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Impacts of REDD+ through a local lens

Perspectives on well-being in the Peruvian Amazon

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Key messages

- As one of the leading countries in efforts to reduce greenhouse gas (GHG) emissions from land use, Peru has established a regulatory framework for compensation for emissions reductions through carbon markets.
- Compensation for emissions reductions through mechanisms such as REDD+ can potentially affect the economic and social well-being of the forest-dependent communities that are part of REDD+ projects.
- To assess the implications of REDD+ for local well-being, it is essential to understand local perspectives about what constitutes well-being and how REDD+ has affected it.
- In two REDD+ sites in the Peruvian Amazon, there is consensus that education and health are key dimensions of local well-being. The importance of other dimensions varies across groups, with more pronounced differences between sociocultural groups (rural vs. indigenous populations) than between genders (male-dominated vs. female groups).
- REDD+ did not have a consistent impact on locally identified dimensions of well-being. However, we found a negative impact on subjective well-being at one site, possibly due to a lack of transparency and unmet expectations around local benefits.

Introduction

"Reducing emissions from deforestation and forest degradation, the sustainable management of forests, and the conservation and enhancement of forest carbon stocks in developing countries", or REDD+, is a key strategy to mitigate global climate change. In addition to conserving and improving forest carbon stocks, it is expected to contribute to biodiversity protection, better forest governance, poverty reduction, and local well-being. In particular, REDD+ must support local livelihoods in return for the participation of local stakeholders in forest conservation (Larson et al. 2013; Sills et al. 2014). Many challenges and controversies have emerged with implementing REDD+ on the ground.

In response to concerns about the possible negative impacts of REDD+ on local livelihoods, the United Nations Framework Convention on Climate Change (UNFCCC) implemented REDD+ safeguards in parallel with certification requirements for REDD+ projects under voluntary carbon offset systems. The safeguards, adopted at the 16th Conference of the Parties (COP16) of the UNFCCC in 2010, call for implementation of REDD+ to be consistent with conserving natural forests and enhancing other social and environmental co-benefits (Sills et al. 2017). This presents the challenge of defining, measuring, and evaluating the impact of REDD+ on these co-benefits.

To implement REDD+ safeguards effectively, it is essential to understand how local people judge co-benefits, i.e., their perspectives and priorities regarding well-being. Because these perspectives may be highly variegated, we propose inclusive approaches to develop more effective REDD+ interventions. We demonstrate these approaches in two REDD+ project sites in Peru, where forests provide a range of products and services that generate income and support the well-being of the regional population (FAO and UNEP 2020).

As a leader in reducing GHG emissions from land use to mitigate climate change, Peru can offer valuable insights to other countries designing and implementing REDD+ initiatives (Peña and Sarmiento 2022). Peru has participated in national REDD+ readiness initiatives, including the Forest Carbon Partnership Facility and the United Nations Programme on REDD+. By 2022, Peru had 13 active REDD+ projects (Simonet et al. 2022). Moreover, Peru has consistently endorsed global market mechanisms, such as participating in the Clean Development Mechanism under the Kyoto Protocol. It was one of the first countries

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to establish regulatory frameworks for compensation for emission reductions through carbon markets, including guidelines for early REDD+ initiatives under the National Registry of Mitigation Actions (RENAMI for its Spanish acronym). RENAMI aims to facilitate climate finance, ensure environmental integrity, and secure compliance with REDD+ social safeguards (Peña and Sarmiento 2022; Peña et al. 2023).

The Global Comparative Study on REDD+ (GCS REDD+) (https://www.cifor-icraf.org/gcs/) is an initiative of the Center for International Forestry Research (CIFOR). It has tracked the implementation and impacts of REDD+ projects across the tropics since 2009. In this way, it aimed to generate knowledge and practical tools to support implementation of REDD+ by learning from projects, including two in regions of the Peruvian Amazon: Madre de Dios and Ucayali (Sunderlin et al. 2016). The sociocultural context for the projects differed across the regions, with *mestizo* or traditional rural communities in Madre de Dios and Indigenous communities in Ucayali.

