



Impact Evaluation of Hariyo Ban II Livelihood Interventions on Biodiversity Outcomes: Baseline Report

December 2019

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ABSTRACT

The Hariyo Ban II (HBII) program is a five-year initiative (2016-2021) aiming to increase ecological and community resilience in the Chitwan-Annapurna Landscape and the Terai Arc Landscape. This evaluation has been designed to test the link between livelihood interventions provided as part of HBII and improved biodiversity outcomes. Data collection (4,840 household surveys, 112 community-level surveys, and 3,183 forest plot assessments) was successful, and data validation checks suggest a strong baseline for the evaluation. Baseline analysis results suggest that forests in communities receiving HBII interventions were in relatively good environmental condition and exhibited deforestation rates close to zero. Given these results and the relatively small current contribution of HBII activities to total income (7.2 percent of mean income), it might not be possible to detect HBII-related effects on forest condition (either positive or negative) at endline. However, results also show evidence for an alternative theory of change with implications for forest conservation. These include (i) Livelihood effects on reduction on forest dependence (using remittances as a proxy for large cash-incomes); (ii) Livelihood effects on potential spaces for reforestation outside of community forests; and (iii) Livelihood effects on reduced engagement with CF institutions. Key questions about conservation effects of HBII livelihood interventions, including a more detailed assessment of an alternative theory of change, could be addressed with an endline and have significant programmatic implications. Baseline results also highlight barriers to participation for poorer households, elite capture, and the exclusion of areas with restoration potential. USAID/Nepal should thus consider conducting an assessment prior to decisions about undertaking follow-on programming.

EXECUTIVE SUMMARY

Impact Evaluation of Hariyo Ban II Livelihood Interventions on Biodiversity Outcomes: Baseline Report

A. Evaluation Purpose

This evaluation has been designed to test a theory of change linking livelihood interventions provided as part of the Hariyo Ban II (HBII) program and improved biodiversity outcomes. Although livelihood-focused interventions are a widely used conservation strategy, their effectiveness is unclear, and the link between changes in livelihoods and positive biodiversity outcomes remains difficult to establish. This impact evaluation addresses this gap by examining the effects of HBII livelihood interventions on livelihoods and forest use, forest management, and forest condition. The results from this evaluation will inform future biodiversity and livelihood-focused programming and other livelihood intervention projects in Nepal and internationally.

B. Project Background

HBII II is a five-year initiative, funded by the United States Agency for International Development (USAID) and implemented by four partners: the World Wildlife Foundation (WWF), the Cooperative for Assistance and Relief Everywhere (CARE), the National Trust for Nature Conservation (NTNC), and the Federation of Community Forestry Users Nepal (FECOFUN). HBII is being implemented from July 2016 to July 2021 and builds upon Hariyo Ban I (HBI) (2011-2016). The overarching goal of HBII is “increasing ecological and community resilience in the Chitwan-Annapurna Landscape and the Terai Arc Landscape.” The HBII program has two objectives to realize this goal: 1) Improving the conservation and management of the CHAL and TAL landscapes; and 2) Reducing climate change vulnerability in CHAL and TAL. This impact evaluation focuses on group-based livelihood interventions under objective one. These interventions can be categorized as small (e.g., vegetable farming), medium (e.g., coffee) or large-scale (eco-tourism). The expected results of the interventions are reduced threats to target species and landscapes, and the development and promotion of market-based livelihood alternatives.

C. Evaluation Questions and Methodology

The evaluation focuses on five research questions related to social and biodiversity outcomes attributable to HBII livelihood interventions.

RQ1. What effect do livelihood interventions have on household wealth, forest dependence, resource use, and pro-conservation behaviors?

RQ2. What effect do livelihood interventions have on forest and landscape biodiversity conservation outcomes?

RQ3. How well do livelihood and resource conservation interventions, undertaken together, improve forest and conservation outcomes at the landscape scale?

RQ4. What factors affect the success of livelihood interventions with respect to improved forest condition?

RQ5. Is there evidence that some types of livelihood interventions have greater effects on livelihoods (e.g., income) and forest condition?

This baseline report asks two additional questions that provide additional programmatic-relevant insights about the relationships between livelihood strategies, forest use, and biodiversity outcomes.

BQ1. How do livelihood strategies of community forest users (including reliance on agriculture and land use, non-agricultural income streams, and remittances) influence forest resource use (fuelwood use), land use (fallow land) and community forest management institutions (meeting attendance)?

BQ2. How do livelihood strategies of community forest users (including reliance on agriculture and land use, non-agricultural income streams, and remittances) influence forest outcomes?

The evaluation uses a quasi-experimental design (Before-After Control-Impact), where differences between treatment and comparison units (CFUGs and households) are measured before and after the intervention. Baseline socio-economic and biophysical forest data were collected between June and December 2018 in 112 CFUGs in CHAL. Data collection instruments included a household survey (n = 4,840), a community-level survey (n = 112), and a forest assessment (3,183 forest plots). Measuring HBII-related changes will require an endline survey. CFUGs were selected by randomly sampling CFUGs receiving HBII livelihood intervention support and matching these to CFUGs without HBII livelihood intervention support. Households were selected through a stratified random sampling strategy using a household well-being ranking.

D. Findings and Conclusions

Data collection and processing was successful, and data validation checks suggest a strong baseline for the evaluation. The sampling approach also selected sufficiently comparable treatment and comparison households and CFUGs to make strong causal inferences at endline.

Forests in treatment and comparison sites had comparable levels of tree species richness and biomass estimates, and exhibited deforestation rates close to zero, mirroring national forest cover trends. Given these results, and the relatively small current contribution of HBII activities to total income (7.2 percent), it might not be possible to detect HBII-related effects on forest condition (either positive or negative) at endline.

However, the evaluation team found evidence for potential pathways with implications for forest conservation presented as part of an alternative theory of change, linked to BQ1 and BQ2. These results speak to related concerns and include: (i) Livelihood effects on reduction on forest dependence (using remittances as proxy for large cash-incomes and fuelwood use as a measure of forest dependence); (ii) livelihood effects on potential spaces for reforestation outside of community forests (fallow land); (iii) livelihood effects on reduced engagement with community forest institutions (attendance at meetings). Key questions about conservation effects of HBII livelihood interventions, including a more detailed assessment of an alternative theory of change, could be addressed with an endline and have significant programmatic implications

Baseline analysis results also pose significant questions about barriers to participation for poorer households, elite capture, and areas with significant restoration potential. USAID/Nepal should consider

conducting a small-scale assessment before making decisions about undertaking follow-on programming, if not earlier.

E. Recommendations

1. USAID should consider undertaking an endline study in the same areas but with revised evaluation questions and streamlined instruments between 2023 and 2026 with scoping work undertaken in 2022.
2. USAID should undertake a cost-effective, qualitative midline study during the final year of HBII implementation.
3. USAID should consider targeting interventions more toward marginal degraded forests and the poor for future programming and, if so, undertake an assessment about whether to target poorer households outside of forest management and on marginal areas outside of CFUGs where greater improvements in biodiversity are possible.
4. HBII should improve the quality of data and database management by better regulating and increasing uniformity and accuracy of data entered through five improvements to data entry and data cleaning.
5. HBII should capture more livelihoods related information in monitoring data, such as direct beneficiaries and revolving funds, to better confirm the effect of livelihoods-related funding on outcomes.
6. If USAID undertakes a follow-on activity in the HBII areas, USAID should require the future IP to improve the monitoring and evaluation (M&E) system to enable better analysis of its interventions by the IP and external evaluators.

ABBREVIATIONS

CHAL	Chitwan Annapurna Landscape
CFUG	Community Forest User Group
DDL	Digital Data Library
HBI	Hariyo Ban I
HBII	Hariyo Ban II
IFRI	International Forestry Resources and Institutions
NMEL	Nepal Monitoring, Evaluation and Learning (activity)
NPR	Nepalese rupees
MPI	Multi-dimensional Poverty Index
OPHI	Oxford Poverty and Human Development Initiative (OPHI)
PWBR	Participatory Wellbeing Ranking
TAL	Terai Arc Landscape
USAID	United States Agency for International Development
WWF	World Wildlife Fund

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I. EVALUATION PURPOSE

I.1 Evaluation Purpose and Introduction

The evaluation has been designed to test a theory of change linking livelihood interventions provided as part of the Hariyo Ban II (HBII) program and improved biodiversity outcomes. These livelihood-focused interventions seek to change livelihoods, to reduce the use of natural resources and environmentally damaging and unsustainable behaviors, and to increase support for conservation (Wright et al., 2016). Although livelihood-focused interventions are a widely used conservation strategy, their effectiveness is unclear, and the link between changes in livelihoods and positive biodiversity outcomes remains difficult to establish (Hajjar et al. 2016; Roe et al., 2015; Wright et al., 2016). This impact evaluation addresses this gap by examining the effects of HBII livelihood interventions on livelihoods and forest use, forest management, and forest condition¹. The results from this evaluation will inform future biodiversity and livelihood-focused programming and will inform other livelihood intervention projects in Nepal and internationally.

Data for the baseline of the impact evaluation was collected between June and December 2018. This report outlines the impact evaluation's rationale and design, provides an assessment of the baseline data for impact evaluation purposes, and presents a set of analyses on livelihood strategies – with a focus on remittances – to inform the theory of change.

I.2 Theory of Change

Nepal's biodiversity and natural resources face multiple threats, including the unsustainable harvesting and trade in natural resources (including the poaching of wildlife species and the illegal harvest of plant species and other non-timber forest products), climate change, hydropower infrastructure, forest fires, and human-wildlife conflicts (Ministry of Forests and Soil Conservation, 2015a; Ministry of Forests and Soil Conservation, 2015b). The HBII program is implementing measures to reduce these threats to biodiversity by contributing to the implementation of the revised Terai Arc Landscape (TAL) Strategy and Action Plan 2015-2025 (Ministry of Forests and Soil Conservation, 2015a), and the Chitwan-Annapurna Landscape (CHAL) Strategy and Action Plan 2016-2025 (Ministry of Forests and Soil Conservation, 2015b). Under HBII, livelihood-based interventions aiming to diversify income streams and reduce forest-dependence of rural households are implemented to improve conservation and management in the CHAL and the TAL. The unsustainable extraction of forest products (particularly fuelwood and timber) is thought to harm forest biodiversity and the ecological resilience of these landscapes.

The main hypothesis underlying the livelihood interventions implemented under HBII is that the unsustainable use of the forest by local people will decline as income from green enterprises, ecotourism, and other types of employment increases and that this will lead to improved biodiversity outcomes. This can be termed the alternative income hypothesis. Livelihood interventions may also promote good relationships between conservation authorities and community members, motivating

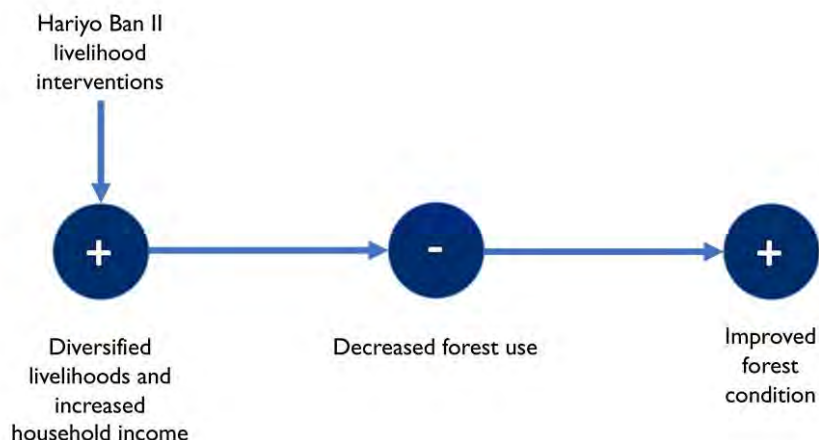
¹ The Statement of Work is provided in Appendix A.

them to participate in pro-conservation behaviors; the goodwill hypothesis. The theory of change underlying these interventions is:

“If green enterprises and eco-tourism are based on sound value chain analysis and business plan development; forest dependent people are aware of conservation benefits, willing to invest/uptake in these enterprises and have required skills, then they will be able to attract investment from the private sectors. If private sectors are involved, then the market linkage for products will be ensured leading to viability of enterprises. If the participants for skill-based training are appropriately selected based on GESI perspective, analysis of market demand and potential for enterprise development, then majority of the trained participants will be employed. *If alternative employment opportunities from enterprise and skill development generate enough income to take forest dependent people off from unsustainable harvesting of forest products, then they solely focus on alternative livelihood opportunities.* If government and community institutions enforce existing rules and regulations to deter people from unsustainable extraction of forest product, then illegal extraction of forest resources will be minimized. All these strategies will help change their behavior to sustainable practices for resource use, reducing threats to biodiversity in conservation landscapes.” (see WWF Nepal, 2016; emphasis added).

There are two key stages to this theory of change: first, it is expected that livelihood interventions will change household livelihood activities, away from environmentally damaging and unsustainable behaviors towards more sustainable livelihood activities and increased income, and second that these changes at the household level, will have a positive effect on biodiversity outcomes and forest condition (Figure 1). Consequently, this impact evaluation seeks to examine a) how livelihood interventions affect livelihood strategies and forest use and b) how livelihood strategies and forest use affect forest outcomes.

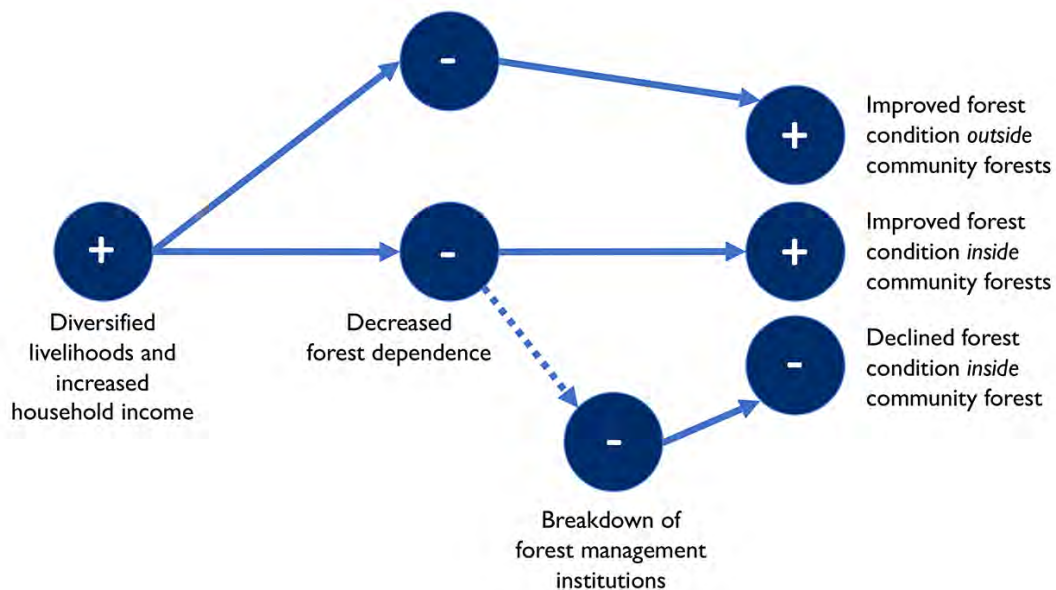
Figure 1: Theory of Change for HBII Livelihood Interventions



Changes in livelihood strategies have the potential to reduce pressure on forests and create spaces for forest recovery by changing both household dependence on agricultural production (a key driver of deforestation globally) and forest products. However, a reduction in household dependence on forest products also could lead to a potential reduction in household

engagement with community forest management institutions, which are critical for effective forest management. This reduced engagement could weaken local institutions, leading to less effective forest management and monitoring, and – ultimately - forest degradation and deforestation. The evaluation team used the baseline data collected as part of the evaluation to test aspects of this alternative theory of change (Figure 2). Specifically, given Nepal’s recent history of international migration and the effects that this socioeconomic change has had on livelihoods and forests in the country (Oldekop et al. 2018), the evaluation team used data on remittances as a proxy for the potential effect of livelihood changes on indicators of forest dependence, agricultural production, and engagement with community forest management institutions (see Section 4.2 and 4.3). Remittances should be considered as an additional influence on livelihoods at endline, but they provide a useful mechanism to understand how households react to substantial increases in income.

Figure 2: Alternative Theory of Change for HBII Livelihood Interventions



2. ACTIVITY BACKGROUND

2.1 Hariyo Ban II

HBII II is a five-year initiative, funded by the United States Agency for International Development (USAID), which is implemented by four partners: the World Wildlife Fund (WWF), Cooperative for Assistance and Relief Everywhere (CARE), National Trust for Nature Conservation (NTNC), and the Federation of Community Forestry Users in Nepal (FECOFUN). HBII is being implemented from July 2016 to July 2021 and is intended to build upon advances made in the first phase of the program, Hariyo Ban I (HBI) (2011-2016). The overarching goal of HBII is “increasing ecological and community resilience in the Chitwan-Annapurna Landscape and the Terai Arc Landscape” (WWF, 2016). The HBII program has two objectives to realize this goal: 1) Improving the conservation and management of the CHAL and TAL landscapes; and 2) Reducing climate change vulnerability in CHAL and TAL (WWF, 2016). Governance, gender equality, and social inclusion crosscut both the conservation and climate change components of the program. Livelihood interventions fall under the first objective.

Based on the findings from HBI, HBII focuses on four geographical areas: 1) the Shuklaphanta Wildlife Reserve – Brahmadev Corridor, 2) the Bardia National Park - Karnali Corridor, 3) the Banke National Park – Kamdi Corridor; and iv) Chitwan National Park – Barandabhar Corridor. Hariyo Ban II focuses on all or part of eight districts: Dadheldhura, Kanchanpur, Kailali, Bardia, Banke, Dang, Nawalparasi, and Chitwan (USAID, 2017). The HBII implementing partners have selected approximately 1289 natural resource management groups² they will engage with over the five-year period, of which 749 are in the CHAL landscape and the remaining 540 in the TAL landscape. These 1289 groups were selected accordingly to the following criteria: the formation and mobilization of a community-based anti-poaching unit; ecosystem restoration needs; human-wildlife conflict mitigation needs; species conservation needs (flora and fauna); priority micro-watershed for an integrated sub-watershed management plan, and where there were existing livelihood interventions or locations identified as having the potential for group-based enterprises.

2.2 Livelihood Interventions Under Hariyo Ban II

The HBII program uses livelihood interventions as part of efforts to achieve the first objective, improved conservation, and management. There are two types of livelihood-related activities in Hariyo Ban II: group-based livelihood interventions, and individual skills training. Typically, only a small number of individuals in a Natural Resource Management Group received individual skills-training (median = 2). One can assume that these interventions will have a smaller impact on biodiversity than the larger group-based interventions. Therefore, this impact evaluation focuses on group-based livelihood interventions, henceforth referred to as “livelihood interventions.”

Livelihood interventions take many forms and can be categorized as small, medium, or large-scale interventions (Table I). Small interventions, such as vegetable farming and livestock rearing including goats, pigs, and poultry, provide a quick return. For example, households may generate income from the

² Natural Resource Management Groups is a collective term for the forest management groups receiving HBII interventions, including Community Forest User Groups (CFUGs), Buffer Zone CFUGs, Leasehold Forestry Groups, and Conservation Area Management Committees.

sale of vegetables after the first growing season. Medium-scale interventions focus on high-value crops, such as cardamom, coffee, citrus fruits, broom grass, and tea. Medium-scale interventions require greater investment from the participant and take several years to generate a return on investment as the high-value crops must mature. Ecotourism is the single large intervention type. As ecotourism require the greatest resources, it is being implemented in only a small number of locations.

The support participating households receive also varies. Households participating in livelihood interventions may receive business training, for example in record-keeping or business plan preparation, technical training specific to the intervention type, material support through the provision of equipment, livestock or sapling and may participate in cross-learning visits. The decision of which households can participate in the group-livelihood intervention is made at the community-level.

