to assist with targeting of community conservation interventions. There are a number of examples of the use of georeferenced RBM data to target community conservation initiatives in ways that ensure they are driven by a conservation logic. First, ranger data identified locations where many people were using the park during the dry season for water collection. These locations then became priorities for provision of alternative supplies. Second, identification of locations with high densities of beehives in the park provided a rationale to support beekeeper associations. Third, following human–gorilla conflict in the Nkuringo area of Bwindi, the location of nests was mapped, identifying gorilla movements outside of the park boundary. This led to prioritization of land use changes such as crops that are less susceptible to gorilla

foraging and to prioritization of the already-mentioned ecotourism lodge to increase economic benefits from the park.

While many respondents recognize the potential to use RBM to prioritize, design, and monitor community projects, it is recognized that this potential is not yet fully realized. Currently, RBM is not geared toward enforcement of contingent behaviors detailed in formal and informal agreements, although plans to monitor socioeconomic indicators, in addition to threats to the park, are likely to improve the future capacity to do this. Enforcing contingencies would also benefit from efforts to make the monitoring of threats more systematic, for example, by monitoring randomly selected transects. While this would strengthen the credibility of evidence for changes in park use behavior, conservation authorities and NGOs have to consider the costs associated with such a shift from more opportunistic sampling, which is often driven by tip-offs and which may be more cost-efficient for immediate law enforcement objectives.

### ***In What Ways Is Community-Level Conservation Logic Supported by Cross-Scale Conservation Management?***

While community-level learning and intervention are critical for conservation, linkages across institutional scales are also vital (Berkes 2004). The following analysis identifies some common scale-related problems for community conservation and provides examples of how these have been addressed in the Virunga-Bwindi region.

*Mismatch Between Local Priorities and National Institutions.* As is well established in literature, work with local communities can be frustrated by poorly aligned or inadequate national legal or policy provisions (Martin and Lemon 2001). For example in the past, the need to link gorilla conservation with local livelihoods was not supported by policy frameworks that enabled local people to benefit financially from gorilla tourism. As previously stated, IGCP advocacy at the national level, with its logistical support for revenue sharing, was intended to help align national institutions with priorities to support local livelihoods. A second example is law enforcement. IGCP has brokered a formal understanding and established a Transboundary Core Executive, paving the way for more effective landscape level law enforcement. While this may seem remote from community interests, the two are in fact closely linked. Communities typically value law enforcement, as rules are essential to the functioning of local institutions (Gibson et al. 2005) and because they increasingly find themselves with (informal) responsibilities to help reduce illegal activities. As several respondents suggested, communities can become disenchanted when they see perpetrators escape across borders due to lack of transboundary collaboration.

*Mismatch Between the Scale at Which a Problem Presents Itself and the Scale at Which Intervention Is Required.* Community conservation has often suffered from the fact that local management cannot deal with large-scale problems or problems that require wide networks (Poteete and Ostrom 2001; Rutagarama and Martin 2006). This kind of conservation problem can often be compounded by problems of information—where information is collected at an inappropriate scale and cannot shed light on the problem. For example, in the Virunga massif, an increase in human conflicts with elephants and buffalo was reported in DRC, Rwanda, and Uganda.

These problems initially appeared as discrete events that required community-level responses. However, communication among rangers established a likely association between these events. For security reasons, the Mwaro corridor between Mikeno and Nyamulagira sectors in DRC had been deforested, cutting off normal migration routes and leading to unprecedented crop raiding by elephants (Gray and Kalpers 2005). Cross-scale partnership had enabled information to be analyzed at a scale that matched the scale of the conservation–development problem.