For this study, we drew on GCS REDD+ data that were collected using three survey instruments (village, women, and household) over three research waves: one before REDD+ implementation (during 2011–2012 in Madre de Dios and 2012–2013 in Ucayali) and two follow-up waves (during 2014 and 2018 in both sites). Using these data, we demonstrated two methods for estimating the impact of REDD+ on local well-being. First, we reviewed data from group interviews with community leaders (village surveys) and women (women surveys) to identify locally important dimensions of well-being. Using data from the household surveys, we analysed the impacts of the two REDD+ projects on measures of those locally important dimensions of well-being. Second, we analysed the impacts on household perceptions of changes in well-being. Full results are reported in Cubas-Baez (2022).

Methods for eliciting local perspectives of well-being and REDD+ impacts

In the GCS REDD+, data were collected in matched sets of villages inside and outside REDD+ project areas, also known as intervention (REDD+) and control villages. Data were collected using three types of surveys: village surveys (group interviews with village leaders and other village residents who are knowledgeable about local conditions, most of them men), women surveys (group interviews with women from the village), and household surveys (interviews with the heads of a random sample of households in each village). The random sample included households directly engaged in REDD+ and others not directly engaged.

Since local well-being perspectives can be understood in multiple ways, we propose two approaches to elicit and capture this information (Figure 1). For the first approach, we drew on the group interviews with village leaders and with women to identify the characteristics associated with the high well-being of households and women. We interpret these characteristics as the "well-being dimensions" most important to the male village leadership and women in the same villages. These responses allowed us to compare the well-being dimensions identified by gender-differentiated groups across sociocultural groups (sites). We then extracted data from the household survey on the well-being dimensions suggested in the group interviews (for example, indicators of household income, health, and housing quality). For the second approach, we drew on household survey data about subjective well-being, which was measured by asking households to assess changes in their well-being over the past two years in response to the question, *"Overall, what is the well-being of your household today compared with the situation two years ago?"*

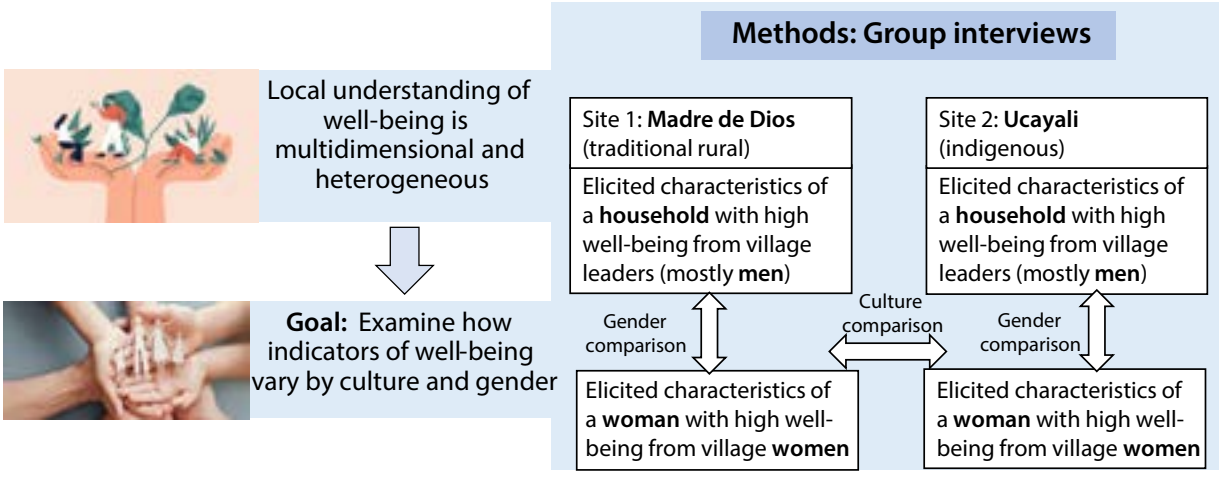

Figure 1. Methods applied to analyse survey responses

We estimated the effects of participation in REDD+ on well-being measured by household-level characteristics that reflect the dimensions of well-being identified by predominantly male village leadership and village women; and households' subjective well-being (stated changes in well-being). Using pooled survey data from all villages (REDD+ and control) and the three phases, we regressed these two types of well-being measures on an indicator of participation in REDD+, indicators for years, and their interactions. We clustered standard errors by household and tested the robustness of the results to include potential confounders (variables that could potentially affect both the selection of a village for REDD+ and outcomes for households in that village) (Sills et al. 2017).