Table 1: Participation in Hariyo Ban II Group-based Livelihood Interventions

Intervention	Participating Households in the Sample	Classification by Activity	Classification by Scale (Implementing Partners)
Broom grass	13	Cultivation	Medium
Cardamom	32	Cultivation	Medium
Chiraito	1	Cultivation	Medium
Coffee	51	Cultivation	Medium
Tea	12	Cultivation	Medium
Vegetable farming	256	Cultivation	Small
Beekeeping	5	Animal-rearing	Small
Cow	1	Animal-rearing	Medium
Goat	108	Animal-rearing	Small
Pig	24	Animal-rearing	Small
Poultry	15	Animal-rearing	Small
Buffalo	10	Animal-rearing	Small
Ecotourism	4	Business	Large
Nature Guide	21	Skills	
Skills	32	Skills	
Other	19	Cultivation (1) Animal rearing (9) Economic assistance (4) Information (5)	Small

Within the HBII Results Framework, the relevant objective is Objective 1: Improve the Conservation and Management of GoN-Identified Biodiverse Landscapes - CHAL and TAL. The expected results are: Result 1.1 Threats to target species reduced³; Result 1.2 Threats to target landscapes⁴ reduced; Result 1.3 Market based livelihood alternatives developed and promoted.

³ Tiger, rhino, snow leopard, pangolin, red panda (WWF Nepal 2016a).

⁴ CHAL and TAL (WWF Nepal 2016a).

3.EVALUATION QUESTIONS AND METHODOLOGY

3.1 Evaluation Questions

3.1.1. Impact Evaluation Research Questions

The evaluation has been designed to test the following two key hypotheses:

- i) That livelihood interventions lead to livelihood changes, including reduced forest dependence and pro-conservation behavior⁵.
- ii) That changes in livelihoods and pro-conservation behavior lead to changes in forest outcomes.

To test these hypotheses, the evaluation was designed to answer the five research questions listed below. These questions focus on measuring the specific outcomes attributable to the HBII livelihood interventions. The first focuses on the social impact on livelihood interventions, the second, third, and fourth focus on the impact on biodiversity outcomes, and the fifth concerns the performance of livelihood interventions.

RQ1. What effect do livelihood interventions have on household wealth, forest dependence, resource use, and pro-conservation behaviors?

RQ2. What effect do livelihood interventions have on forest and landscape biodiversity conservation outcomes?

RQ3. How well do livelihood and resource conservation interventions, undertaken together, improve forest and conservation outcomes at the landscape scale?

RQ4. What factors affect the success of livelihood interventions with respect to improved forest condition?

RQ5. Is there evidence that some types of livelihood interventions have greater effects on livelihoods (e.g., income) and forest condition?

The five questions above will be answered by comparing social and biophysical data collected at the baseline (2018) to data collected at the endline, likely to be conducted several years after the end of Hariyo Ban II in 2021. How each of these research questions will be answered is provided in the Getting to Answers matrix, Appendix B.

⁵ Pro-conservation behavior is defined as engagement in a series of biodiversity-friendly forest, species and watershed management practices, including anti-poaching patrols, invasive species control, fireline construction and controlled burning, enrichment planting of firewood, fodder, and timber species (Appendix A: Statement of Work – Figure 2).

3.1.2 Baseline Research Questions

The evaluation focuses specifically on livelihood interventions. However, the data collected at the baseline provides an insight into the relationships between livelihood strategies, forest use, and forest condition. In this baseline report, we, therefore, also answer the following two research questions:

BQ1. How do livelihood strategies of community forest users (including reliance on agriculture and land use, non-agricultural income streams, and remittances) influence forest resource use (fuelwood use), land use (fallow land) and community forest management institutions (meeting attendance)?

BQ2. How do livelihood strategies of community forest users (including reliance on agriculture and land use, non-agricultural income streams, and remittances) influence forest outcomes?

3.2 Methodology and Analytical Approach

3.2.1. Analytical Approach

The impact evaluation was designed to use a quasi-experimental design, involving treatment and matched comparison CFUGs. The evaluation was designed as a standard nested “Before-After Control-Impact (BACI)” design in which differences between treatment and comparison units are measured before and after the intervention. Treatment units are households and CFUGs that have already received a livelihood intervention under Hariyo Ban II, and comparison units are those households and CFUGs that have not received a livelihood intervention under Hariyo Ban II. It should be noted that comparison CFUGs are not perfect controls for the HBII program. This is because they may have received other interventions from HBII or other funders. Further, the intervention sites were chosen specifically for their potential impact on fauna biodiversity corridors, which are generally correlated with forest type and forest environmental quality. Nonetheless, if the baseline finds that there are no measurable differences between treatment and comparison units at baseline on key observable indicators, any differences measured at endline should be attributable to intervention effects. That is, the baseline would be found appropriate to enable endline data collection. Our analytical approach to test links between livelihood interventions and changes in livelihoods and forest outcomes will use nested design (Appendix Figure 1) and collect data at the level of community forest user groups (CFUGs - primary sampling units (PSUs)), and individual households (secondary sampling units – SSUs).

3.2.2 Methods

The evaluation team collected socioeconomic and biophysical forest data for the baseline, and data on these should be collected again as part of the endline. The team conducted a household survey (n = 4,840) to collect data on basic household characteristics and livelihood strategies, including income, land and forest use, participation in HBII and other interventions, and engagement with community forest management institutions and participation in forest management activities. The household survey included 211 questions and typically took 2 to 2.5 hours to complete. The evaluation team carefully designed the household survey to capture detailed information but not be too long and time-consuming for the respondent. A community-level survey (n = 112) also was conducted with executive committee members in each CFUG (3 to 10 members, mean = 8). This CFUG-level survey collected data on the user group and the management and governance of the community forest. Forest tree biodiversity and

environmental conditions were assessed using a methodology developed by the International Forestry Resources and Institutions (IFRI)⁶. The forestry data collectors completed a forest overview survey to record information about the forest, including vegetation type and topography. Household, CFUG, and forest survey instruments are provided in Appendix F. The boundary of each forest was surveyed and used to analyze forest loss between 2000 and 2017 using the Global Forest Change dataset (version 1.6) (Hansen et al. 2013). Measures were programmed into the survey software to ensure that high-quality data would be collected. The data collected were checked by the subcontractors, New ERA (social data) and Forest Action (biophysical data), and verified by USAID/Nepal's Nepal Monitoring, Evaluation, and Learning (MEL) Activity. The baseline data collection was reviewed and approved by the ethical review team at the University of Sheffield.

3.3 Sampling Strategy

3.3.1 Primary Sampling Units

To select a set of primary sampling units for the baseline data collection, the evaluation team used CFUG-level data held by HBII implementing partners to select a set of initial treatment and comparison sites. Of the 457 CFUGs that could be included in the sampling process, 80 were sites receiving a livelihood intervention as part of HBII. The remaining 377, thus, could be considered comparison sites. Nine of the HBII CFUGs are Conservation Area Management Committees (CAMCs), and 16 are Buffer Zone Community Forest User Groups (BZCFUGs). CAMCs differ considerably from CFUGs and BZCFUGs as they exist within larger designated conservation areas. BZCFUGs also are likely to be affected by the management of protected areas. Given their small representation in the potential sample, and to minimize, including additional variation in the sample by forest management type, the impact evaluation was restricted to CFUGs. Furthermore, because the distribution of households is highly skewed (Figure 3), sampling was restricted to CFUGs with 600 households or fewer ($n = 432$).

Due to logistical and financial constraints, it would have only been possible to sample 10 sites in TAL, which is ecologically different to CHAL. However, these 10 sites would provide limited insight into livelihood interventions in TAL. Including sites from the TAL into the sample would, therefore, introduce additional heterogeneity into the evaluation. Sampling was, thus, restricted to CHAL sites only (potential treatment sites = 62, potential comparison sites = 216).

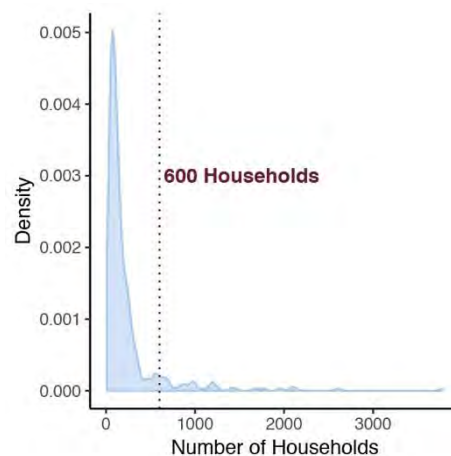
To generate a sample of treatment and comparison sites close to the maximum number of sites that could be sampled as part of the evaluation ($n = 115$), the team first selected a set of 42 random treatment sites in CHAL. Because treatment sites were unequally distributed between districts, this sampling was designed to be representative of treatment sites at the district level. The team then matched treatment sites to comparison sites using an approximate 1:2 treatment to comparison ratio. Exact matching was used to match on district, river basin/corridor, working site/block and biodiversity threat, and propensity score matching was used to match on forest area, altitude, and the number of households. This matching yielded a total of 113 sites (42 comparison sites and 71 treatment sites – Appendix Table 1). Matching generated a substantial improvement in propensity score balance, reducing the standardized mean difference of the propensity score from 0.25 in the unmatched dataset to 0.098

⁶ Further information is available at: <http://www.ifriresearch.net/resources/methods/>.

in the matched dataset, suggesting that the matching algorithm was able to select successfully comparable treatment and comparison households.

However, one CFUG did not wish to participate in the study (reducing the sample to 112 CFUGs), and some comparison sites were found to be treatment sites while some treatment sites were found to be comparison sites after the completion of the fieldwork. Therefore, treatment and comparison sites were re-matched within the sample of 112 CFUGs using data collected as part of CFUG and household surveys as matching covariates (see below).

Figure 3: Distribution of the Number of Households Within the Potential Sample of 432 CFUGs



3.3.2 Secondary Sampling Units

For the purposes of the evaluation, there are two types of households in treatment CFUGs: households that have participated in a group-level livelihood intervention (treatment households) and those that have not (comparison households). In comparison CFUGs, there are only comparison households. The data collection effort aimed to sample 60 households in treatment CFUGs and 40 in comparison CFUGs. Because treatment CFUGs had varying numbers of participants, the team designed a stratified random sampling strategy that accounted for this variation. The stratification was based on the participatory well-being ranking (PWBR) exercise that CFUG management committees have to submit as part of their forest management plans to the district forest office. In this exercise, the CFUG management committee classifies CFUG member households into four poverty and wellbeing categories (very poor, poor, middle income, and well-off). The general methodology used to conduct the ranking is uniform across CFUGs, but the specific criteria used to assess poverty and well-being are specific to individual CFUGs. The designed sampling framework used PWBR rankings as sampling strata and proportionally sampled comparison households based on the PWBR ranking distribution of treatment households (see Appendix Figure 2). The team developed a specific algorithm to help enumerators select the appropriate sampling strategy and calculate the number of comparison households to be sampled within each PWBR.

3.4 Key Limitations

A key limitation of the impact evaluation is that there is no single type of HBII livelihood intervention. As shown in Table I, the treatment households sampled at baseline received many different types of interventions. The type of intervention can be expected to influence income generation in different ways, both the quantity of income generated and the timing of the income generation (almost immediately or after several years). The impacts of HBII interventions may, therefore, vary by intervention type, affecting the ability to measure the effects across the HBII interventions. Intervention-related results may be small and difficult to link to HBII activities because (i) livelihood interventions are not designed to affect forests directly (interventions are designed to change livelihoods, which then translate into forest changes), (ii) forests like all biological systems, are complex and tend to change slowly without disturbance, and (iii) changes may be limited to small portions of the forest as resources are not uniformly distributed. To help address some of these potential limitations, data collection efforts and sampling strategy were designed to be focused on multiple forest condition indicators, and on multiple groupings of intervention types (Table I).

3.5 Data Management Notes

Data collected under the data collection will be uploaded to the Digital Data Library (DDL) at data.usaid.gov. The data collection was undertaken accounting for confidentiality standards in the United States, Nepal, and, as a United Kingdom university was involved, the European Union. The confidentiality agreements and standards require that the uploaded data do not include any personally identifiable information. The data manipulation undertaken to mask individual identities will be based on measures recommended by the study team (Appendix G) in negotiation with DDL staff. CAMRIS International, the company operating USAID's Monitoring, Evaluation and Learning Activity (2015-2020) will retain the original analyzed dataset for 10 years for the future principle investigators of the impact evaluation endline or other closely related research as directed by USAID/Nepal.

4. FINDINGS AND CONCLUSIONS

4.1 Sample Description

The evaluation team collected forest, community, and household-level data in 112 CFUGs⁷. The sample included a complete collection of forest spatial boundaries, 3,183 forest plots (mean = 28 plots per forest), 112 CFUG-level surveys, and 4,840 household surveys (mean = 43 households per CFUG). The analyses focused on 28 key household-level socioeconomic variables (Appendix Table 1), and 32 key CFUG-level socioeconomic and environmental variables (Appendix Table 2). These variables allow for the exploration of links between income, livelihood changes, land and forest use, community institutions, and forest environmental outcomes that are central to the evaluation research questions. The majority of sampled CFUGs (n = 92) were in three districts: Gorkha (n = 24), Kaski (n = 27), and Tanahun (n = 41). The remaining CFUGs were in Chitwan (n = 6), Lamjung (n = 9), and Syangja (n = 5). Of the sampled households, 538 in 34 CFUGs indicated they had received HBII group-based livelihood interventions, with 68 percent of participating households receiving support for vegetable farming (n = 256) and goat rearing (n = 108).⁸ Of the treatment and comparison CFUGs originally identified by HBII partners, one treatment CFUG was found during data collection not to have received any group-based livelihood intervention support, and two comparison CFUGs were found to have received group-based livelihood intervention support.

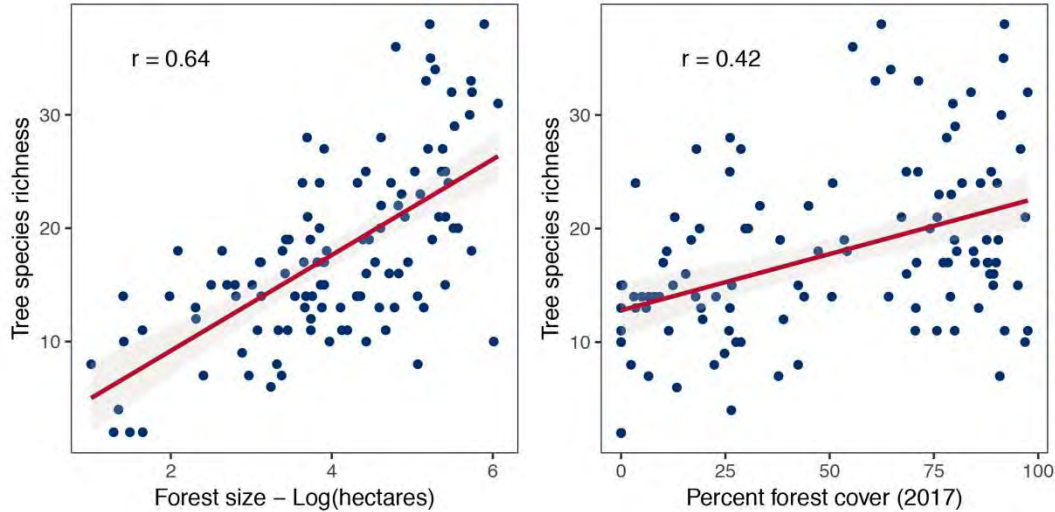
4.1.1 Forest Data Validation

To determine the internal validity of the forest data, measures of tree species richness and biomass - calculated from forest plot data - were correlated against measures of forest size - calculated using forest spatial boundary data, and tree cover - calculated using the remotely-sensed global forest change dataset (Hansen et al. 2013). As expected, forest size (calculated in logarithmic scale to account for a larger number of smaller forests and some very large forests) was positively correlated with both tree species richness ($r = 0.64$) and biomass ($r = 0.28$). In Figure 4, blue dots represent individual forests, the red line represents the best-fit regression line, and the shaded area represents confidence intervals of the best-fit regression line. Forest cover in 2017 (measured by subtracting deforested areas from baseline forest cover estimates for 2000) was positively correlated with both tree species richness ($r = 0.42$) and biomass ($r = 0.30$). These positive relationships between the various data sources provide a degree of validation of the collected forest-level data.

⁷ 113 CFUGs were initially sampled. The executive committee of one CFUG did not wish to participate in the study and the CFUG was consequently excluded from the sample, reducing the sample to 112 CFUGs.

⁸ See Table 1 for a detailed description of participation in other types of group-based interventions.

Figure 4: Relationship Between Tree Species Richness, and Forest Size and Forest Cover



4.1.2 Household and CFUG Data Validation

To determine the internal validity of the household-level dataset, the evaluation team assessed a series of analogous relationships between key variables. PWBR and household income were positively related (ANOVA $F = 19$, $P < 0.001$) as shown in Figure 5, where blue dots represent the distribution of income in each PWBR category and red bars represent the mean income in each PWBR category). Middle-income households had lower mean household income than well-off households (Tukey's $P < 0.01$), and poor households had lower mean household income than middle-income households (Tukey's $P < 0.01$). Although households classified as very poor had lower mean household income than poor households, this difference was not statistically significant.

Mean household income at the CFUG level (calculated by aggregating household-level data) was negatively correlated with the proportion of households classified as being multidimensionally poor⁹ ($r = -0.63$). As shown in Figure 6A, blue dots represent individual forests, the red line represents the best-fit regression line, and the shaded area represents confidence intervals of the best-fit regression line. However, mean household income was only weakly correlated ($r = -0.14$, Figure 6B) with the proportion of households classed as poor or very poor using PWBR classifications. These results suggest that although PWBR classifications provide a moderately good indication of income levels (and multidimensional poverty) at the household level, they might not provide a good indication of income or multidimensional poverty when aggregated to the CFUG-level.

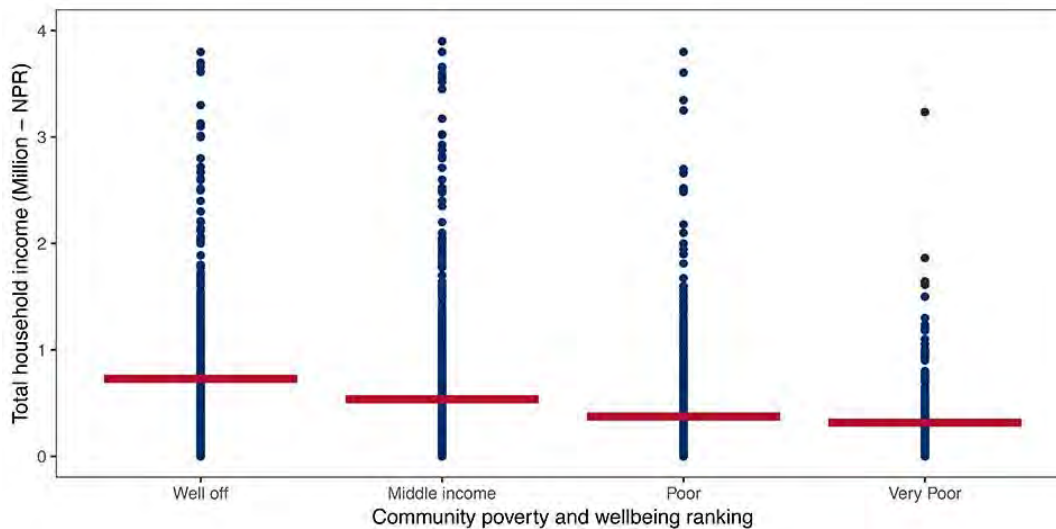
Production of the most important subsistence crop and the area of agricultural land were strongly and positively correlated ($r = 0.69$), as shown in Figure 7, where blue dots represent individual forests, the red line represents the best-fit regression line, and shaded area represents confidence intervals of the best-fit regression line¹⁰. Similarly, the amount of non-agricultural income – calculated as the total gross

⁹ A multi-dimensional poverty index (MPI) was created using indicators of health, education and living standards. How the index was constructed is detailed in Appendix D.

¹⁰ Note: households with yields smaller than 1Kg or no land dedicated to agriculture were removed from the sample, ($n = 146$).