*Mismatch Between Location of Costs and Benefits of Conservation.* Costs such as crop raiding tend to be felt locally, while some of the greatest benefits from conservation (biodiversity, carbon storage, hydrological services) are enjoyed at a range of scales up to the global (Adams et al. 2004). Thus, work with communities can benefit from institutional mechanisms that create “bridges” across scales. Bridging institutions can help with the sharing of information and other resources (Cash et al. 2006). For example, in 2005 IGCP brokered a transboundary agreement for sharing tourism income between countries to reflect the roving nature of the resource and to reduce the tensions that previously arose when gorillas crossed borders. The conservation dividends from this arrangement are already showing. For example, in September 2008, a group of habituated gorillas crossed from Bwindi in Uganda to an adjacent forest reserve in DRC, causing concern due to the prevalence of hunting snares in the location. However, under the current momentum toward transboundary collaboration, both the institutional framework and the interpersonal relationships between park staff help to make it acceptable for Ugandan rangers to cross the border and to monitor the gorillas, enabling cooperative resolution of the problem. Importantly, arrangements at the transboundary scale can provide some resilience to the unpredictability of both nature and society, making revenue sharing more stable in all countries, as evidenced by the fact that DRC has in recent years received revenue from gorilla tourism despite the fact that war in North Kivu prevented gorilla tourism in PNVI up until 2009.

While international agreement has institutionalized gorilla tourism benefit sharing between states, the distribution of benefits within and between local communities proves difficult. On the one hand, the nature of benefits from park-dependent activities is only ever likely to make a minor contribution to social development and this will fall directly on relatively few individuals: Only a small minority will work in IGCP tourism operations or make a living from IGCP supported associations for handicrafts, mushroom cultivation, or beekeeping. Most of those working in mountain gorilla conservation acknowledge this constraint, accepting that parks in such a densely inhabited location cannot be expected to provide the principal economic dynamic for adjacent populations. However, while mainly accepting the limitations of park-based income generation, there remains a concern about who benefits and who does not, especially where it is perceived that the most vulnerable people are not among the minority who benefit most. This is a concern that we previously expressed in connection with the state-managed revenue-sharing systems. Gorilla tourism revenue is also distributed to communities through IGCP’s public–private partnership arrangements for eco-lodge operations in Uganda and Rwanda. The first eco-lodge was constructed at the base of Mt. Sabyinyo, PNV, and opened for business in August 2007. The lodge is owned by the Sabyinyo Community Livelihoods Association (SACOLA), which has granted a 15-year lease to a private company to operate the business. The Kenyan

company Musiara Ltd. is contracted to pay a “bed-night fee” of \$50 plus 7.5% of income. Between August 2007 and February 2008, SACOLA received US\$34,500. Another “community lodge” was completed in late 2008 at Nkuringo and is operated by Uganda Safari Company. The greatest challenge for these partnership enterprises, in terms of ensuring benefit sharing, will be to ensure that local government and other relatively powerful interests do not obstruct pro-poor uses of income. IGCP and its partners are acutely aware that failure to “get the institutions right” in this respect could undermine any of the conservation logics that underpin its project designs.

## Conclusions

The ability to link development interventions to conservation outcomes (the conservation logic) appears to be strongest where development outcomes are dependent in the long term on successful conservation. This finding partly agrees with earlier work such as Brandon and Wells (1992) and Salafsky and Wollenberg (2000), but we also cite examples of IGCP projects that show that while this logic may be an important design component for linking conservation and development, it may not be a sufficient one. One solution is to combine it with contractual linkages that render development benefits contingent on the expectation of certain conservation duties. In contexts where it is possible to achieve this combination of linkage mechanisms, there appears to be scope to design “win-win” projects—though we stress the significance of context and do not present this as a blanket solution. One of the important contexts in the IGCP case is the capacity to collect and analyze ranger data relevant for identifying, designing, and monitoring community conservation projects across a range of scales. For conservation practitioners without such extensive involvement in monitoring it might be possible to explore collaboration that could enrich the information base upon which community interventions are designed. Another context that we have argued to be significant is the linkage across scales of analysis and intervention. Conservation and development costs and benefits accrue at different scales, typically with costs borne locally while benefits are enjoyed at higher scales. Linking conservation and development requires policies and institutions (transboundary collaboration, revenue sharing, social protection) that can serve to reconcile such asymmetries.

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