GCS REDD+ in Peru

While REDD+ projects across the tropics have incorporated a wide range of interventions to achieve forest conservation, the two projects in Peru both promote sustainable forest management. The local stakeholders are Brazil nut concessionaires (*castañeros*) in Madre de Dios and seven Indigenous communities in Ucayali. As practical examples of how REDD+ has been designed and implemented, these projects can offer valuable lessons to inform future efforts to address community and global priorities simultaneously.

Study site in Madre de Dios

Madre de Dios is Peru's third most extensive (and least populated) region. It is considered the "Biodiversity Capital of Peru," containing six key biodiversity areas (Hajek et al. 2011; Torre-Marin Rando et al. 2021). The region's natural habitats are highly threatened by agriculture, cattle ranching, fires, gold mining, mercury pollution, and climate change. Rural livelihoods in Madre de Dios are dominated by natural resource extraction, with economic activities including Brazil nut collection, gold mining, logging, small-scale agriculture, and tourism (Vuohelainen et al. 2012). The region's population has been increasing through migration from the Andes facilitated by construction of the Interoceanic Highway connecting Peru, Bolivia, and Brazil (Garrish et al. 2014). About half of the population in Madre de Dios is traditional rural *mestizo*, a term used to describe settlers of non-Amazonian origin, including both Indigenous and non-Indigenous people (Vuohelainen et al. 2012; Porro et al. 2015; Torre-Marin Rando et al. 2021).

The company *Bosques Amazonicos* SAC (BAM) implemented a REDD+ project in the region to reduce deforestation and contribute to the economic development of the *castañeros*. It worked in partnership with the Departmental Federation of Brazil Nut Producers of Madre de Dios (FEPROCAMD), the organization that represents Brazil nut collectors in the region. Brazil nut production promotes forest conservation as the trees only produce nuts when growing in relatively undisturbed native forests. In 2009, BAM signed a partnership contract with FEPROCAMD to construct a Brazil nut processing plant; provide loans to cover initial costs during the nut harvesting season; provide technical and legal assistance with submission of documents required to maintain control over their concessions; and share revenue from the sale of carbon offsets (Garrish et al. 2014; Solis et al. 2021).

Study site in Ucayali

Ucayali, the second largest region of the country, is 87% covered by Amazon tropical forest. The population includes 12% of Peru's Amazonian Indigenous population with 27 ethnicities. The Indigenous communities in and around the REDD+ project rely on agriculture, fishing, and harvesting forest products for their livelihoods (Rodriguez-Ward and Paredes del Aguila 2014; AIDER 2015). Rural livelihoods vary by season: primarily fishing in the dry season and agriculture in the rainy season.

The Association for Research and Integrated Development (AIDER), implemented a REDD+ project with families from seven Indigenous Shipibo Conibo and Cacataibo communities. AIDER expects to protect the forest and local livelihoods by reducing land-use pressures driving deforestation and forest degradation; building capacity for forest monitoring and long-term sustainable forest management; and supporting biodiversity conservation. Revenues from the sale of carbon credits will be used to improve local livelihoods and increase forest management activities (Rodriguez-Ward and Paredes del Aguila 2014).

Lessons learned from the REDD+ initiatives

Cultural and gender differences in local perspectives on well-being

Across group interviews with predominantly male village leaders and women from the same villages, there was consensus around education and health as central to local well-being. Figure 2 illustrates the well-being dimensions highlighted by each group in each site. The differences across the two sites were statistically significant, confirming that sociocultural context shapes well-being perspectives. While group interviews with village leaders and women also revealed some differences in well-being priorities, these were not consistent enough to be statistically significant. To further explore women's well-being perspectives, we suggest that future household surveys could include specific modules to be answered by women (Figure 2).