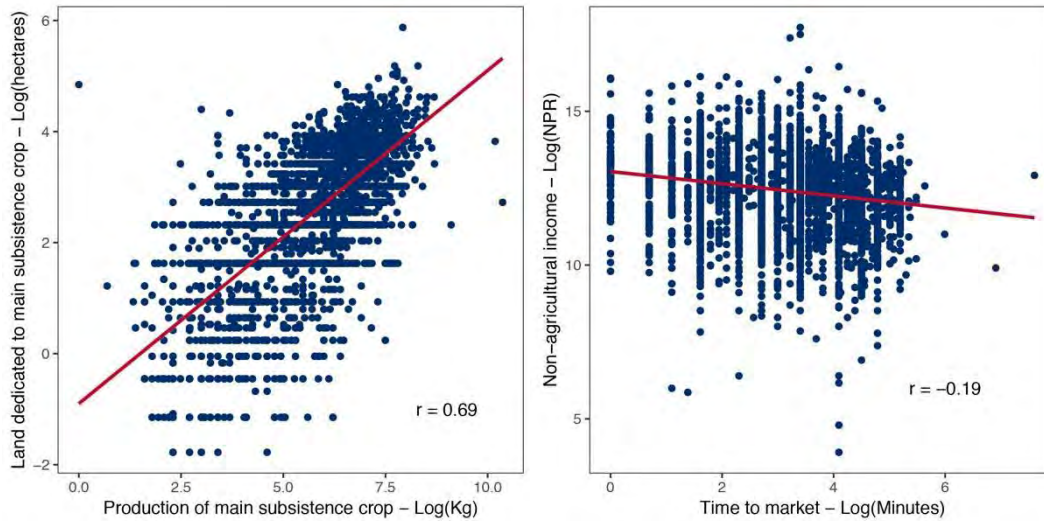
income minus the gross agricultural income – was weakly and negatively correlated with travel time to nearest market ($r = -0.19$, Figure 7)¹¹. The observed pattern of the examined household-level variables provides a similar degree of validation as the forest-level data between the data collected and expectations.

Figure 5: Relationship Between Participatory Wellbeing Ranking and Total Household Income



¹¹ Note: households with negative non-agricultural incomes, or non-agricultural incomes of 0 were removed from the sample ($n = 155$).

Figure 7: Relationship Between Production of the Most Important Subsistence Crop and Agricultural Area, and Time to Market and Non-Agricultural Income.



4.1.3 Matching and Potential for Causal Inference after Endline Data Collection

To assess the potential to draw causal inference from an endline data collection effort, treatment and comparison households and CFUGs were statistically matched on the basis of a suite of covariates with the potential to affect both selection into the treatment (whether to participate in HBII group-based livelihood activities or not) and forest-related outcomes of interest (forest dependence, land use, and indicators of forest condition) (Ho et al. 2007).

Household-level Data

HBII livelihood activities vary substantially in scope, scale, and the number of participants (see Table I), making it difficult to isolate factors affecting participation in specific activities. The evaluation team, therefore, considered three separate analyses on different sub-classifications of HBII livelihood activities. The first analysis focused on participation in *any* HBII livelihood activity, and the second and third analyses focused on participation in the two largest sub-categories of HBII livelihood activities: those supporting the development of cultivars (mostly vegetable farming), and those classed as “small” by HBII implementing partners (activities mainly included the production of cultivars and small livestock).

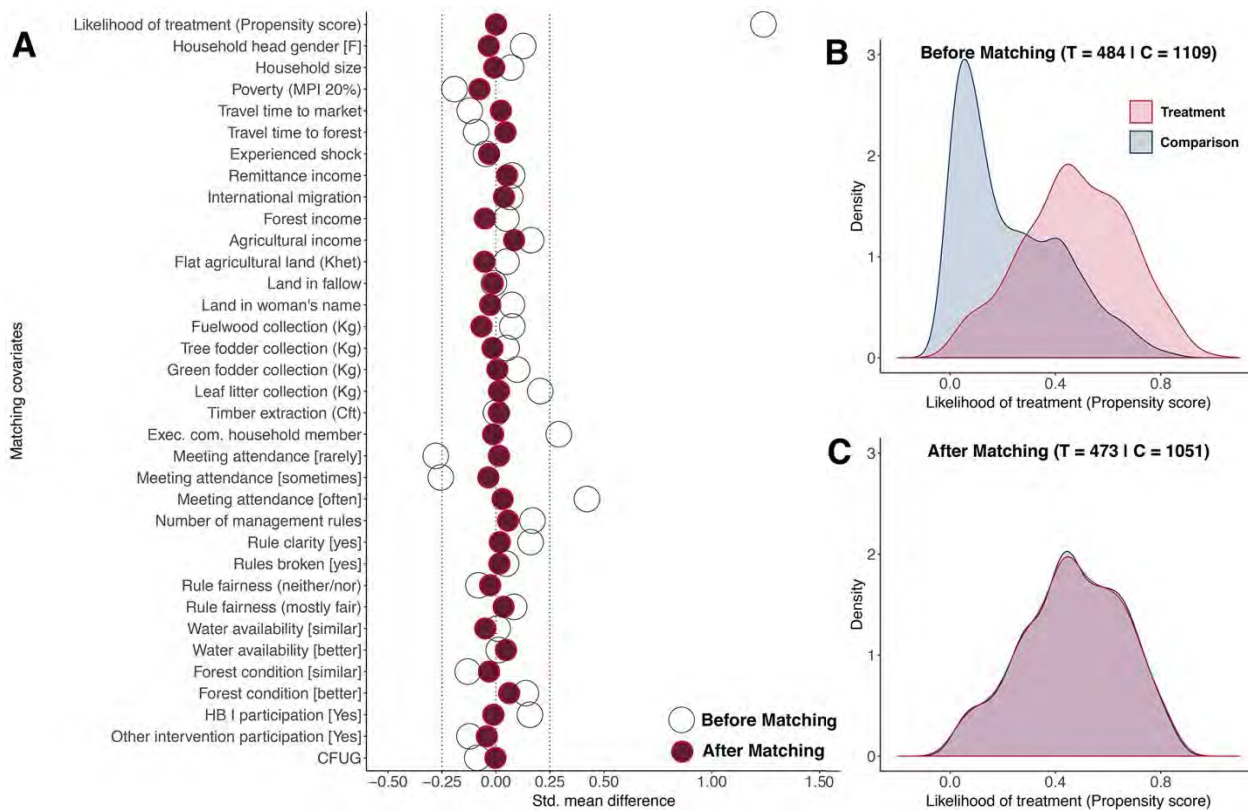
Matching covariates included:

- i) Household characteristics: the gender of the household head, household size, multidimensional poverty, travel time to markets and forest, experience of shocks, remittances, and international migration.
- ii) Land and forest use: forest and agricultural income, land ownership, and forest production collection.

- iii) Participation in and perception of forest management institutions: participation in the CFUG executive committee and CFUG meetings, clarity, fairness, and community adherence to management rules.
- iv) Perception of the state of the environment: forest condition and water availability.
- v) Participation in HBI activities or activities organized by governmental or other donor-funded institutions.

The CFUG that households are a member of was also included in the matching to control for time-invariant or unmeasured differences between CFUGs. Households with missing data on any of these covariates were removed from the sample ($n = 1,593$). Differences between treatment and comparison households were assessed using standardized mean differences between selected covariates, with standardized mean differences of < 0.25 used as an indication of a sufficiently good match.

Figure 8: Covariate Differences Before and After Matching for Treatment and Comparison Households



Full matching (Hansen 2004), which maximizes the retention of treatment and comparison units by matching one or more treatment units to one or more comparison units, substantially improved the match between households participating in any HBI activity and comparison households (Figure 8)¹². This improvement is visualized in Figure 8. Figure 8A displays the improvement in matching by showing standardized mean difference between treatment and comparison households for matching variables

¹² Means and standard deviations for most covariates before matching are included in Appendix E, Table I.

before matching (open circles) and after matching (red circles). Note that the standardized difference for the likelihood of receiving HBI livelihood interventions (propensity score) between treatment and comparison households is relatively large before matching and close to zero after matching. This improvement in the likelihood of receiving HBI interventions before and after matching is further visualized in Figure 8B and Figure 8C, which display the distribution of propensity scores for treatment and comparison households before (Figure 8B) and after (Figure 8C) matching. After matching, the distribution of propensity scores is almost identical between treatment and comparison households. Full matching also substantially reduced differences between treatment and comparison households taking part in cultivation-based livelihood activities (Appendix E, Appendix Figure 3), and between treatment and comparison households taking part in small group-based livelihood activities (Appendix Figure 4). These results demonstrate the existence of sufficiently similar treatment and comparison units to detect potential HBI group-based livelihood activity effects at endline.

CFUG-level Data

Because households in CFUGs have the potential to participate in different group-based livelihood interventions, CFUG-level analyses are likely to focus on participation in any type of HBI intervention (although this will depend on HBI programming between now and endline data collection).

To assess differences between treatment CFUGs (CFUGs participating in any HBI group-based livelihood interventions) and comparison CFUGs, a similar set of matching covariates used in the household-level assessments were selected. For the most part, CFUG-level matching covariates were derived from aggregating household-level data. Covariates included:

- i) Household characteristics: the proportion of female-headed households, mean household size, proportion of multidimensionally poor households, mean travel time to markets and forest, proportion of households experiencing shocks, mean remittance income, and proportion of households with at least one international migrant.
- ii) Land and forest use: mean forest and agricultural income, mean land ownership, and mean forest product collection.
- iii) Participation in and perception of forest management institution: the proportion of households participating in the CFUG executive committee and the proportion of households stating regular CFUG meeting attendance, clarity, fairness, and community adherence to management rules.
- iv) Perception on the state of the environment: the proportion of households stating forest condition and water availability is improving.
- v) Proportion of households participating in HBI activities, or activities organized by governmental or other donor-funded institutions.

In addition, tree species richness, biomass, mean slope, forest size, and percent forest cover in 2000 were also included to control for baseline forest characteristics. The district that CFUGs are in was also included in the matching to control for time-invariant or unmeasured differences between districts.

Despite the significantly smaller sample size between treatment and comparison units ($n = 112$), full matching substantially reduced differences between treatment and comparison CFUGs taking part in any

HBI group-based livelihood (Appendix Figure 5)¹³. However, the sample size is considerably reduced: from 34 treatment CFUGs and 78 comparison CFUGs before matching, to 18 treatment CFUGs and 59 comparison CFUGs after matching. This reduction in sample size has the potential to reduce the statistical power of any analyses comparing before and after intervention effects using both baseline and endline data collection, and the likelihood of the evaluation team finding any statistically significant HBI forest-related effects.

4.1.4 Factors Affecting Participation in Hariyo Ban II Group-based Livelihood Activities

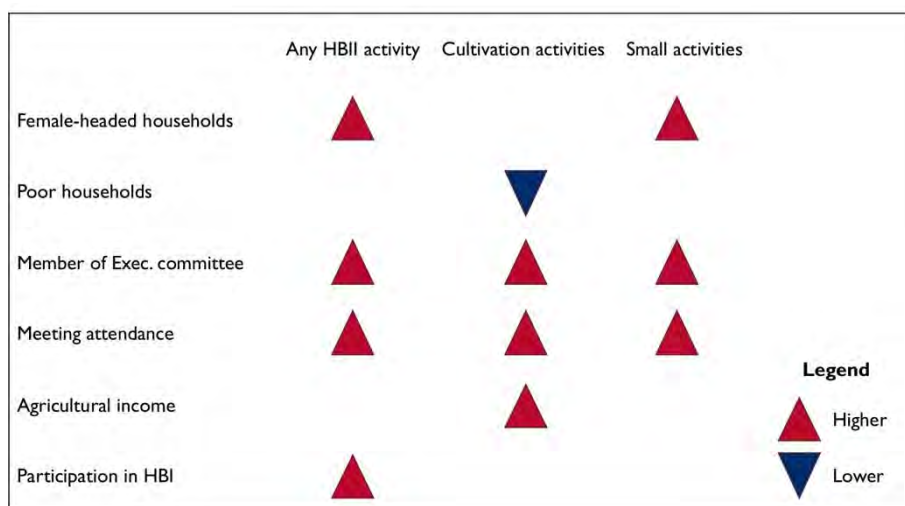
To assess whether selected covariates are linked to participation in HBI group-based livelihood activities, the evaluation team ran a set of binomial regressions. These binomial regressions are equivalent to the ones used to calculate the likelihood of treatment allocation (propensity score) performed as part of the statistical matching^{14,15}. Factors affecting participation were calculated for household participation in any HBI group-based livelihood activity, cultivation-based livelihood activities, and small livelihood activities. Figure 9, below, presents the direction of the relationship between key covariates and participation in *any* HBI livelihood activity, and participation in the two largest sub-categories of HBI livelihood activities (one column per activity, where red triangles represent positive relationships, and blue triangles represent negative relationships).

¹³ Differences in means for all covariates before matching are included in Appendix Table 2.

¹⁴ In the equation $hhP_i = \beta_0 + \beta Char_i + \beta Inst_i + \beta Ag_i + \beta For_i + \beta OtherInt_i + \beta CFUG_i + \varepsilon_i$; where participation in HBI activities in household i ($hhP_i = 1$ if $hhP_i > 0$, otherwise $hhP_i = 0$); $\beta Char_i$ is a vector of household characteristics; $Inst_i$ is a vector of variables related to household engagement in, and perceptions of community forest management institutions; Ag_i is a vector of household agricultural related variables; For_i is a vector of variables related to household forest use and perceptions of forest condition; $OtherInt_i$ is a vector for variables linked to participation in HBI and other livelihood interventions; $CFUG_i$ is a dummy variable to control for CFUG-level fixed effects.

¹⁵ $cfugP_j = \beta_0 + \beta Char_j + \beta Inst_j + \beta Ag_j + \beta For_j + \beta OtherInt_j + \beta CFUG_j + \varepsilon_j$; where $cfugP_j$ is participation in HBI activities in CFUG j ($cfugP_j = 1$ if $cfugP_j > 0$, otherwise $cfugP_j = 0$); $Char_j$ is a vector of CFUG characteristics; $Inst_j$ is a vector related to engagement in, and perceptions of community forest management institutions; Ag_j is a vector of agricultural related variables; For_j is a vector of variables related to forest use, perceptions of forest condition and biophysical factors; $OtherInt_j$ is a vector for variables linked to participation in HBI and other livelihood interventions; $cfugP_j$ is a dummy variable to control for CFUG-level fixed effects.

Figure 9: Factors Influencing the Likelihood of Participating in Hariyo Ban II Activities (Any Activity, Cultivation Activities and Small Activities)



Detailed tables describing statistical relationships between HBII participation and key covariates are presented in Appendix Table 3 and Appendix Table 4. Results show that participating households of any HBII activity were slightly more likely to be (i) female-headed, (ii) members of the CFUG executive committee, (iii) households with higher levels CFUG engagement, and (iv) participants of Hariyo Ban I activities. Similarly, participants of HBII cultivation activities were less likely to be (i) multidimensionally poor, and more likely to (ii) be members of the CFUG executive committee with higher levels CFUG engagement, and (iii) have higher income from agricultural sources. Participation in small HBII activities is determined by similar factors.

Conversely, CFUGs participating in HBII were more likely to have (i) a larger proportion of households having experienced a recent shock, (ii) fewer regular participants at CFUG meetings, (iii) lower CFUG revenue, (iv) higher perceived adherence to forest management rules, (v) more agriculturally suitable forests (forests on flatter lands), and (vi) higher tree species richness (see Appendix Table 4).

The magnitude of all of these differences listed above is moderate and, in some instances, large (both at the household and CFUG-level). For example, someone who attends CFUG meetings “often” increases the likelihood of participating in *any* HBII activity by 23 percent [see Appendix Table 3, “Meeting Attendance (often)”]. These results shed some light on the nature of participating households and CFUGs and highlight potential spaces for improvement in the targeting of HBII activities.

4.1.5 Preliminary Effects of Hariyo Ban II on Income

Household survey participants were asked to provide estimates of their total income over the past year, and participants in HBII group-based livelihood activities also were asked to provide an estimate of any income that they could specifically link to participation in HBII activities. These questions enable the calculation of preliminary HBII effects on participation less than two years into implementation. The theoretical assumption is that if HBII participation has affected household income, then the total household income minus HBII-specific income should not differ between matched participating and non-participating households. However, because total household income should include income generated

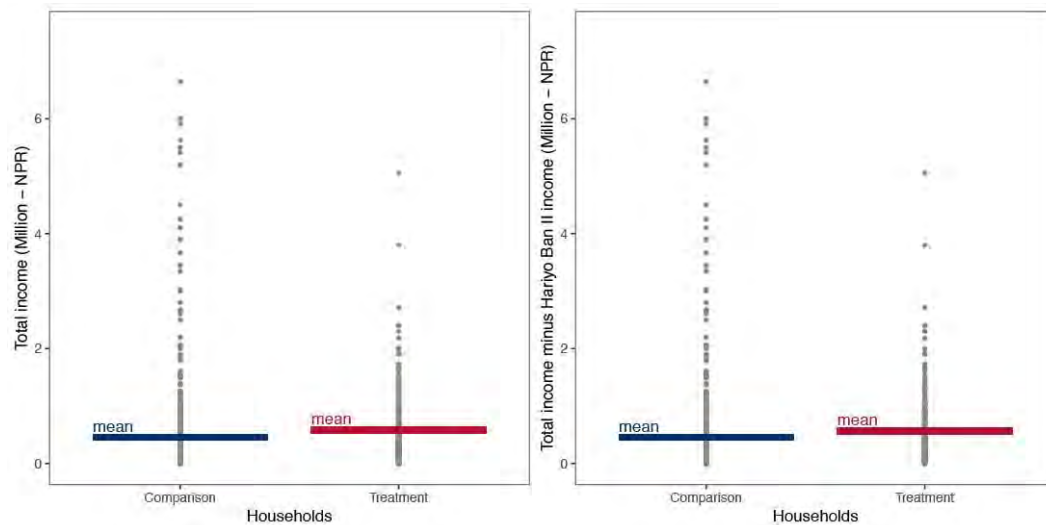
from HBII activities, total household income should differ between matched treatment and comparison units. Of the 538 HBII participating households sampled as part of the baseline, 192 households reported a mean income of 40,507 NPR (about \$370 at the time of writing) that they attributed to activities supported by HBII since the start of the program. This represents an average of 7.2 percent of the mean and 13 percent of the median income for treatment households.

As expected, results from a post-matching analysis show no statistically significant difference in total income minus HBII-specific income between treatment and comparison households (coef. = 0.01, std. error = 0.03, $P = 0.71$)¹⁶. Total income also did not differ significantly between matched treatment and comparison households (coef. = 0.04, std. error = 0.03, $P = 0.17$)¹⁷. These results are summarized in Figure 10. Taken in combination, these results suggest no effects of HBII participation on household income to date. However, these results should be interpreted considering the short time since implementation of HBII activities (between 1 and 2 years at the time of data collection), and lag effects of potentially high-income generating interventions (e.g., coffee plantations).

¹⁶ $TInc_i = HBInc_i + \beta_0 + \beta P_i + \beta Cov_i + \beta \varpi_i + \varepsilon_i$; where $TInc_i$ is the total income in household i ; $HBInc_i$ is HBII specific income; P_i is participation in HBII livelihood activities; Cov_i is a vector key covariates linked to household characteristics, engagement in and perceptions of community forest management institutions, agricultural variables, forest use and perception of forest condition and participation in HBI activities and other livelihood interventions; and ϖ_i is the matching weight.

¹⁷ $TInc_i = \beta_0 + \beta P_i + \beta Cov_i + \beta \varpi_i + \varepsilon_i$; where $TInc_i$ is the total income in household i ; P_i is participation in HBII livelihood activities; Cov_i is a vector key covariates linked to household characteristics, engagement in and perceptions of community forest management institutions, agricultural variables, forest use and perception of forest condition and participation in HBI activities and other livelihood interventions; and ϖ_i is the matching weight.

Figure 10: Preliminary Effects of Participation in HBII Group-based Activities on Household Income.