In Madre de Dios, group interviews suggested that well-being was associated with education (good education, education for children, access to professional development courses),

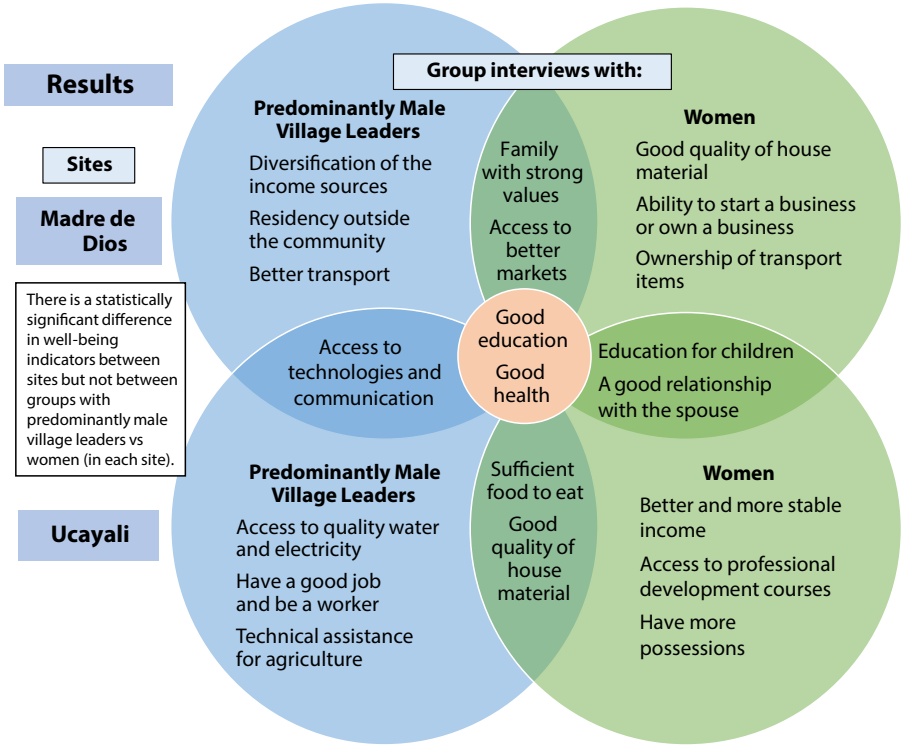

Figure 2. Well-being perspectives showing a consensus around education and health as central to local well-being

health (access to good healthcare), family values (united family with strong values), and access to better markets. The predominantly male village leaders said that a household with high well-being would have diversified income sources, own houses outside the village, and have its own means of transportation. For their part, women identified education for their children, a well-constructed home, and the ability to start a business as key dimensions of a woman's well-being.

In Ucayali, group interviews with village leaders and women agreed that well-being depends on the ability to meet basic needs such as education, healthcare, food, and shelter. Predominantly male village leaders suggested that the well-being of households is related to access to clean water, electricity, employment, and technical assistance with agriculture. For their part, women emphasized that their well-being was associated with having their own sources of income, education for their children, and access to professional development courses. Similar results were reported by Larson et al. (2018). The differences across sites, with more emphasis on basic needs in Ucayali, may be due to lower income levels than in Madre de Dios.

Impacts of REDD+

In Madre de Dios, we found mixed evidence on the impacts of REDD+. It had significant impacts on a few indicators of well-being identified in the group interviews, both positive (increasing the number of houses owned outside the village) and negative (decreasing the fraction of children who attend school). Participation in the REDD+ initiative (living in a REDD+ village) had a significant negative effect on households' assessments of changes in well-being. In other words, households were more likely to perceive that their well-being had declined over time if they participated in REDD+.

The negative effect of REDD+ on households' subjective well-being may have resulted from disappointment in not receiving the expected project benefits, compounded by a lack of transparency. Previous studies reported similar findings (Larson et al. 2018; Montoya-Zumaeta et al. 2021, 2022). At the time of the third phase of the GCS REDD+ survey, promised direct payments from carbon sales were delayed (due to delays in the sale of credits in the voluntary carbon markets), and the Brazil nut processing plant had still not been initiated (Montoya-Zumaeta et al. 2022).

In Ucayali, we also found mixed evidence on the impacts of REDD+. Across the dimensions of well-being suggested by group interviews, there were a few significant positive (on annual household income) and negative (on quality and access to water) effects. However, unlike in Madre de Dios, participation in REDD+ did not have a measurable impact on households' subjective well-being. This may have been due to the large number of forest interventions implemented in the area by the time of the GCS REDD+ survey, which might have been helped by the relatively quick sale of carbon

credits. The project was certified and sold carbon credits in 2017, and carbon revenues were invested in new productive activities in the villages (such as nurseries for timber species and agroforestry plantations). The participating communities were also offered capacity-building workshops and equipment for forest monitoring, livestock, and fishing production (Naime et al. 2022).

In summary, evidence on the impacts of REDD+ is mixed, with no clear pattern emerging, despite our careful approach to identifying locally relevant dimensions of well-being and extracting measures of those dimensions from the survey data. When considering multiple well-being indicators, some significant relationships may emerge randomly. We conclude that overall, REDD+ had no impact, as judged by objective measures of well-being in these two sites. However, in one site, it did have a negative impact on subjective well-being.

Conclusions

Our study confirmed that well-being is multidimensional and heterogeneous in the two REDD+ sites in the Peruvian Amazon. However, there was consensus around education and health as central to local well-being. Group interviews with the predominantly male village leaders and women in the same villages identified different well-being indicators. However, these differences were not as statistically significant as those between the two sites, confirming that sociocultural context shapes well-being perspectives and priorities.

Our findings from two specific Peruvian sites provide an example of how to monitor compliance with REDD+ safeguards in the framework of the RENAMI. For example, group interviews before household surveys allowed local input on indicators to be incorporated into survey instruments, thus generating locally appropriate measures of well-being. Asking survey respondents direct questions about their household's well-being was another relatively straightforward approach to obtaining local input.

Lastly, the mixed evidence on the impacts of REDD+ across multiple locally relevant dimensions of well-being likely reflects the mix of ways that REDD+ affects local people, both positive and negative. In Madre de Dios, while REDD+ had mixed effects on well-being dimensions suggested by village leaders and women, it negatively impacted household assessments of changes in well-being. In Ucayali, on the other hand, REDD+ again had mixed effects on locally relevant dimensions of well-being. However, it had no measurable effect on household assessments of changes in well-being. While Montoya-Zumeta and Naime (2022) argued that delays and limitations on funding negatively affected both initiatives, we found that implications for local perceptions of well-being were more severe in Madre de Dios. This could be attributed to the project's reliance on relatively few activities; when those did not materialize, dashed expectations and lack of information caused local people to perceive that their overall well-being was declining overtime.

Findings and recommendations

- Local input on how to measure well-being and on changes in well-being is essential for compliance with REDD+ safeguards. It can provide valuable lessons to project proponents, donors, agencies, and policymakers.
- The multidimensional nature and diverse perspectives on local well-being demonstrate the relevance of engaging diverse stakeholders in the design and implementation of REDD+ to ensure local support, transparency, and fair benefit distribution.
- In the case of REDD+ projects in the Peruvian Amazon, the mixed evidence on the impacts of REDD+ across multiple locally relevant dimensions of well-being likely reflects the mix of ways REDD+ affects local people. Even without systematic negative impacts on locally relevant indicators, the potential for negative perceptions highlights the importance of transparency and fair benefit distribution. Project proponents and policymakers should be wary of raising expectations and consider the multiple dimensions of well-being that matter to local people to ensure compliance with REDD+ safeguards.

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