4.2 Baseline Research Question I: How do livelihood strategies of community forest users influence forest resource use, land use and community forest management institutions?

Rural livelihood strategies, including land and forest use, affect forests through several pathways, including i) forest conversion to agricultural land and ii) the extraction of timber and non-timber forest products that affect forests' ecological condition (Sunderlin et al. 2005). Local forest management institutions can also affect forests by moderating the effect of rural livelihood strategies as communities design, implement, and enforce rules to control forest use. Research has shown that strong management institutions are associated with better forest outcomes generally (Persha et al. 2011). Specifically, with respect to Nepal, local forest management institutions have been credited with reductions in both poverty and deforestation (Oldekop et al. 2019).

The first baseline research question focuses on the links between livelihood strategies (including income sources and land use), forest use, and community management institutions. International migration and remittance income have been a key driver of poverty reduction in Nepal (Maharjan et al. 2013, Oldekop et al. 2018), and have led to significant changes in livelihood strategies in rural areas that can reduce pressure on community forest and create spaces for reforestation (Maharjan et al. 2013, Oldekop et al. 2018). Remittances are a substantial cash income (mean contribution of remittances to total household income in the collected baseline data is approximately 31 percent) and have the potential to influence land use, forest dependence, and community forest institutions. Because remittances affect many aspects of rural livelihoods, they provide a useful proxy for the potential effect of livelihood interventions designed to diversify incomes and reduce dependence on forest resources and agriculture.

Remittance income has the potential to reduce pressure on forests by changing household dependence on forest products, including fuelwood (Robson and Berkes 2011, Manning and Taylor 2014). Similarly, remittance income can lead to a reduction in the land dedicated to agriculture by reducing household dependency on agricultural production or by permitting households to invest in the intensification of agricultural production on more agriculturally productive lands (Maharjan et al. 2013, Oldekop et al. 2018). These processes can create spaces for reforestation on areas no longer used for agriculture, or

areas that are less suitable for agricultural production (Schmook and Radel 2008, Manning and Taylor 2014, Oldekop et al. 2018).

Effective forest management institutions, the rules, controls and sanctions that local communities implement, have been shown to be critical drivers of positive condition (Chhatre and Agrawal 2008, Persha et al. 2011). Strong institutions of common-pool resource management systems depend on a degree of dependency and perceptions of scarcity on the resources being managed collectively (Wade 1986, Ostrom 2009, Oldekop et al. 2012). A reduction in household dependence on forest products could lead to a potential reduction in the engagement with forest management and, therefore, lead to a reduction in the effectiveness of forest management institutions; an unintended consequence, that represents an alternative hypothesis to the expected theory of change, as represented in Figure 2. To understand how remittances potentially affect forest dependence, land use, and community forest institutions, the link between remittances and fuelwood collection, fallow land, and CFUG meeting attendance (a proxy for household engagement in community forest management decision making processes) was investigated.

4.2.1 Fuelwood Collection

Fuelwood collection is a key driver of deforestation and forest degradation globally (Hosonuma et al. 2012). Mean annual fuelwood collection from community forests by surveyed households was 1,982 Kg (std. deviation = 11,362 Kg). While high and highly varied, this amount is within the range of previous reported rural fuelwood consumption patterns (Kandel et al. 2016). To assess the effects of remittance income on fuelwood collection, fuelwood collection was modeled statistically as a function of remittances and key covariates¹⁸.

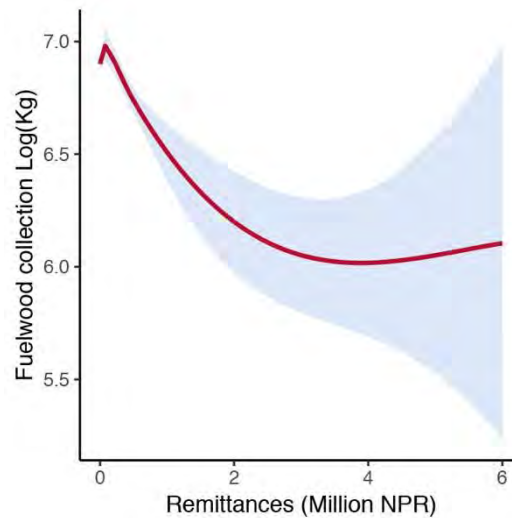
Results from these analyses show that remittances were negatively and statistically significantly linked to fuelwood collection (coef. = -1.6E-07, std. error = 4.9E-08, P = 0.0012, Appendix Table 5) The evaluation team tested the robustness of these findings and found that the relationship is not a function of how the statistical model specified the fuelwood collection variable¹⁹. Although statistically significant, the relationship between fuelwood collection and remittance income is relatively small substantively. A doubling in the mean annual remittance income leads to only a 2.5 percent decrease in the mean annual fuelwood collection. Furthermore, the relationship between remittances and fuelwood consumption appears not to be linear, with higher remittance incomes not leading to a further reduction in fuelwood collection. This finding is in line with other studies, which show that rural households readily diversify their fuel sources when opportunities arise (fuel stacking) but does not switch entirely from one fuel source to another (e.g., from fuelwood to liquefied petroleum gas; Manning and Taylor 2014, Kar et al. 2019). This relationship is visualized in Figure 11, below, where the red line represents the best-fit line,

¹⁸ $\log(\text{Fuel}_i + 100) = \beta_0 + \beta \text{Remit}_i + \beta \text{Cov}_i + \varepsilon_i$; where Fuel_i is fuelwood consumption in household i (because fuelwood collection measures were positively skewed, fuelwood collection measures were log-transformed to meet statistical requirements necessary for analysis. 100 was added as a constant to ensure that households with 0 fuelwood consumption were retained in the analysis); Remit_i is household remittance income; and Cov_i is a vector key covariates linked to household characteristics, engagement in and perceptions of community forest management institutions, agricultural variables, forest use and perception of forest condition, and participation in HBI activities and other livelihood interventions.

¹⁹ A robustness test using a different model specification in which the continuous fuelwood collection variable was replaced with a binary measure of whether household fuelwood collection was in the upper tercile or not confirms the statistically negative relationship between remittance income and fuelwood collection (Appendix Table 5).

and the light blue shaded the areas the 95 percent confidence intervals (both the best-fit line and confidence intervals were calculated using a Loess smoothing function).

Figure 11: Relationship Between Remittance Income and Fuelwood Collection



4.2.2 Fallow Land

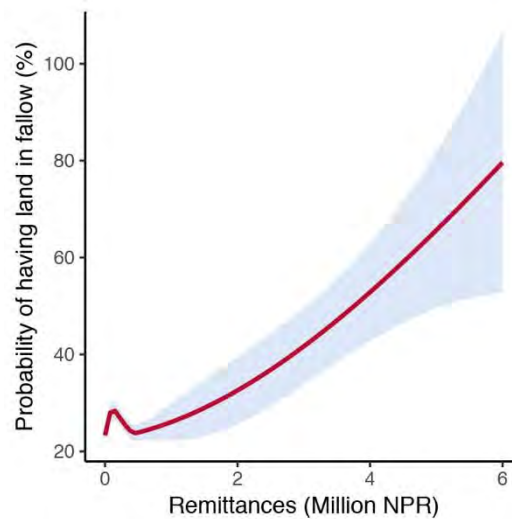
Fallow land can be a key space for reforestation and is linked to a reorganization of agricultural production that is often driven by market forces (Rudel et al. 2005, Meyfroidt and Lambin 2011). This reorganization can be influenced by remittances as households become less reliant on agricultural production or as households invest remittances to intensify agricultural production and consolidate agricultural land (Rudel et al. 2005, Meyfroidt and Lambin 2011, Oldekop et al. 2018). Of the 4,840 surveyed households, 1,068 indicated they had land in fallow with an average of about a quarter of a hectare in fallow (0.26 hectares, std. deviation = 0.34, mean duration in fallow = 46.36 months, std. deviation = 47.95).

Because a large number of households did not own any land in fallow, the evaluation team conducted a first analysis to estimate whether remittance income increased the likelihood of having land in fallow. Whether households had land in fallow was modeled as a function of remittance income and other key covariates using a binomial regression. A second analysis was then conducted on households owning fallow land to determine whether households with higher remittance income had more land in fallow. The amount of land held in fallow was positively skewed (a large number of households held very small amounts of land in fallow while a small number of households held very large amounts of land in fallow)²⁰.

²⁰ $\log(\text{Fallow}_i + 1) = \beta_0 + \beta \text{Remit}_i + \beta \text{Cov}_i + \varepsilon_i$; where Fallow_i is the amount of fallow land in household (because fallow land measures were positively skewed, fallow land measures were log-transformed to meet statistical requirements necessary for analysis. 1 was added as a constant to ensure that households with 0 fallow land were retained in the analysis); Remit_i is household remittance income; and Cov_i is a vector key covariates linked to household characteristics, engagement in and perceptions of community forest management institutions, agricultural variables, forest use and perception of forest condition, and participation in HBI activities and other livelihood interventions

Results from this analysis indicate that remittance income was positively and statistically significantly linked to having land in fallow (logit coef. = 3.1E-07, $P = 0.014$, Appendix Table 6). The probability of having land in fallow increases substantially with remittances. A doubling in the mean annual remittance income leads to a 5.4 percent increase in the probability of having land in fallow. This relationship is demonstrated in Figure 12, below, where the red line represents the best-fit line and the light blue shaded areas the 95 percent confidence intervals (both the best-fit line and confidence intervals were calculated using a Loess smoothing function). However, for those households with land in fallow, remittance income was not linked to larger amounts of land in fallow (coef. = 5.9E-08, $P = 0.41$, Appendix Table 6). Rather than stopping agricultural production altogether, households receiving remittances might be investing remittances into agricultural inputs and agricultural intensification (Oldekop et al. 2018), leading to non-linear relationships between remittance income and land in fallow.

Figure 12: Relationship Between Remittance Income and the Likelihood of Having Land in Fallow



4.2.3 Engagement with Community Forest Management Institutions

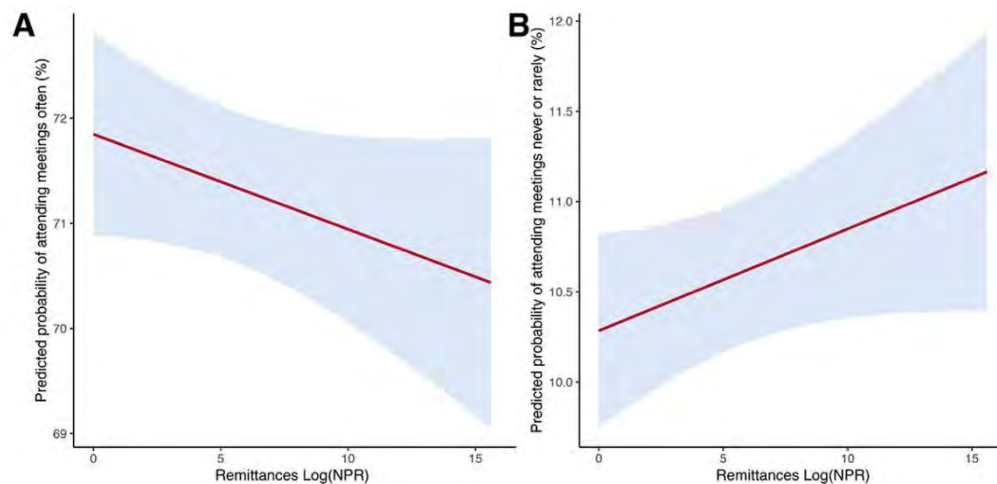
Household survey participants were asked how often members of the household participated in CFUG meetings using a five-point Likert scale (never < rarely < sometimes < often < always). To assess whether remittance income was associated with the frequency of participation in meetings, the frequency of participation was modeled as a function of remittance income and key covariates using an ordinal logistic regression²¹.

²¹ Within the baseline sample, 268 respondents stated that their households “never” attended meetings, 182 stated that they “rarely” attended meetings, 776 stated that they “sometimes” attended meetings, and 3098 stated they often. No survey participants responded stated they “always” participated in meetings. Because no participant responded “always”, and because relatively few participants responded “never” or “rarely”, the frequency of participation variable was re-coded into a three-point Likert scale by combining “never” and “rarely” responses. Meeting attendance was modelled as:

$Attend_i = \beta_0 + \beta_{Remit_i} + \beta_{Cov_i} + \varepsilon_i$ where $Attend_i$ is attendance at CFUG meetings in household and can take three values (never/rarely; sometimes; and often); $Remit_i$ is household remittance income; and Cov_i is a vector key covariates linked to household characteristics, engagement in and perceptions of community forest management institutions,

Remittances were negatively and statically significantly linked to lower participation rates in CFUG meetings (coef. = -0.02, P = 0.016, Appendix Table 7). These results are visualized in Figure 13, where red lines represent the best-fit lines and the light blue shaded areas the 95 percent confidence intervals (both the best-fit line and confidence intervals were calculated using a Loess smoothing function). The figure shows that the likelihood of attending meetings “often” decreases with remittances (Figure 13A), while the likelihood increases of attending meetings “never” or “rarely” (Figure 13B). The declines in the probability of attendance are relatively small: relative to no remittance income, having a mean remittance income reduces the probability of attending meetings often by 2.2 percent. As with fuelwood collection, the evaluation team performed a test for robustness of these findings to how the statistical model was specified.²² The test confirms the statistically negative relationship between income from remittances and participation in CFUG meetings (Appendix Table 7).

Figure 13: Association Between Remittance Income, and Participation in CFUG Management Meetings



As a baseline data collection, there is no longitudinal data to link casually CFUG management meeting participation with forest outcomes. Further time and research, including qualitative data collection to understand how forest management institutions are changing, would be required to determine whether reductions in CFUG management meeting participation of this magnitude translate into a reduction in the effectiveness of forest management institutions in line with the proposed alternative theory of change discussed above and represented in Figure 2.

agricultural variables, forest use and perception of forest condition, and participation in HBI activities and other livelihood interventions. To improve model fit, remittance income and other heavily skewed variables

²² This robustness test uses a post-matching regression and a different model specification in which the continuous remittance variable is replaced with a binary remittance variable, coding whether households had received remittances or not.

4.3 Baseline Research Question 2: How do livelihood strategies of community forest users influence forest outcomes?

As part of the analysis of the baseline data, the team assessed what socio-economic, institutional, and biophysical covariates affected three widely used indicators of forest condition: tree species richness, biomass, and deforestation. CFUG-level covariates were compiled from three sources:

- (i) Data collected as part of the household survey and aggregated to the level of individual CFUGs (for example, household fuelwood collection was aggregated to the CFUG-level by calculating the mean household fuelwood collection of all sampled households within a CFUG).
- (ii) Spatial, remote sensing and forest-plot level data.
- (iii) Data collected as part of the CFUG-level survey.

To assess which covariates affected forest condition, indicators (tree species richness²³, biomass²⁴, and deforestation²⁵) were modelled as a function of key characteristics of the CFUGs, household socio-economic characteristics, household land and forest use, biophysical conditions, participation in HBII, HBI and other livelihood interventions, and forest biophysical conditions. After controlling for these key socio-economic, institutional and biophysical covariates, none of the assessed forest condition indicators were associated with CFUG participation in HBII livelihood activities (Figure 14), as explained further below. Differences in forest condition indicators between treatment and comparison CFUGs are presented in Figure 15, below, where grey dots represent forest condition estimates for individual CFUGs, and the horizontal bars represent the mean estimates in treatment and comparison groups (means for comparison CFUGs are represented in blue, and treatment CFUGs are represented in red).

Detailed tables describing statistical relationships between the three forest condition indicators and key covariates are presented in Appendix Table 8. Key findings are discussed here by indicator and visually represented in Figure 14, below. Figure 14 presents the direction of the relationships between key covariates and the three-forest health-related indicators in three separate columns (one column per

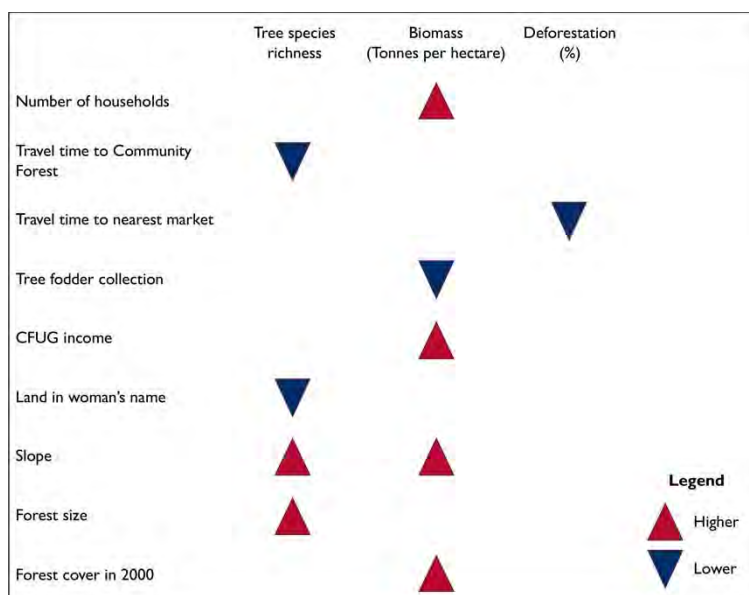
²³ $TRich_j = \beta_0 + \beta_{Char_j} + \beta_{Inst_j} + \beta_{Ag_j} + \beta_{For_j} + \beta_{Int_j} + \beta_{CFUG_j} + \varepsilon_j$; where $TRich_j$ is tree species richness in CFUG j ; $Char_j$ is a vector of CFUG characteristics; $Inst_j$ is a vector related to engagement in, and perceptions of community forest management institutions; Ag_j is a vector of agricultural related variables; For_j is a vector of variables related to forest use and key forest biophysical factors; Int_j is a vector for variables linked to participation in HBI, HBII and other livelihood interventions; $CFUG_j$ is a dummy variable to control for CFUG-level fixed effects.

²⁴ $Biom_j = \beta_0 + \beta_{Char_j} + \beta_{Inst_j} + \beta_{Ag_j} + \beta_{For_j} + \beta_{Int_j} + \beta_{CFUG_j} + \varepsilon_j$; where $Biom_j$ is biomass in CFUG j ; $Char_j$ is a vector of CFUG characteristics; $Inst_j$ is a vector related to engagement in, and perceptions of community forest management institutions; Ag_j is a vector of agricultural related variables; For_j is a vector of variables related to forest use and key forest biophysical factors; Int_j is a vector for variables linked to participation in HBI, HBII and other livelihood interventions; $CFUG_j$ is a dummy variable to control for CFUG-level fixed effects.

²⁵ $Def_j = \beta_0 + \beta_{Char_j} + \beta_{Inst_j} + \beta_{Ag_j} + \beta_{For_j} + \beta_{Int_j} + \beta_{CFUG_j} + \varepsilon_j$; where Def_j is the occurrence of deforestation in CFUG j ($Def_j = 1$ if $Def_j > 0$, otherwise $Def_j = 0$); $Char_j$ is a vector of CFUG characteristics; $Inst_j$ is a vector related to engagement in, and perceptions of community forest management institutions; Ag_j is a vector of agricultural related variables; For_j is a vector of variables related to forest use and key forest biophysical factors; Int_j is a vector for variables linked to participation in HBI, HBII and other livelihood interventions; $CFUG_j$ is a dummy variable to control for CFUG-level fixed effects.

indicator, where red triangles represent positive relationships, and blue triangles represent negative relationships).

Figure 14: Factors Influencing Indicators of Forest Condition



Tree species richness was negatively and statistically significantly linked to travel time to the community forest, as expected (coef. = -0.07, $P = 0.017$) and mean household area in women's name – a key social equity indicator (coef. = -0.003, $P = 0.026$), although both associations are small to moderate. For example, for each additional minute of travel time, tree species richness decreases by less than one species: doubling the travel time to forests (27.7 minutes) would decrease species richness by 1.9 species. Tree species richness was positively and statistically significantly associated with forest slope (coef. = 0.41, $P < 0.001$), and forest size (coef. = 5.6, $P < 0.001$).

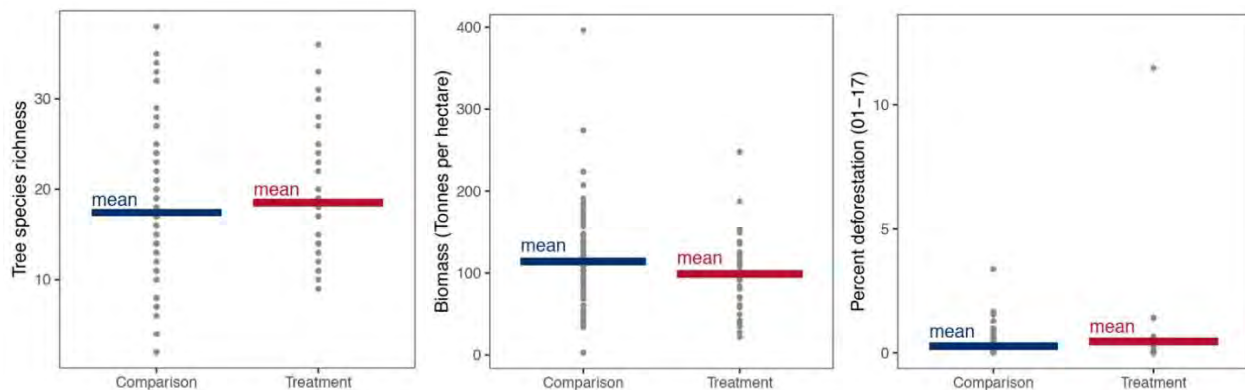
Biomass was negatively and statistically significantly associated with tree fodder collection (coef. = -0.004, $P = 0.037$), and positively and statistically significantly associated with the number of households within the CFUG (coef. = 0.16, $P = 0.029$), CFUG income (coef. = 1.0E-05, $P = 0.003$), forest slope (coef. = 3.1, $P = 0.004$), and percent forest cover in 2000 (coef. = 0.52, $P = 0.019$).

Deforestation, measured as the percentage of deforestation relative to baseline forest cover in 2000, was close to zero among all sampled CFUGs (Figure 15). The deforestation variable, therefore, was transformed into a binary variable, classifying community forests with equal or higher levels of deforestation than the mean (0.33 percent) as 1 and those below as 0. Mean tree fodder collection and mean forest income were highly collinear with fuelwood collection and community forest income and, therefore, were excluded from the analysis. Results are presented in the third column of figure 15. The figure shows that deforestation was negatively linked only to mean travel time to markets (coef. = -0.04, $P = 0.034$). This association also is moderate, with each additional minute of travel decreasing the likelihood of deforestation by 0.3 percent: doubling the mean travel time to markets (37.9 minutes) would decrease the likelihood of deforestation by an average of 11.4 percent.

The factors associated with forest condition predominantly relate to the following:

- Biophysical covariates (slope - a commonly used proxy for agricultural suitability, forest size, and forest baseline forest cover).
- Relatively time-invariant factors (e.g., household travel time to the community forest, and household travel time to the nearest local market).
- Forest-use covariates (tree-fodder collection).
- Community characteristics (CFUG household number – a proxy for size and CFUG income).

Figure 15: Differences between comparison and treatment CFUGs by forest condition indicator.



These results are in line with previous research on drivers of forest condition and deforestation (e.g., Geist and Lambin 2002), and factors associated with positive community forest outcomes. For example, previous work on community forests has shown a positive association between forest size and forest outcomes (Chhatre and Agrawal 2009), and a curvilinear relationship between CFUG size and forest outcomes (Oldekop et al. 2010), the rationale being that larger forests harbor larger amounts of carbon (and biodiversity), and that moderately sized CFUGs are able to maximize community social, human, financial capital²⁶. Similarly, recent research has shown that CFUGs in poorer areas less effective at reducing deforestation than similar CFUGs in relatively wealthier areas (Oldekop et al. 2018). The negative relationship between the amount of land in women's name is surprising, and rather than being a causal relationship, may be due to higher efforts to empower women in more degraded areas.

4.4 Conclusions

4.4.1 Strength of the Baseline

Data validation results (sections 4.1.1 and 4.1.2) from the three data collection efforts (forest condition assessments – including remote sensing analysis, CFUG-level survey, and household-level survey), and a broad overlap in associations between key socioeconomic and biophysical covariates found in previous studies (see section 4.3 above) suggest that all three data collection efforts and related data cleaning processes were highly successful, yielding high-quality data for the evaluation. Furthermore, matching analyses at both the household- and CFUG-level suggests that the sampling designed by the evaluation

²⁶ CFUGs with more than 600 households were excluded from the sample, helping to explain a linear relationship rather than a curvilinear one in this analysis.

team was successful at selecting sufficiently comparable treatment and comparison households and CFUGs to make strong causal inferences should the baseline data be combined with end-line data.

The household-level sampling and data collection was particularly successful. The degree of success is demonstrated by the strength of the matching results (the ability to find comparable comparison households to selected treatment households) and the high retention of treatment and comparison households after matching. Furthermore, the strength of matching and retention of treatment and comparison households was comparable for participation in *any* HBII livelihood activity, and participation in the two largest sub-categories of HBII livelihood activities (cultivation-linked interventions, and small interventions), suggesting that the sampling design also was able to address potential sample-size and statistical power issues linked to the fact that HBII livelihood support encompasses a multitude of different interventions..

The evaluation team's matching analysis of the CFUG-level data also was able to select successfully comparable treatment and comparison households. However, the matching algorithm was only able to retain 53 percent of treatment CFUGs (34 treatment CFUGs before matching, 18 treatment CFUGs after matching). This is likely due to the small initial sample size of CFUGs sampled as part of the evaluation, which was due to financial constraints that limited the number of CFUGs that could be sampled. However, standardized mean differences (a common measure used to assess difference between treatment and comparison CFUGs) for most covariates before matching are relatively small, suggesting that causal inferences could be made using standard regression analysis alongside various robustness checks, including hidden-bias analyses (e.g., Rosenbaum bounds), endogeneity tests, and spatial autocorrelation analyses, to ensure that results are (i) not overly sensitive to potential unmeasured variables, (ii) that any unmeasured variables are not associated with the likelihood of receiving the treatment or the outcomes of interest, and that (iii) results are not influenced by the spatial distribution of treatment and comparison CFUGs.

4.4.2 Minimal Deforestation in CFUGs

Deforestation in Nepal is currently close to zero, and the country is on the cusp of a forest transition - a reversion from historical deforestation trends to reforestation (Oldekop et al. 2018). Analyses of baseline data in this report show very low levels of deforestation in both treatment and comparison CFUGs and follow nationally observed trends. The team also found no significant differences in tree species richness and biomass between treatment and comparison CFUGs. Given the widespread prevalence of community forestry and the lack of protected areas that might provide a set of reference forests for comparison, it is impossible to assess how species richness and biomass values compare to "intact" virgin forests in these areas. However, the observed species richness and biomass values appear to be in line with typically-observed values of community-managed forests in the middle hills of Nepal (L Sharma and B Karna – pers. comms). This suggests that the sampled community forests are in relatively good environmental condition.

4.4.3 Effects of Remittances on Forest Dependence, Land Use, and Engagement in Community Forest Management Institutions

The baseline data collection also allowed the team to test the potential effects of an alternative theory of change (see section 1.2). This theory of change posits that in addition to affecting agricultural production and forest resource use, changes in livelihoods also affect household engagement in the local

community institutions responsible for effective forest management. This reduced engagement could lead to a reduction in the effectiveness of local institutions and have potentially negative effects on forest condition – something that would run counter to the overall aims of the HB programs. The evaluation used income from remittances, which have transformed rural landscapes in Nepal (Maharjan et al. 2013, Oldekop et al. 2018), as a proxy for intervention-linked livelihood diversifications.

Results from these sets of analyses demonstrate that remittance income is associated with the creation of spaces for forest restoration and resurgence (reductions in household fuelwood consumption and increased likelihood of households having land in fallow), as well as reductions in household engagement in community forest management institutions (measured as the frequency of household attendance at community meetings). The evaluations team's findings of remittance income effects on forest and agricultural dependence are in line with recent research efforts demonstrating that international migration has been a key driver of forest resurgence in Nepal - largely due to a re-arrangement of agricultural practices and reforestation on more marginal lands (Oldekop et al. 2018). A key question remains whether the effects of remittances on reductions on fuelwood consumption are large enough to have detectable effects on biophysical measures on forest condition. Changes in forest condition are difficult to measure using the remote sensing products available to the team, which have a relatively coarse spatial resolution (30m x 30m pixels)²⁷. The combination of detailed biophysical forest condition assessments at baseline and endline should provide insight into the causal relationship between changes in the fuelwood consumption and changes in forest condition. It is similarly difficult to gauge reductions in household engagement in community management institutions are also linked to reductions in management effectiveness (e.g., enforcement of sanctions), and whether this, in turn, translates into changes in forest condition. Here, again, the combination of detailed biophysical forest condition assessments at baseline and endline should provide more insight on the causal relationship between engagement in community institutions, reductions in the effectiveness in community institutions, and forest condition.

Critically, the current income from HBII activities represents approximately 16 percent of mean income generated from remittances. If the magnitude of these HBII livelihood benefits remain similar, they might potentially be too small to affect forest and agricultural dependence or community institutions.

4.4.4 Program Participation, Poverty, and Marginalization

Analyses of the baseline data revealed several key trends with respect to participation of both CFUGs and households in HBII livelihood interventions. Firstly, participating households tended to (i) be less poor, (ii) have higher contributions of their income stem from agricultural activities, and (iii) be part of the CFUG's executive committee. Secondly, participating CFUGs tended to be in slightly better environmental condition (higher levels of tree species richness). These findings pose significant questions about the exclusion of areas with significant restoration potential and barriers to participation for poorer households, and elite capture

The majority of HBII livelihood interventions relate to agricultural activities and require some form of in-kind contribution by participating households (e.g., agricultural materials). Poorer households with little access to land, or without sufficient assets (e.g., land) or capital might thus be excluded inadvertently from the program. This exclusion could lead to increased inequalities and further

²⁷ Degradation occurs at finer spatial scales and is detectable using higher resolution remote sensing products.

marginalization of the poorest CFUG members. Critically, recent research from Nepal has shown that CFUG in poorer areas are less effective at reducing deforestation (Oldekop et al. 2019), suggesting that additional support for poorer CFUGs (and households) is critical to increasing the effectiveness of community management programs is critical.

Elite capture and the perpetuation of inequalities has dogged debates on community-based conservation in Nepal and elsewhere for decades (e.g., Iversen et al. 2006, Lund and Saito-Jensen 2013). Empirical evidence suggests that although decentralization of natural resource management increases the likelihood of elite capture, this risk *can* be mitigated by involvement and support of external agencies (Persha and Anderson 2014), potentially through the implementation mechanisms to increase transparency of relative benefits (Barnes and van Laerhoven 2013).

5. RECOMMENDATIONS

5.1 Recommendations for the Evaluation: Midline and Endline

I. USAID should consider undertaking an endline study in the same areas but with revised evaluation questions and streamlined instruments between 2023 and 2026 with scoping work undertaken in 2022.

Given the strength of the baseline data collection effort and results from the set of initial analyses, USAID/Nepal should consider conducting an endline data collection and analysis between 2023-2026. Such an analysis would allow the evaluation team to assess the effects of livelihood interventions and livelihood changes, albeit with modified evaluation questions than those planned originally, and modified data collection instruments.

Given the relatively good environmental condition of community forests in treatment and comparison CFUGs and the relatively small current contribution of HBII activities to total income, it might not be possible to detect HBII-related effects on forest condition (either positive or negative) that are the centerpiece of the evaluation questions as written currently. However, the evaluation team found evidence for potential pathways with implications for forest conservation presented as part of the alternative hypothesis. These results speak to related concerns and include: (i) Livelihood effects on reduction on forest dependence (using remittances as proxy for large cash-incomes); (ii) livelihood effects on potential spaces for reforestation outside of community forests (fallow land); (iii) livelihood effects on reduced engagement with CF institutions (attendance at meetings).

Although USAID could continue to pursue the original evaluation questions with an endline, other causal pathways linking livelihood changes to forest outcomes are likely to be larger in the Nepali context (e.g., remittance effects). Changing the evaluation questions will sharpen the evaluation's focus and increase statistical power and the probability of detecting expected results. However, there is a pressing need to better understand drivers of forest condition inside and outside community forests. Key questions about conservation effects of HBII livelihood interventions, including a more detailed assessment of the alternative theory of change which has potential programmatic implications, could be addressed with an endline. The following three evaluations questions appear more relevant, important, and answerable given the context and baseline findings than the original five evaluation questions as written. The first question retains the original evaluation question but adds the two words in italics.

1. What effect do livelihood interventions *and other sources of income (including remittances)* have on household wealth, forest dependence, resource use, and pro-conservation behaviors?
2. How do livelihood programming- and increased income (including remittances) affect community forest institutions, and do these effects translate into forest outcomes inside and outside of community forests?
3. What is the relative magnitude of potentially divergent effects (reduced forest dependence; reduced engagement with CF institutions; reduced agricultural dependence) on forests inside and outside of community forests?

For question one, above, the team's analysis shows some evidence of these effects^{28[1]}, but results are inconclusive - potentially due to the modest number of surveyed community forests. Conducting a dedicated power analysis prior to undertaking the midline could suggest the increase in livelihoods funding or remittances required to find a significant effect during the endline, although doing so is less accurate than conducting an endline to generate a longitudinal dataset.

For question two and three, the evaluation could focus on generating more precise estimates of the amount of reforestation occurring in areas previously used for agricultural production and the ecological quality of these forests. These could be measured using remotely sensed data without the need for a baseline. Addressing this question is key because the strengthening of local institutions to conserve and restore community forests has been the focus of millions of dollars of investment by the Nepali government, and international aid by USAID and other international donors.

While these questions are not the originally planned evaluation questions for the endline, addressing these questions would provide critical programmatic information for key stakeholders (including USAID Nepal) about targeting future HB interventions and beyond, including decisions about where and how to support livelihoods and CFUGs in the future. Such support could include (i) potential support to help maintain community forest management institutions affected by livelihood changes; (ii) support for CFUGs in poorer environmental condition, and (iii) support for households to maximize forest recovery outside of CFUGs.

Of importance are two issues. First, a better understanding of how alternative livelihood strategies and the diversification of livelihoods affect community forest management institutions, and to assess in detail the potential for perverse effects that these changes could have on community management institutions and forests. Second, a better understanding of how livelihood changes influence the potential for forest recovery outside of community forests (e.g., on land no longer used for agriculture). A midline data collection will provide some initial qualitative insight on these issues, but an endline data collection effort will provide the necessary rigor to make stronger causal inferences as well as key programmatic recommendations. Critically, a detailed analysis of baseline and endline data would provide additional insights to understand the relative effects of both reductions in forest dependence and weakening of community forest management institutions (e.g., through reduced enforcement - Questions 2 and 3).

The collected baseline data still could be used to answer these additional evaluation questions. But data collection instruments for the endline would have to be modified to include additional questions about engagement in community forest management institutions, spatial data and GPS locations of agricultural land and fallow land, and biodiversity assessments of resurgent forests. Note, however, that a less intensive assessment of community forests would help to ensure that such an endline data collection effort remains similar in terms of costs to the baseline.

The evaluation team recommends that an endline study should be undertaken between three and six years after the end of the program (2023-2026). This corresponds to between seven and ten years after the collection of the baseline. At this time, CFUGs and households should have fully implemented HBII related activities, allowing a detailed assessment of how HBII support has influenced livelihoods and how this is impacting forests and community forest institutions. By 2021, the Mission also should know

^{28[1]} Coefficients of key variables - household meeting attendance, clarity of rules, fairness of rules - are in the expected direction, see Appendix Table 8.

whether there is a follow-on activity and the overlap of that activity's implementation areas with the HBII areas. Planning for the endline data, including the design of the sampling strategy and data collection efforts should start at least a year in advance of the actual data collection effort. This planning effort undertaken in 2022 could include a scoping effort that both defines the scope of work and also possibly collects information about implementation areas to determine better whether the follow-on activity is likely to augment or reduce the potential to measure effects. This effort will further help the Mission determine whether to proceed with the endline. Given the strength of the baseline data collection, the evaluation team recommends resampling the areas already sampled during the baseline, although the data collection instruments would be streamlined to be more efficient for evaluators and respondents and facilitate quicker data cleaning processes and analyses.

2. USAID should undertake a cost-effective, qualitative midline study during the final year of HBII implementation.

Based on the strength of the baseline as a basis for a longer-term evaluation, USAID/Nepal should consider undertaking a small qualitative midline study to clarify further the longer-term value of pursuing an endline data collection and to provide additional insights on key relationships found during the baseline.

Section 4.1.4 shows that some types of households (and CFUGs) were slightly more likely to participate in HBII livelihood interventions²⁹, though the baseline did not collect information to explain the reasons for these patterns. A midline data collection could help the Mission in understanding the processes and decisions that lead to households a) participating in HBII interventions and b) generating income from these interventions, which is necessary to comprehend the trends seen at baseline, and the outcomes that will be measured at the endline. The cost should be modest and improve the Mission's insights into questions of why underlying key findings from the baseline and improve the probability of a successful endline.

A midline data collection also could provide further insight into how changes in forest dependence affect forest management and condition. This is based on findings from Section 4.2.3, showing that reduced forest dependence may affect participation in community forest management institutions. Further discussions with households and CFUG executive committee members would help speak further to changes in forest dependence and interim changes in forest management.

The evaluation team, therefore, recommends a midline study to explore the following further:

- How CFUGs decided which households would participate in the HBII livelihood interventions.
- The reasons why households did and did not participate in a HBII livelihood intervention.
- The reasons why households did or did not generate income from the HBII livelihood intervention.

²⁹ Of particular interest, especially considering the cross-cutting themes of the HBII program (governance, gender equality and social inclusion), households participating in HBII activities are slightly more likely to be female-headed and to be members of the CFUG executive committee and that participants of HBII cultivation activities are less likely to be multidimensionally poor.

- The experiences of households generating income from HBII livelihood interventions, how income generation from different intervention types compare, and expectations regarding whether income generation is stable or increasing.
- Expectations from stakeholders regarding the sustainability of effects from livelihoods interventions.

How changes in forest dependence affect community forest management institutions. The midline could be combined with further inquiry and liaison with implementing partners to assess:

- Whether the IP has information suggesting any other comparison CFUGs that received treatment (resulting in reduced statistical power that may hinder the ability to detect intervention effects at endline).
- Gathering updated information from other donors in Kathmandu about potential contamination by other donor-funded livelihoods-related programming in program areas.

The issues listed above will be best captured using qualitative methods. A combination of focus group discussions and semi-structured interviews would be used during a mid-line. A sub-section of treatment CFUGs that include a range of intervention types should be selected.

The evaluation team recommends a qualitative midline study should be undertaken in the final year of HBII (2020-2021), although it may be possible to undertake it even soon after the end of HBII. At this time, CFUGs and households should still remember the selection process and should have had sufficient time to start the livelihood activity for which they received training. Costs should be in the range of that for a small performance evaluation with no quantitative element.

5.2 Recommendations for the Implementation of Livelihood Interventions

3. USAID should consider targeting interventions more toward marginal degraded forests and the poor for future programming and, if so, undertake an assessment about whether to target poorer households outside of forest management and on marginal areas outside of CFUGs where greater improvements in biodiversity are possible.

As discussed in section 4.4.3, analyses of the baseline data revealed two key findings concerning the participation of both CFUGs and households in HBII activities that suggest the value of undertaking a small assessment with respect to increasing inclusiveness for future programming and whether to target other or additional areas. First, participating CFUGs tended to be in better environmental conditions (higher levels of species richness). Second, participating households tended to (i) be less poor, (ii) have higher contributions of their income stem from agricultural activities, and (iii) be part of the CFUG's executive committee. These findings pose significant questions about barriers to participation for poorer households, elite capture, and the exclusion of areas with higher potential for restoration.

To contend with these issues, the evaluation team recommends that USAID/Nepal conduct a small-scale assessment prior to decisions about undertaking follow-on programming, if not earlier. The goal would be to assess the use of measures to reduce barriers of participation for poor households and reduce the

risks for elite capture. The assessment might suggest, for example, how implementation mechanisms to increase the transparency of relative benefits might be integrated into future programming (Persha and Anderson 2014, Barnes and Laerhoven 2013). The Mission also may engage current implementers as to whether such efforts are practical given the current advanced state of HBII implementation.

Concerning the first finding discussed above, targeting areas (CFUGs) with forests in relatively good environmental condition appears important to protect large species wildlife corridors. However, it is unclear whether these areas will see the greatest improvements in habitat quality. During strategy setting as part of the CDCS and decision making in developing future programming, the Mission should confirm whether its goal is to focus on large animal wildlife corridors or to improve forests in more marginal areas, where substantial improvements in forest condition could provide the largest economic and environmental benefits. If the latter is prioritized, the assessment discussed above could include a second element to assess the potential of expanding support to poorer and more environmentally degraded areas. This process should also include a situation analysis with implementing partners to review the theory of change.

5.3 Monitoring System Improvements for Improved Detailed Understanding of Implementation

Perhaps the largest threat to a successful endline is the lack of detailed, accurate information about the interventions being implemented across different CFUGs. HBII's M&E system is not set up currently to provide accurate information on implementation beyond the date of data collection for use by the endline evaluation team. Below are suggestions to HBII to improve monitoring data 1) to better assure the proper attribution by location and type of interventions for USAID's and HBII's understanding of implementation, 2) for accurate targeting for any potential follow-on activity, and 3) to increase the probability of a successful endline data collection informed by an accurate updated understanding of implementation after 2018. The evaluation team presents recommendations first for improvements that can be implemented during the remaining period of HBII, second, to merge data on various implementation types, and third, for future implementers working in the same CFUGs were there a follow-on activity.

4. HBII should improve the quality of data and database management by better regulating and increasing uniformity and accuracy of data entered through five improvements to data entry and data cleaning.

This would be undertaken through five potential improvements as follows:

- 4.1. HBII should develop and share with field teams a uniform list that they request the field use for inputting monitoring data or else hire a staff member whose responsibility is to clean monitoring data. This uniform list should ensure that:
 - CFUG names, municipal names, and district names in the records of livelihood training activities are uniform and free of spelling mistakes. The names of community forest user groups, municipalities and districts should be uniform across all datasets and among different implementing partners.

- Accurate record-keeping of which interventions are being implemented by which agency, in which CFUG, and include a record of who the participants are, and what activities they participated in (please consider the ethical implications of collecting this data, including free, prior and informed consent). If possible, also include financial information (how much was spent in each CFUG on training activities, this enable the generation of a potential “intensity measure” that could be used to measure evaluation impacts.

4.2 HBII should produce a simple procedural document on what the standard entries should be and share it with data entry operators.

4.3 Consider narrowing the room for errors by having forms that require as many options as feasible to be selected from a drop-down list or separate spreadsheet/tab to copy and paste rather than entered by typing, especially as the number of additional areas will decrease at this phase.

4.4 Link governance, climate change adaptation activities, and biodiversity conservation components’ regular monitoring data with livelihood data through CFUG, intervention location, and HH matching. This would produce a database of CFUGs, locations, and whether they have received each type of intervention.

4.5 Recruit more M&E staff or interns in the central M&E team to clean the uploaded monitoring data.

5. HBII should capture more livelihoods related information in monitoring data, such as direct beneficiaries and revolving funds, to confirm better the effect of livelihoods-related funding on outcomes.

5.1 Regularly update the list of direct beneficiaries of existing enterprise support activities. (For example, collect the number of new farmers affiliated with certain HBII supported enterprise.)

5.2 If feasible, HBII should work with CFUGs to monitor revolving funds to trace the flow of the seed fund and their utilization by recipients and the outcomes, including amounts disbursed, the timing of repayments, investment types, and types of recipients.

6. If USAID undertakes a follow-on activity in the HBII areas, USAID should require the future IP to improve the M&E system and add helpful data to enable better analysis of its interventions by the IP and external evaluators.

6.1 USAID should have a third-party reviewer (such as a MEL mechanism) provide direct technical assistance to future implementers to review their data and database management plan and approach at multiple points to help improve the quality of data in line with recommendations 1 and 2. Part of the review should include steps the IP should undertake to minimize or capture for analytical purposes contamination of the comparison group with related interventions.

6.2 The future IP should explore the possibility of allocating each household a unique ID (after informed consent is provided) to better track beneficiary household participation in different interventions as well as receipt of different livelihoods and other support. Eventually, training participation forms and material distribution forms could add an additional column to input the

unique IDs of households and thus trace the household in different project activities. This improves monitoring generally and may help the endline track the overlap of interventions.

6.3 Update NRM group profiles with all intervention subactivities undertaken in that area by date.

6.4 Utilize USAID/Nepal's Common Use Platform to track better implementation locations including the use of geocodes.

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APPENDIX A: STATEMENT OF WORK

STATEMENT OF WORK

IMPACT EVALUATION
INVOLVING
HARIYO BAN II LIVELIHOOD INTERVENTIONS

I. PURPOSE OF THE EVALUATION

USAID Nepal invests in biodiversity through several activities, and partners with the Government of Nepal (GoN) to support biodiversity conservation. One of its key development objectives is to support inclusive and sustainable economic growth to reduce extreme poverty. Within this objective, USAID Nepal aims to improve the resilience of targeted natural resources and related livelihoods.

There has been much debate about the extent to which site-specific livelihood interventions reduce threats to biodiversity (Wright et al., 2016). However, very few evaluations have been designed to capture comprehensive measures of shifts in livelihoods, specifically around forest-based resources, that result from such interventions, while at the same time directly assessing change in the status of biodiversity.

The purpose of this evaluation is to test the theory of change that assumes a link between livelihood interventions and improved biodiversity outcomes. Results from this study will inform future biodiversity and livelihood/economic growth programming, thus ensuring it more effectively contributes to the goals of the USAID Nepal Mission. The findings will also contribute to a broader knowledge base on the connection between sustainable economic growth and biodiversity conservation.

This statement of work (SOW) is for the implementation of the impact evaluation of the livelihood interventions implemented among the forest user group member households as a component of the Hariyo Ban Program II (Hariyo Ban II or HBII). This SOW details about planning, logistics, data collection, analysis and reporting.

The cost of this evaluation will be covered by a fund designated for program design and learning. The justification for this is that the evaluation has the potential to inform other livelihood intervention projects in Nepal and internationally, both those implemented for rural development and conservation purposes, as the link between improvements in livelihoods and positive biodiversity outcomes remains difficult to establish (Hajjar et al. 2016). This evaluation will provide a unique opportunity to estimate the biodiversity impacts as well as the social impacts. Because, for livelihood projects to have an impact on biodiversity, an essential intermediate outcome is that they have positive social impacts on those who participate. With its long history of community forest management, Nepal presents an ideal context from which lessons can be learned.

2. Summary Information

Project Name	Hariyo Ban II
Implementer	World Wildlife Foundation
Cooperative Agreement #	AID-367-A-16-00008
Total Estimated Ceiling of the Evaluated Project (TEC)	\$18,000,000
Life of Project	July 15, 2016 to July 14, 2021
Active Geographic Regions	The Program works in biological corridors and river basins in Terai Arc Landscape (TAL) and Chitwan-Annapurna Landscape (CHAL), respectively, across 15 districts: Banke, Bardia, Dadheldhura, Dang, Kailali and Kanchanpur in TAL and Chitwan, Gorkha, Kaski, Lamjung, Makwanpur, Manang, Nawalparasi, Syangja and Tanahun in CHAL.
Development Objective(s) (DOs)	DO2: Inclusive and sustainable economic growth to reduce extreme poverty IR.3. Resilience of targeted natural resources and related livelihoods improved
USAID Office	Social, Environmental and Economic Development (SEED)

3. Background

Hariyo Ban II is a five-year initiative funded by the United States Agency for International Development (USAID) designed to build upon the advances made in the first phase of the Hariyo Ban Program (Hariyo Ban I or HBI) in addressing biodiversity threats and climate vulnerabilities. Hariyo Ban II is being implemented from July 2016 to July 2021 by the same consortium of partners that implemented the first five-year phase: World Wildlife Fund (WWF-lead), CARE Nepal, Federation of Community Forestry Users Nepal (FECOFUN) and National Trust for Nature Conservation (NTNC).

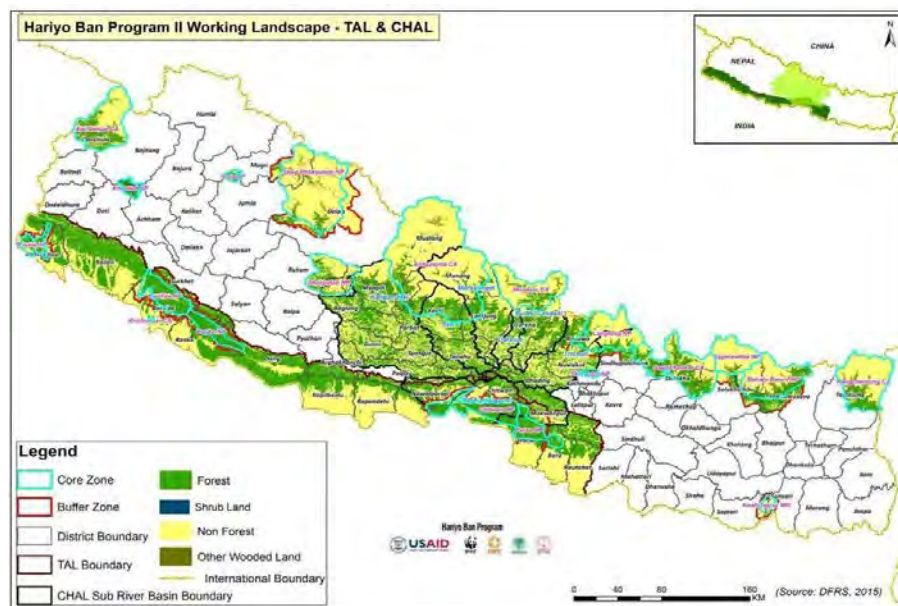
The goal of Hariyo Ban II is to increase ecological and community resilience in the Chitwan-Annapurna Landscape (CHAL) and the Terai Arc Landscape (TAL). This will be achieved through two objectives: 1) improve the conservation and management of the GoN-identified biodiverse landscapes of CHAL and TAL, and 2) reduce climate change vulnerability in CHAL and TAL. Governance and Gender Equality and Social Inclusion (GESI) are cross-cutting themes that will be mainstreamed across the two objectives of the Program. Livelihood interventions are nested under the biodiversity conservation objective.

Hariyo Ban II will work at multiple levels, from site to landscape and national levels, using a strategic approach based on learning from phase one as well as on actions guided by the CHAL and TAL strategies (Ministry of Forests and Soil Conservation, 2015). The Program will work in priority river basins and biological corridors in CHAL and TAL, respectively, across 15 districts (as of the year two annual work plan): Chitwan, Gorkha, Kaski, Lamjung, Makwanpur, Manang, Nawalparasi, Syangja and Tanahun in CHAL; and Banke, Bardia, Dadheldhura, Dang, Kailali and Kanchanpur in TAL (Figure 1). The Program will focus interventions on specific ‘working sites’ with common issues, threats and opportunities in critical sub-watersheds in biological corridors in CHAL and biological corridors in TAL. The Program will pilot, leverage and scale up interventions to achieve the desired results in specific protected areas, critical corridors, and sub-basins.

The major stakeholders for the Program include government institutions; natural resources management (NRM) groups, including Community Forest User Groups (CFUG), Buffer Zone Community Forest User Groups (BZCFUG), Buffer Zone User Committees (BZUC), Conservation Area Management

Committees (CAMC) and Leasehold Forest User Groups (LFUG)³⁰; other Community Based Organizations (CBOs); civil society; academia, research institutions, private sector, and Non-Governmental Organizations (NGOs).

Figure 1: Map of the Hariyo Ban II sites across the CHAL and TAL landscapes



3.1 Problem and Development Hypothesis

Nepal's biodiversity and natural resources provide important ecosystem services and economic benefits for livelihoods. However, they are affected by many threats that are often exacerbated by climate change and socio-economic disparities. The key threats to biodiversity and natural resources include, but are not limited to, the unsustainable harvesting and trade in natural resources, including poaching of wildlife species and illegal harvest of important plant species and their products i.e. non-timber forest products (NTFPs), climate change, development of linear and hydropower infrastructure in and around forests and protected area systems, forest fires, and human-wildlife conflicts.

Hariyo Ban II will implement various measures to reduce threats to biodiversity, thus contributing to the implementation of the revised TAL Strategy and Action Plan 2015-2025 (Ministry of Forests and Soil Conservation, 2015a), and the new CHAL Strategy and Action Plan 2016-2025 (Ministry of Forests and Soil Conservation, 2015b). Hariyo Ban II will focus 80% of program effort in CHAL, supporting the implementation of the CHAL strategy to promote climate-smart integrated river basin management (IRBM) in Gandaki basin, while 20% of program effort will be channelled to implement the revised TAL

³⁰ These Forest User Groups (FUGs) fall under different departments - CFUGs and LFUGs fall under the jurisdiction of the Department of Forests (DoF) within the Ministry of Forests and Soil Conservation (MFSC). BZCFUGs and CAMCs fall under the jurisdiction of the Department of National Park and Wildlife Conservation (DNPWC), which is also within the MFSC (GoN 2015; HMGN, 1973; 1974; 1993; 1995; 1996; 2000). FUGs do not necessarily map directly onto villages. In some cases, multiple settlements can form one FUG, and in other cases one settlement may contain several FUGs, with households able to join more than one. Therefore, the boundaries of the defining units of intervention are somewhat blurred (DoF, 2009).

strategy focusing on the recovery and conservation of focal wildlife species by combating wildlife poaching and illegal trade.

The development hypothesis for Hariyo Ban II as a whole is: *“If stakeholders are better able to conserve and benefit from biodiverse natural resources and adapt to climate change in a manner that diversifies livelihood options, improves gender equality and social inclusion, and promotes good natural resource governance, then people and ecosystems in the target landscapes will be more resilient.”*

Many households in both landscapes are dependent on natural resources for fuelwood, fodder, food and medicines. The unsustainable extraction of forest products is thought to have a negative impact on biodiversity, as well as an effect on the ecological resilience of the TAL and CHAL landscapes. An assumption underpinning Hariyo Ban II is that diversifying the income sources of forest dependent people will enable them to transition from the harvesting of forest products to alternative, more sustainable livelihood activities, either village-based enterprises or service sector activities. Therefore, the development and promotion of market-based livelihood alternatives is part of the package of interventions that will be implemented during Hariyo Ban II to improve the conservation and management of the biodiverse landscapes of CHAL and TAL.

A narrative theory of change for the market-based livelihood alternatives was developed during a four-day workshop held in Kathmandu in September 2016. Fifty-eight people from the Hariyo Ban II implementing partner organizations, USAID and the Ministry of Forests and Soil Conservation attended this workshop. The theory of change for market-based livelihood alternatives is as follows:

“If green enterprises and eco-tourism are based on sound value chain analysis and business plan development; forest dependent people are aware of conservation benefits, willing to invest/uptake in these enterprises and have required skills, then they will be able to attract investment from the private sectors. If private sectors are involved, then the market linkage for products will be ensured leading to viability of enterprises. If the participants for skill-based training are appropriately selected based on GESI perspective, analysis of market demand and potential for enterprise development, then majority of the trained participants will be employed. If alternative employment opportunities from enterprise and skill development generate enough income to take forest dependent people off from unsustainable harvesting of forest products, then they solely focus on alternative livelihood opportunities. If government and community institutions enforce existing rules and regulations to deter people from unsustainable extraction of forest product, then illegal extraction of forest resources will be minimized. All these strategies will help change their behavior to sustainable practices for resource use, reducing threats to biodiversity in conservation landscapes.” (see: WWF Nepal, 2016a; emphasis added).

The main hypothesis underlying the livelihood interventions to be implemented during Hariyo Ban II from July 2016 to July 2021 is that unsustainable harvesting of forest products by local people will decline as their income from green enterprises, eco-tourism or employment increases, and that this will ultimately lead to the maintenance or improvement of key biodiversity elements (i.e. the alternative income hypothesis). However, Hariyo Ban II interventions may increase incomes by any sustainable means, including through activities that encourage more sustainable natural resource use. Therefore, the livelihood interventions also aim to change the behaviors of local people by encouraging communities to care about and conserve their natural resources to ensure that such resources can be sustainably utilized over the long-term. Livelihood interventions can help in maintaining positive relationships between the implementing partners and community members, keeping them motivated to continue to volunteer for forest and conservation work in return for livelihood benefits. Evidence from Hariyo Ban I suggests that many villagers benefitted through increased income from the livelihood interventions implemented during the first five years, and they have become used to working with government officials

and project staff in a collegial rather than a confrontational way (WWF Nepal, 2016b). Therefore, an alternative hypothesis is that the goodwill and trust established between local people and the HBII partner organizations, through the implementation of livelihood interventions, will lead to pro-conservation behaviors which ultimately lead to the maintenance or improvement of key biodiversity elements (i.e. the goodwill hypothesis).

Note, that testing the goodwill is possible but would require a more expansive and complex evaluation design that includes treated FUG and multiple comparisons, including HB II FUGs that were not part of HB I, and FUGs that were not part of either interventions.

Drawing on the results chains in the Hariyo Ban Program II Monitoring, Evaluation and Learning (MEL) Plan, Figure 2 summarizes the Program activities and associated livelihood outcomes that can be expected to result from the development and promotion of market-based livelihood alternatives. The social impacts, and the behavioral changes that these are expected to lead to, are elaborated. The expected biodiversity results are: 1) improved biophysical condition of critical habitats, 2) conservation of focal animal species, 3) maintained flow of clean water, and 4) maintenance of ecosystem services (for detailed results chains on all Program components see: WWF Nepal, 2017).

Figure 2: Results Framework Highlighting Main Social Impacts and Anticipated Behavioral Changes Expected from Livelihood Alternatives



3.2 Summary of Activity

3.2.1 Overview of Activities

Hariyo Ban II (HBII) will carry out livelihood interventions at the level Forest User Groups (FUGs) and individuals affiliated to them. User groups represent a “community” of individuals from one or multiple settlements that manage a forest collectively. HBII will invest in livelihood interventions in 35 percent of HBII communities, 142 out of 418 (FUGs) across twelve districts in the TAL and CHAL landscapes. A ‘livelihood intervention’ for the purpose of this evaluation may be defined as a sub-activity that either seeks to encourage the adoption of a particular income-generating activity, provides people with the skills, resources and opportunities to engage in an income-generating activity of their choice, or improves the enabling environment to raise incomes from existing livelihood practices. HBII is planning to implement small, medium and largescale green enterprises to reach poor to wealthier people. Various other interventions will be implemented at the community level under HBII, including biodiversity conservation related training to 130,000 FUG members (i.e. sustainable forest management, forest fire management and community-based anti-poaching operations) and climate change awareness raising activities.

3.2.2 Identification of Communities by HBII

The livelihood support component of Hariyo Ban II will concentrate efforts in key sites of biodiversity importance that are facing high level of threats. The HBII implementing partners have selected 418 FUGs in total that they will engage with over the next five years based on the criteria detailed in Table I. Of these, 312 (with 260 CFUGs) are located in the CHAL landscape and 106 (90 CFUGs) in the TAL landscape.

Table I: Criteria Used to Select FUGs for the Biodiversity Component of HBII

Criteria
1) Community-based anti-poaching unit (CBAPU) formed and mobilized
2) Ecosystem restoration needs
3) Human-wildlife conflict mitigation needs
4) Species conservation needs (flora and fauna)
5) Priority micro-watershed for an integrated sub-watershed management plan (ISWMP)
6) Existing livelihood interventions or potential group-based enterprises identified

During year I of HBII, 142 FUGs were identified for the implementation of livelihood interventions. of them, the majority (n=120) are CFUGs in CHAL and only 9 CFUGs in TAL. As per HBII recent record, 61 CFUGs in CHAL will undertake 72 different livelihood interventions which could be potential intervention sites. The sites chosen were considered to have the best production and market access potential. The target is to reach at least 30,000 people with livelihood interventions, ranging from skill development training to small/medium enterprise support and eco-tourism, and the IE should provide data to indicate whether this target has been met.

3.2.3 Identification of Households by HBII

HBII Livelihood interventions are designed to target poor FUG members that are identified using a participatory well-being ranking (PWBR) process³¹. HBII places focus as well on forest dependence (Table 2), with those involved in the unsustainable harvesting of natural resources being the target population.³² Often, only the wealthier households in an FUG have the capacity to engage in certain livelihood activities, so HBII is planning to implement a range of projects to make some activities accessible to the poorer households as well as the wealthier ones.

Table 2: Forest Dependency Categories Used to Select Participants for Livelihood Interventions

Priority	Definition
First	People who live inside forests, often living as hunter-gatherers or shifting cultivators, and who are heavily dependent on forests for their livelihood primarily on a subsistence basis.
Second	People who live near forests, usually involved in agriculture outside the forest, who regularly use forest products (timber, fuelwood, bush foods, medicinal plants etc.) partly for their own subsistence purposes and partly for income generation.
Third	People who live near forests, usually involved in agriculture outside the forest, who partly use forest products (timber, fuelwood, bush foods, medicinal plants etc.) for their own subsistence purposes.
Fourth	People engaged in such commercial activities as trapping, collecting minerals or forest industries such as logging. Such people may be part of a mixed subsistence and cash economy.

Proposed small-scale enterprises include vegetable farming, fish farming and wool weaving; medium-scale enterprises include block plantations of coffee, tea, cardamom, chiraito (*Swertia chirayita*), cinnamon, broom grass, bel, and sal leaf plate (*Shorea robusta*); large-scale enterprises will include ten ecotourism sites. Many communities already have a revolving fund which received seed funding during HBI. HBII will continue to assist households in applying for and managing loans received from these revolving funds. About 9 to 10 percent of households within each FUG are likely to be involved in livelihood interventions implemented by HBII.

3.3 Alignment of the Evaluation with the MEL Plan and Expected Roles of Each Partner

The approved Hariyo Ban Program II MEL Plan (WWF Nepal, 2017) is developed on the core principles of results-based planning, monitoring and performance reporting; strengthening institutional monitoring mechanisms; creating meaningful evidence of change for informed decision making; and building learning and knowledge management. This living document represents a comprehensive commitment of the implementing consortium (WWF-led, CARE, FECOFUN, and NTNC) to capture the longer-term results of Hariyo Ban II (HBII).

³¹ See: DoF, 2009 and WWF Nepal, 2013b. This approach is often referred to as wealth ranking and does not explore well-being as described in recent literature (see: Woodhouse et al., 2015).

³² Table 1 details the criteria devised by the HBII implementing partners to assess forest dependence; however, it is not clear how households will be classified according to forest dependence in practice. The four categories overlap, and it is not clear that the necessary information will be available before the baseline survey.

The HBII activity mainly focuses on reducing threats (to biodiversity) through its contribution in implementing the TAL Strategy and Action Plan (2015-2025) and CHAL Strategy and Action Plan (2016-2025). The HBII impact evaluation (IE) can be aligned with the Results Framework of HBII on both social and biodiversity fronts. Within the HBII Results Framework, the relevant objective is Objective 1: Improve the Conservation and Management of GoN-Identified Biodiverse Landscapes - CHAL and TAL. The expected results are: Result 1.1 Threats to target species reduced³³, Result 1.2 Threats to target landscapes³⁴ reduced, Result 1.3 Market based livelihood alternatives developed and promoted.

The IE should concentrate on the effectiveness of HBII livelihoods interventions on changing the income sources and motivation of forest dependent populations to reduce unsustainable resource use behaviors and engage in pro-conservation activities. The resultant impacts will be on the adjacent biodiversity, more specifically the forests which provide habitats for some of HBII's key focal wildlife species. This research focus maps to several indicators in the MEL Plan, as shown in Table 3. These indicators have been noted as key changes of interest to HB implementing partners and have thus helped in forming the research focus of the IE.

Table 3: Priority, Relevant Indicators from the HBII MEL Plan

HBII MEL Indicators	Indicator Description / Targets	Potential Priorities for IE Review
Number of hectares of biologically significant areas under improved natural resource management (Outcome 1.2.4 / EG.10.2-2)	- Protected Area Management Plans / Watershed Management Plans are endorsed by wider stakeholders; - Human and institutional capacity is developed to implement the plans; - Plans are implemented; - Monitoring and evaluation is established or improved;	Habitat improvement in protected areas, community forest, watersheds; management of invasive species, grazing and fire control
Number of hectares of biologically significant areas showing improved biophysical conditions (Outcome 1.2.5 / EG.10.2-1)	Improved biophysical condition reported by HBII activities as (a) the logical sequence of events linked with the observed biophysical change, and (b) the milestones used within the program to gauge success.	Areas (ha) showing improvement; and areas (ha) showing degradation avoided, or a slower rate of decline
Revenue generated from conservation friendly enterprises (Outcome 1.3.1)	Increased revenue generation through alternative livelihoods is expected to contribute to reducing pressure on forests. Comparative analysis of revenue generated by type of enterprise. An average of Rs 168,270 will be generated by each enterprise, with 55 different enterprises planned under HBII. Baseline will focus on identification of target household and preparation of business plans.	Change in income from promoted livelihood activities relative to forest income sources. Note: Focus may be on change in total annual income (Rs) and change in proportion of income from forests. Analysis of social data may be disaggregated by livelihood intervention type if feasible.
Number of people with improved economic benefits derived from sustainable natural resource management	The number of people with improved economic benefits will reach 30,000. These individuals will be supported through 20 small-scale enterprises, 25 medium-scale enterprises, and 10 ecotourism sites.	From HB records on the number of livelihood intervention participants in each FUG. Note: The number who participate at some point during the life of the

³³ Tiger, rhino, snow leopard, pangolin, red panda (WWF Nepal 2016a).

³⁴ CHAL and TAL (WWF Nepal 2016a).

and/or biodiversity conservation as a result of USG assistance (Outcome 1.3.2 / EG.10.2-3)		intervention may not reflect the number who are actively engaged over an extended period.
Number of women entrepreneurs engaged in conservation friendly enterprises (Outcome 1.3.3)	An average of 11 women entrepreneurs is expected to be engaged in each enterprise making a total of 605 women entrepreneurs.	From HB records on the number of female participants. The IE would further explore the nature and effects of this involvement.
Proportion of skill-based trainees employed (Outcome 1.3.4)	Training is to be provided in various skills to promote employment of forest dependent Poor Vulnerable and Socially Excluded and marginal farmers who are exerting unsustainable pressure on forests. Aim is to shift their livelihood dependency from forests to the service sector. Total number of skill-based trainees employed out of all those who received skill-based training.	From HB records on the number of skill-based trainees who gain employment. The IE would further explore the nature and effects of this employment.

In some cases, the IE may measure indicators listed in the HBII MEL Plan. Two examples are Outcome 1.2.5 on the number of hectares showing improved biophysical conditions and Outcome 1.3.1 on the revenue generated through the conservation-friendly enterprises promoted by the livelihood interventions. However, due to the timeframe of the evaluation, this data would not be available until after the final reporting period of HBII. However, generating appropriate and detailed baselines to monitor HBII outcomes is critical for evaluation purposes and to provide an indication of change across the broader HBII landscape, and thus the generalizability of the IE results.

Furthermore, HBI and HBII records on the number of livelihood intervention participants in each FUG will be critical for the IE to enable sampling of participant and non-participant households. The monitoring data on the number of skill-based trainees employed and the number of female participants will feed into the performance component of this evaluation, which will explore how the livelihood interventions functioned in practice. The Nepal Monitoring, Evaluation and Learning (MEL) project will play a central role in ensuring the quality of the monitoring data collected by HBII.

This IE will require extensive collaboration with the HBII implementing partners because the timeframe of the social component of the evaluation will need to align with the roll-out of livelihood interventions in order to capture participants in the sample. A focal point within the evaluation design and implementation team (or MEL project) will be identified to liaise and coordinate with the HBII implementing partners. Other data collected at the FUG-level for the IE can also feed directly into HBII planning activities to help improve the type and targeting of the livelihood interventions. To ensure high standards are met, the MEL Project and the MEL and Agreement Officer's Representative (AOR) teams at USAID will play a key oversight role throughout the evaluation period to the endline.

3.4 Review of Existing Data

Evaluations of livelihood interventions, both in conservation and rural development, need an understanding of approaches, tools and indicators past relevant studies used so that good practices can be continued, and drawbacks need to be left out. There are some resources that the evaluation implementation team should review. Studies were conducted covering some geographical areas of HBII

(see WWF Nepal, 2013a). The Nepal Living Standards Survey (Central Bureau of Statistics, 2011) selected sites across Nepal. A Poverty-Environment Network (PEN) survey (Larsen et al., 2014) covered three HBI districts in CHAL. A Poverty and Vulnerability Assessment (PVA)³⁵ survey (Gerlitz et al., 2014) had a less geographical cross-over with the HBI landscape. Thus, the findings from these studies may not generalize across the whole HBI geographical coverage.

Studies have analyzed household income and disaggregated by cash and non-cash, farm-based, natural resources (forest) based, and off-farm sources including remittances. These will be important to examine household's dependency on different income streams (CAMRIS, 2017; Larsen et al., 2014; Gerlitz et al., 2014; Central Bureau of Statistics, 2011; and Angelsen et al., 2011). The PEN methodology is considered the most accurate way to capture forest income (Angelsen et al., 2011). However, it is arguable that income measures can be problematic because they do not provide an indication of whether the source of income has shifted from forest-based to other activities. Indeed, increased incomes could facilitate greater forest use. Thus, the multiple sources of income that households rely on need to be emphasized. The HBI baseline report (WWF Nepal, 2013a) documents the possession of assets, some of which could be used again as indicators as part of a composite wealth score during the impact evaluation, such as hectares of land owned, roof type and means of transport owned. There also has been considerable work done on multi-dimensional poverty indicators (e.g., Alkire and Santos, 2014).

Some literature present data on the use of forest resources such as firewood and fodder collection to indicate forest dependence (see Gerlitz et al., 2014 and Central Bureau of Statistics, 2011). Application of chemical fertilizers in rice, wheat, maize, and potato is common (see Central Bureau of Statistics, 2011). It shows farmers' economic ability to purchase agricultural inputs, which can have negative environmental outcomes, including the deterioration of drinking water quality and eutrophication with serious implications for downstream wetland ecosystems.

The evaluation team should be aware of the literature on Nepal's biodiversity status with reference to CHAL and TAL landscapes of Hariyo Ban II activity (DFRS 2014 and 2015, Ministry of Forests and Soil Conservation, 2015 and UNIQUE Forestry and Land Use). TAL Strategy and Action Plan 2015-2025 and CHAL Strategy and Action Plan 2016-2025 (Ministry of Forests and Soil Conservation, 2015) identifies threats to terrestrial and aquatic biodiversity in different target areas (forests, shrub lands, grasslands, waterbodies). In line with these existing studies, the IE design and implementation team should propose to concentrate on gathering from primary sources the information on different aspects of threats/ biological features in target areas (forests, shrublands, grasslands, waterbodies) as discussed above. The IUCN's Red List could be a useful resource to understand expected impacts on fauna,

The Forest Resource Assessment covers land cover, forest cover, growing stock, structural composition of tree species, biomass, carbon stock, and forest disturbance. The forest resource assessment also uses high-resolution satellite imagery for land cover mapping (DFRS 2014 and 2015). Besides, there were several other studies conducted using comprehensive GIS/Remote Sensing techniques (Hansen et al. 2013, WWF Nepal 2013c, Subedi et al., 2015 and Shrestha et al. 2016). These processes will be useful to assess the terrestrial ecosystems in FUGs including wildlife habitat. The GoogleEarth and/or available high-resolution imagery through USAID, such as NextView could be the useful resources to review.

Some resources help develop the biodiversity data collection protocols - field guide (DFRS 2017) for the national forest inventory of Nepal, the field guide (BFD 2016) for the national forest inventory of Bangladesh. Subedi et al. (2015) is a useful resource to determine the forest plot sample size. The forest plot design developed for the National Forest Inventory of Nepal is a useful guide (DFRS 2015b). Many

³⁵ The data for the PVA survey is searchable online at <http://www.icimod.org/pvaexplorer/>.

attributes are often collected as part of a forest inventory, but, by far, the most important are tree species and diameter (see DFRS 2014 and 2015).

Measuring changes in attitudes toward conservation bodies is important since these link directly to the goodwill hypothesis in that improved attitudes could increase willingness to get involved in the pro-conservation behaviors the same entities promote. Besides, the evaluation design and implementation could propose a second form of attitude variable that relates to the perceived importance of ecosystem services. This starts to tap into intrinsic, rather than extrinsic, motivations to conserve biodiversity (see Cetas and Yasué, 2017). Since attitude questions are notoriously difficult to get reliable responses to if closed questions are used, the evaluation design and implementation team should take some suggestions from Thapa Karki and Hubacek (2015). Miller et al. (2017) discuss predictive proxy indicators to measure planned livelihood changes. Multivariate statistical modeling forms an important part of data analysis in the proposed evaluation. Cochran (1977) is a useful resource to help guide in sampling and undertaking variance analysis between and within sampling unit.

4. Evaluation Questions

The following questions are intended as the foci for the impact evaluation. Through these questions, the aim is to measure both the social and biodiversity impacts of livelihood interventions implemented within the conservation sector.

Biodiversity impact

Q1: What effect do livelihood interventions have on forest and landscape biodiversity conservation outcomes?

Q2: What factors affect the success of livelihood interventions with respect to biodiversity conservation outcomes?

Q3: How well do livelihood and resource conservation interventions, undertaken together, improve forest and landscape conservation outcomes?

Social impact

Q4: What effect do livelihood interventions have on household wealth, forest dependence, resource use, and pro-conservation behaviors?

Livelihood intervention performance

Q5: Is there evidence that some types of livelihood interventions may have benefitted households and biodiversity conservation better?

Q1-Q3 are focused on biodiversity impacts because biodiversity conservation is the ultimate goal of the livelihood interventions implemented by HBII³⁶. These questions are closely related but will require

³⁶ A third biodiversity-focused impact evaluation question was initially proposed to compare change between CFUGs and BZCFUGs. This could have determined whether livelihood interventions are more effective in an autonomous community managed forest setting rather than the more regulated context associated with protected areas. However, only six BZCFUGs were earmarked to receive

analysis of data across different groups of locations based on the package of livelihood and other interventions implemented. The second question focuses on behavior change and the factors that affect the likelihood of success. It may involve self-reports, which are not always reliable. However, the biodiversity component of the IE is designed to address this issue by providing a verification mechanism. The third question is based on the hypothesis that livelihood interventions may improve the willingness of FUG member households to engage in other resource conservation interventions implemented at the same site. Therefore, one would expect to see greater evidence of pro-conservation behaviors, such as the planting of trees, at sites with livelihood interventions.

Q4 is focused on determining the social impacts of livelihood interventions, which are impacts but also intermediate steps in the causal chain towards biodiversity impacts. The question highlights the poverty reduction effects of livelihood interventions as well as the impact they have on levels of forest dependence. Assessing the social impacts of the livelihood interventions will provide evidence for the effectiveness of rural livelihood interventions in general, which can inform future programming beyond the conservation sector.

Q5 aims to merge process and qualitative data on how the livelihood interventions functioned with quantitative data. The qualitative information will be key to interpreting the findings of the impact evaluation questions and to ensure the internal validity of assigning attribution to the livelihood interventions for any change detected. Qualitative data will be collected to determine whether the livelihood activities promoted were actually adopted by project participants and whether the expected economic benefits are likely to be realized.

An earlier version of Q5 that focused on determining differentiated effects by type of intervention was originally considered for an impact evaluation question; however, the livelihood interventions are a) too varied, b) with no ability to control the packages of interventions delivered, and c) with too few locations and individuals per location to expect to have sufficient power. However, this question remains of interest, and the qualitative data collected through this performance evaluation question will give a sense of the likelihood of detecting social and biodiversity change at the endline. Question 5 also makes clear the importance of collecting data on what type of intervention is being implemented where and how.

The intention of the IE questions (Q1-Q4) is to measure the average treatment effect of the livelihood interventions on both the social and biodiversity outcomes of interest.

Although social data will be collected at the household level, questions about forest use will take gender into consideration enabling sex-disaggregation of part of the dataset. Households will also be disaggregated by wealth classifications and the evaluation implementation team should take caste and ethnicity into consideration. However, since the primary focus is on conservation outcomes, the power analyses do not necessarily need to be designed specifically with sufficient power to disaggregate by gender-related data nor caste/ethnicity.

USAID expects that the impact reported will be one in which USAID is the primary attributable donating partner, with other contributions primarily from the GoN and local institutions. Attribution may be focused only on HBII, although attribution to HBI is also acceptable. The general strengths and

livelihood interventions, which would not have provided sufficient basis for comparison. These FUGs have therefore been removed from the proposed sample.

limitations of the suggested evaluation design are discussed below and in the two subsections covering the social and biodiversity components.

5. Evaluation Methodology

5.1 Methods, Structural Model, Sampling

The impact evaluation will follow quasi-experimental design methodology with a counterfactual involving treatment and matched comparison sites, while also incorporating non-experimental techniques more common in long-term performance evaluations to better understand the reasons for the findings, including lack of statistically-significance involving the main underlying hypotheses. There are expected to be two primary components of primary data collections: a quantitative panel survey focused on the human targets of the livelihoods interventions and forest plot biodiversity measurements in primarily-forested landscapes. In addition, there are expected to be semi-structured group interviews with FUG committee representatives.³⁷ The evaluation should consider undertaking a nearest-market price survey and collect administrative data, including FUG records and monitoring data from HB-II.

The overall structural model is expected to be a two-stage equation regression model. The conceptual models could be represented as the impacts as a function of the inputs:

Social Impact = f (HBII program inputs & outputs; management history, resource availability)

Biodiversity Impact = f (HBII program inputs & outputs, social impacts; management history, resource characteristics)

The models are expected to be hierarchal and handle both plot level and FUG level data. Outcomes from the social equations³⁸ serve as the key explanatory variables of interest in explaining the evaluation questions.³⁹ The evaluation should consider analysis of difference-in-differences across individual variables separately to test for statistically significance of differences between the treatment and comparison groups on observable variables at baseline and to compare the before-and-after changes in individual key variables.⁴⁰ However, as the overall model is two-stage and given that there was no randomization, a regression model likely will be required to regress covariates as controls.

Because the livelihood interventions are being applied at the FUG level, the data collection is envisioned as following a two-stage sampling design, with the FUG as the primary sampling unit (PSU) across both the social and biodiversity components of the IE. The secondary sampling unit (SSU) will be the member households within the FUGs. The maximum number of treatment PSUs appropriate for the analysis is approximately 50. The number of comparison PSUs and SSU units for both treatment and comparisons will be determined by the evaluation implementation team based on how well matching is expected to occur across FUGs taking into account the tradeoff between power and cost reasonableness. Ideally, the proportion of FUGs for comparison relative to treated FUGs would be as large as two-to-one. The implementation team will revisit estimates from the evaluation design team based on approximately 40 households per comparison FUG and 60 households in treatment FUGs, as there is expected to be more categories to select in treatment areas. More households sampled in treated areas also are

³⁷ Focus group discussions might be undertaken with livelihood intervention participants if a midline data collection is undertaken.

³⁸ Multiple equations are implicit here, and the evaluation team should clarify whether to measure for attitudinal changes in addition to behavioral change.

³⁹ These relationship between evaluation questions and data sources should be spelled out in detail in the evaluation design and getting-to-answers matrix.

⁴⁰ Difference-in-differences can be used to compare treatment and comparison FUGs at baseline.

expected to allow better estimates of treatment on treated as well as average treatment effects. The evaluation design will provide planned distance measures and matching methods, it but should plan to test a variety of measures contingent on how the data match in reality.

Community forests also will be sampled in two stages because they are too large to measure in their entirety, averaging 80 hectares. The evaluation implementation team should determine whether each plot would be permanent to maximize the ability to estimate change and contingent on the expectation about whether behavior may change in response to making plots permanent. The majority of CFUGs are in CHAL. The evaluation implementation team should decide whether to include CFUGs from TAL to generalize more broadly across landscapes, although the data is not expected to be disaggregated by landscape.

The evaluation team are expected to revise the participatory well-being rankings (PWBR) at least in comparison areas, for a more up-to-date and inclusive household list. The expectation is that PWBRs in comparison areas will be out of date, as they might be in some treatment areas, and it is unclear whether biases might result from the use of old PWBRs. The evaluation team will propose whether and where PWBRs will be revised.⁴¹

5.2 Limitations and Potential Challenges

The evaluation implementation team should identify social and biodiversity-related limitations and challenges. The risk of social desirability bias could be one of the challenges, particularly when asking for self-report behaviors or questions on attitudes. Responses to these kinds of questions can be affected by any environmental education components of a biodiversity conservation program. This is expected to be the case with HBII, although the exact nature of conservation messaging in each community is not yet known. The evaluation implementation team should find out more about the messages being relayed during any sensitization efforts by HBII and take such messages into consideration both when designing instruments, to mask socially desirable answers to attitudinal questions as much as possible, and when interpreting results.

Recall bias is also a potential issue, so questions should be prepared in such a way that respondents can recall incomes from a particular activity as accurately as possible, and then further assessments of income can be built on that. Although households will be geotagged, but challenges in relocating households during follow-up surveys are inevitable. Thus, the total sample size will change at each stage of the IE. Further, the baseline sample will need to be increased to account for attrition and non-responses by households or to specific survey items. The aspects of 'forest income' that need to be captured in could be - proportions rather than actual volumes for most forest products due to the complications of measuring income. Due to difficulties in capturing seasonality and data on all types of forest resources as the livelihood practices of conservation will be difficult, limiting the focus mainly to selected indicators, such as firewood and fodder, but possibly also to a few high-value NTFPs.

Biological systems are often very complicated and heterogeneous both locally and across landscapes. Since the treatments (livelihood interventions) are not intended to affect the forest directly, the

⁴¹ As mentioned in section 3.2.3 DoF, 2009 and WWF, 2013b provide the detailed PWBR process and utility.

resulting changes may be small and difficult to link to the intervention. The IE implementation team, therefore, are expected to engage the IPs on whether and how interventions could be augmented to increase the probability of detecting measurable change.

5.3 Quality Control

USAID expects the HB implementing partners to undertake appropriate processes to ensure the quality of data from subcontractors and field-based data collectors. USAID may request USAID's MEL project to schedule a data quality assessment early in the life of HBII. The evaluation implementation team should also make recommendations to the HBII implementing partners regarding improvements that could be made to the MEL plan indicators and monitoring protocol to make these more useful for the evaluation. The evaluation implementation team should specify in the evaluation design what secondary data will be used in the analyses, how the data will be used and how quality will be assured

The evaluation implementation team should develop quality control protocols and consistently apply them at each step. For most steps, this involves review (checking) by someone else. Appropriate questioning techniques, short recall periods, use of local measurement units and clear definition of terms could minimize errors in designing quantitative survey tools. Preparation of field manuals, training to enumerators, spot check use of portable data recorders with appropriate data entry software could be other measures. to quality control for both the social and biodiversity components.

6. DELIVERABLES AND REPORTING REQUIREMENTS

The following deliverables represent those throughout the life of the evaluation, although some will not be undertaken during the baseline.

1. **Evaluation Work plan:** The contractor will develop a work plan for the evaluation and present it to the Contracting Officer's Representative. The work plan will include a draft anticipated schedule in Gantt chart format and a list of the members of the evaluation implementation team, delineated by roles and responsibilities.
2. **Evaluation Design:** After USAID approves the work plan, and the contractor constitutes the evaluation implementation team (including the team leader), the evaluation implementation team will prepare an evaluation design. The contractor will submit the evaluation design to the Contracting Officer's Representative (COR). The initial draft evaluation design should include standard USAID design elements including a detailed evaluation design matrix that links the evaluation questions in the SOW to data sources, methods, and the data analysis plan; the list of potential interviewees and sites to be visited; proposed methodology, selection criteria and/or sampling plan; detailed list of data collection instruments including key topics to be covered/collected; known limitations to the evaluation design; and a brief dissemination plan. As data collection may not all be undertaken simultaneously, draft questionnaires and other data collection instruments or their main features will be delivered separately as later appendices.

USAID will take up to 10 business days to review and consolidate comments through the COR. Given the complexity of impact evaluation designs and making adjustments to them, once the evaluation implementation team receives the consolidated comments on the initial evaluation design and work plan, they are expected to return with a revised evaluation design and work plan within 15 business days or as agreed upon with the COR. For draft questionnaires and data collection instruments, USAID will take up to 2 business days to review or as agreed upon with the contractor. Comments may not be consolidated through the COR, but the COR must review comments or be available to resolve conflicts.

3. **In-briefings:** On request of the COR, USAID may request in-briefings from expatriate evaluation implementation team members visiting Nepal for purposes of the evaluation. The in-briefings may be formal or informal. The purposes may be to discuss key issues to be determined and resolved via the time in-country, changes or updates to the design or work plan, or other issues, as agreed upon.
4. **Field trip report(s):** On request of the COR, USAID may request a field trip report from evaluation implementation team member visits to Nepal for purposes of undertaking evaluation activities. These reports are not expected to be required for some purely technical visits or for data collection. The field trip reports are expected to be short (around 2 to 5 pages), in summary format, and include key stakeholders or experts met, main activities undertaken, key observations, and changes required to the evaluation design or instruments. Field trip reports will be due within 10 business days of departure, or as agreed upon with the COR to prevent conflict with data collection deadlines.

5. **Presentation(s):** The evaluation implementation team is expected to hold one or more virtual presentations via conferencing software to discuss the summary of findings, conclusions, and/or recommendations, as relevant, to USAID. The presentation for the baseline data collection(s) report is expected to focus on complications encountered during data collection and analysis and findings. The presentation also may present recommendations for the evaluation implementation team or USAID for follow-up actions to support the evaluation. This presentation will be scheduled as agreed upon between the COR and contractor and are not expected to coincide with a specific evaluation event or activity. Given the long timelines required typically to analyze data for impact evaluations, presentations may be scheduled to present interim findings and partial analyses upon agreement with the contractor. The COR will determine appropriate USAID staff and stakeholder involvement and length.

6. **Draft Baseline Impact Evaluation Report:** Baseline report(s) will present information on the data collection, baseline values, comparability of treatment and comparison groups, and any key statistically significant comparisons or differences. As feasible, the baseline report should speak to whether there is any change in the assessment of evaluability of evaluation questions. The report also should speak to recommendations for updating the evaluation design, follow-on data collections, or monitoring; and recommendations to USAID, if any, on actions required of USAID or the implementing partner to maintain fidelity with the evaluation design. The baseline report should include an executive summary 2 to 5 pages in length that summarizes key points including purpose and background, evaluation questions, methods, and findings. The report also should include in an appendix the evaluation SOW and data collection tools used (as feasible in electronic format). The submission date for the draft baseline report will be determined in the evaluation work plan and will be updated in consultation with the COR as needed based on any issues or complications with data analysis.

The contractor and evaluation implementation team may recommend presenting partial baseline data collection as an interim report if the team and COR believe doing so is warranted, for instance due to a delayed schedule for gathering all the various elements of the data collection for a full evaluation baseline report. Given the length and depth of such reports, the complications involved with data analysis in response to client requests, and as the baseline report is not expected to be relevant to immediate decision making, the draft baseline report(s) should not have compressed timelines that short-change analysis. Once the draft baseline report(s) is submitted, USAID will have 15 business days in which to provide consolidated comments, or as agreed upon with the contractor.

7. **Endline evaluation report** are not expected during the life of the contract under which the baseline data collection and report will be undertaken.

8. **Final Baseline Impact Evaluation Report(s):** The evaluation implementation team may be asked to undertake additional analyses or gather additional data for analysis, which could delay the delivery of the final report. The due date to submit a revised final baseline impact evaluation report is expected to be within 20 business days of providing final comments, or as agreed upon with the COR accounting for the complexity of resolving issues in the baseline report(s).

9. **Evaluation Policy Summary Documents:** The evaluation implementation team should expect to be asked to write a short, approximately two-page summary document at endline to communicate simply to stakeholders the key take-aways learned.

10. Baseline Dataset Posting Plan: The evaluation implementation team will recommend to USAID in a memorandum what measures should be taken with the baseline data collection to comply with ADS 579 and the US Federal Open Data Policy while also complying with confidentiality agreements and protection of sensitive information. Upon agreement with the COR, the contractor will implement plans for making the relevant datasets available either to USAID/Nepal alone or uploaded to the Digital Data Library, as agreed upon with the COR. It is expected that data may be posted online in line the recommendation of the evaluation implementation team up to a year after data collection to allow evaluation implementation team members the opportunity to publish analyses in peer-reviewed journals.

7. Evaluation Team Compositions and Evaluation Roles

The implementation contractor will propose the evaluation implementation team with key staffing positions and the general subcontracting teaming approach to receive concurrence by USAID. The evaluation will be led by an overall team leader demonstrating appropriate methodological expertise and developing-country experience related to livelihoods, biodiversity resource conservation, impact evaluation, and data analysis. The evaluation implementation contractor will propose additional support staff and an overall subcontracting teaming structure to provide, as well, expertise with data collection in Nepal related to both the livelihoods (households) and biodiversity (landscape plot measurement) with the management team and data collection teams sized as appropriate to collect data in the period indicated. The data collection team also should include local language expertise. The evaluation implementation team shall demonstrate familiarity with USAID's evaluation policies and guidance included in the USAID Automated Directive System (ADS) in Chapter 200. The contractor will provide a dedicated evaluation manager to oversee quality control and compliance with contractual and ADS requirements.

All team members will be required to provide a signed statement attesting to a lack of conflict of interest or describing any existing conflict of interest. As the evaluation is of impact and not of activity performance, USAID or HBII staff may observe some of the data collection efforts except where indicated by the evaluation implementers to avoid affecting responses and to guarantee independence.

The HBII Implementing Partners are expected to cooperate with the implementation contractor and its evaluation implementation team, providing more detailed information than typically required of an IP about exactly what is implemented when and how for livelihood sites in order to interpret results. The IP also may be advised to redirect or intensify efforts in order to improve measurable effect as well as be advised not to implement livelihood interventions anywhere not specified during the baseline. This may limit the IP's flexibility to change implementation as they see fit more than they are accustomed under a Cooperative Agreement. HBII is expected to coordinate with the evaluation implementation team through the evaluation implementation contractor or copy the evaluation implementation contractor when agreement has been reached to coordinate on technical issues directly with the evaluation implementation team.

The USAID/SEED MEL Team and AOR for the Hariyo Ban II Program will provide guidance as questions arise during planning for data collection and during data analysis and reporting. Where required, USAID/PPD coordinating with USAID/SEED will play an intermediary role to mediate any requests between the evaluation implementers and activity IPs to clarify roles and resolve technical or operational concerns that require external guidance.

8. Evaluation Schedule

The IE implementation team will propose a timeline accounting for design, data collection, analysis, and reporting. All preparations for and social data collection should begin as early as feasible 2018 accounting for the development of instruments, pre- and pilot-testing, and receiving approvals from USAID and GoN. The household interviews to be conducted in treatment sites would need to be done after participants have been selected to ensure participants are captured in the sample. Data collection

in TAL areas are expected to occur and end earlier to avoid data collection during peak heat and fire seasons. Changes in forest plots are not expected to occur quickly, but data collection should be completed by when the social data collection is completed to expedite analysis. For ease of mobility, primary data collection is expected to be completed by the end of to avoid the heavy monsoon period.

Biodiversity impacts can be expected to occur over a timeframe that is generally longer than the periods of individual activities. The evaluation implementation team will propose when is most appropriate to collect endline data. Endline data collection may occur approximately 2 to 3 years after completion of HBII to see whether changes in attitudes have maintained. The endline timeline should take into consideration the potential for other confounding events. The evaluation team, in coordination with the Mission, will consider whether a qualitative data collection should be planned towards the end of the life of HBII in 2021 to confirm expectations about the fidelity of implementation to plan, probability of intended outputs occurring, and measurability of impacts to consider design adjustments and timing for endline.

Endline data collection is expected to occur in the same season as baseline data collection, although seasonality may not be a critical factor. The various activities to be conducted during the baseline and the timeframe for each data collection period should be proposed as a Gantt chart. Exact timings for the endline could be provisional.

9. Budget

The budget should cover consultants, travel, other direct costs, and subcontractors to collect the social and biodiversity data. The final budget will be determined once the number of sites (FUGs), the number of measurement years, and the subsampling intensities for both households and forest plots are finalized. The rationale for the budget is the unique opportunity to estimate the biodiversity impacts as well as the social impacts and subsequent potential to inform other livelihood intervention projects internationally, both those implemented for rural development and conservation purposes.

10. Final Report Format

The evaluation final report should include an abstract; executive summary; background of the local context and the strategies/projects/activities being evaluated; the evaluation purpose and main evaluation questions; the methodology or methodologies; the limitations to the evaluation; findings, conclusions, and recommendations. For more detail, see “How-To Note: Preparing Evaluation Reports” and **ADS 201mah, USAID Evaluation Report Requirements**. An optional evaluation report [template is available in the Evaluation Toolkit](#).

The executive summary should be 2–5 pages in length and summarize the purpose, background of the project being evaluated, main evaluation questions, methods, findings, conclusions, and recommendations and lessons learned (if applicable).

The evaluation methodology shall be explained in the report in detail. Limitations to the evaluation shall be disclosed in the report, with particular attention to the limitations associated with the evaluation methodology (e.g., selection bias, recall bias, unobservable differences between comparator groups, etc.)

The appendices or annexes to the report shall include:

- The Evaluation SOW;
- Any statements of difference regarding significant unresolved differences of opinion by funders, implementers, and/or members of the evaluation implementation team;
- All data collection and analysis tools used in conducting the evaluation, such as questionnaires, checklists, and discussion guides;
- All sources of information, properly identified and listed; and
- Signed disclosure of conflict of interest forms for all evaluation implementation team members, either attesting to a lack of conflicts of interest or describing existing conflicts of.
- Any “statements of difference” regarding significant unresolved differences of opinion by funders, implementers, and/or members of the evaluation implementation team.
- Summary information about evaluation implementation team members, including qualifications, experience, and role on the team.

In accordance with ADS 201, the contractor will make the final evaluation reports publicly available through the Development Experience Clearinghouse within three months of the evaluation’s conclusion.

II. Criteria to Ensure the Quality of the Evaluation Report

Per **ADS 201maa, Criteria to Ensure the Quality of the Evaluation Report**, draft and final evaluation reports will be evaluated against the following criteria to ensure the quality of the evaluation report.⁴² The Hariyo Ban II impact evaluation report is expected to represent a thoughtful, well-researched, and well-organized effort to objectively evaluate the activity’s outcomes and impacts. The Executive Summary should present a concise and accurate statement of the most critical elements of the report.

The evaluation methodology should be explained in detail and sources of information identified. Although the methodological sections will be highly technical, the report as a whole should be readily understood by an internal audience and should identify key points clearly, distinctly, and succinctly. Limitations to the evaluation should be adequately disclosed in the report, with particular attention to the limitations associated with the evaluation methodology (selection bias, recall bias, unobservable differences between comparator groups, etc.).

The report should address all evaluation questions. Evaluation findings should be presented as analyzed facts, evidence, and data and not based on anecdotes, hearsay, or compilation of opinions. Findings and conclusions should be specific, concise, and supported by strong quantitative or qualitative evidence.

If evaluation findings assess person-level outcomes or impact, they should also be separately assessed for both males and females and keep gender considerations in perspective more generally. If recommendations are included, they should be supported by a specific set of findings and should be action-oriented, practical, and specific.

⁴² See ADS 201mah, USAID Evaluation Report Requirements and the Evaluation Report Review Checklist from the Evaluation Toolkit for additional guidance.

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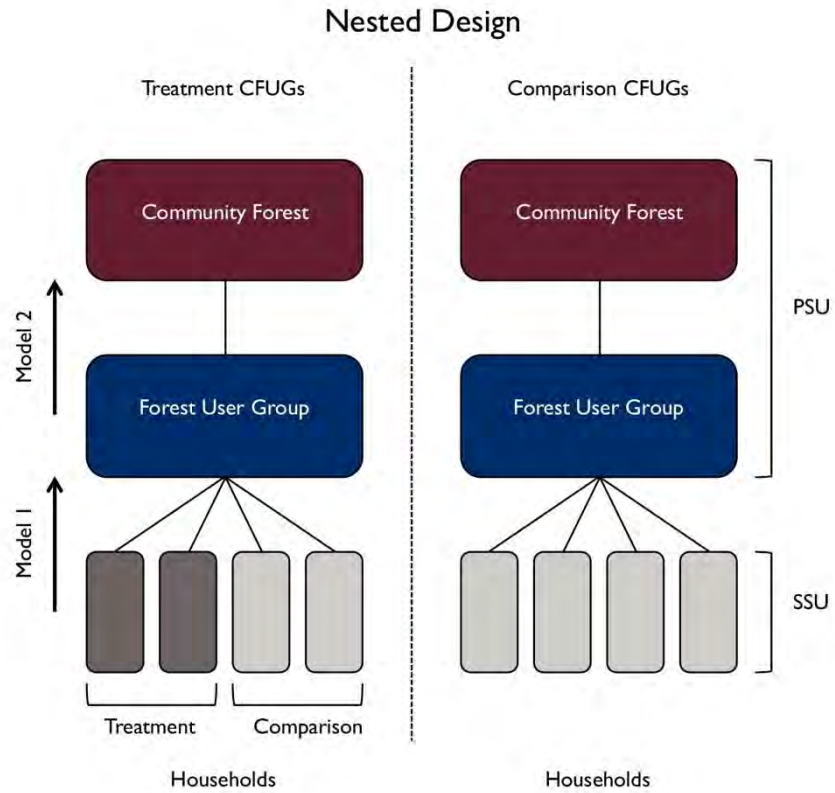
APPENDIX B: GETTING TO ANSWERS MATRIX

Question	Key Measures	Methodology Data Sources/Method	Selection Criteria
Q1: What effect do livelihood interventions have on household wealth, forest dependence, resource use, and pro-conservation behaviors?	• Participation in livelihood interventions ○ FUG participation ○ Household participation, by type ○ Intensity of participation ○ HBII activity monitoring data for verification • Household wealth • Total income and expenditure • Sources of income • Assets • Household well-being • Forest dependence ○ Use of forest products for domestic use ○ Income generated from the sale of forest products ○ Fuel source • Resource use ○ How the household uses the forest: number and type of products collected ○ Use of the forest for grazing ○ Clearing of the land for agriculture ○ Expenditure on agrichemicals • Behaviors with potentially positive impacts ○ anti-poaching patrols ○ fire-line construction ○ planting ○ control of invasive species • other involvement with FUG activities	• Overall methodology: Two-stage multiple-regression equation involving baseline and endline values; Triangulation via administrative data and qualitative interviews. • Sources (Social): Household survey, FUG survey, HBII monitoring data (participation)	• Households participating in the livelihood interventions (skills training, community enterprises) in treatment CFUGs • Households not participating in the livelihood interventions in treatment CFUGs, stratified by wealth ranking, and randomly selected (approximately) proportionate to probability of program selection. • Households from treatment and comparison CFUGs matched with treatment households in treatment CFUGs. Sampling of households follows a proportional random stratified sampling design.
Q2: What effect do livelihood interventions have on forest and landscape biodiversity conservation outcomes?	• Selected site characteristics ○ % by Land Cover Class ○ % Live Vegetation Cover ○ Disturbance Intensity ○ Improved Biophysical Condition ○ Improved Management	• Landscape and forest structure assessments using the IFRI network's methodology, which uses 10m and 3m concentric plots.	• Number of forest plots selected proportional to forest size within treatment and comparison community forests

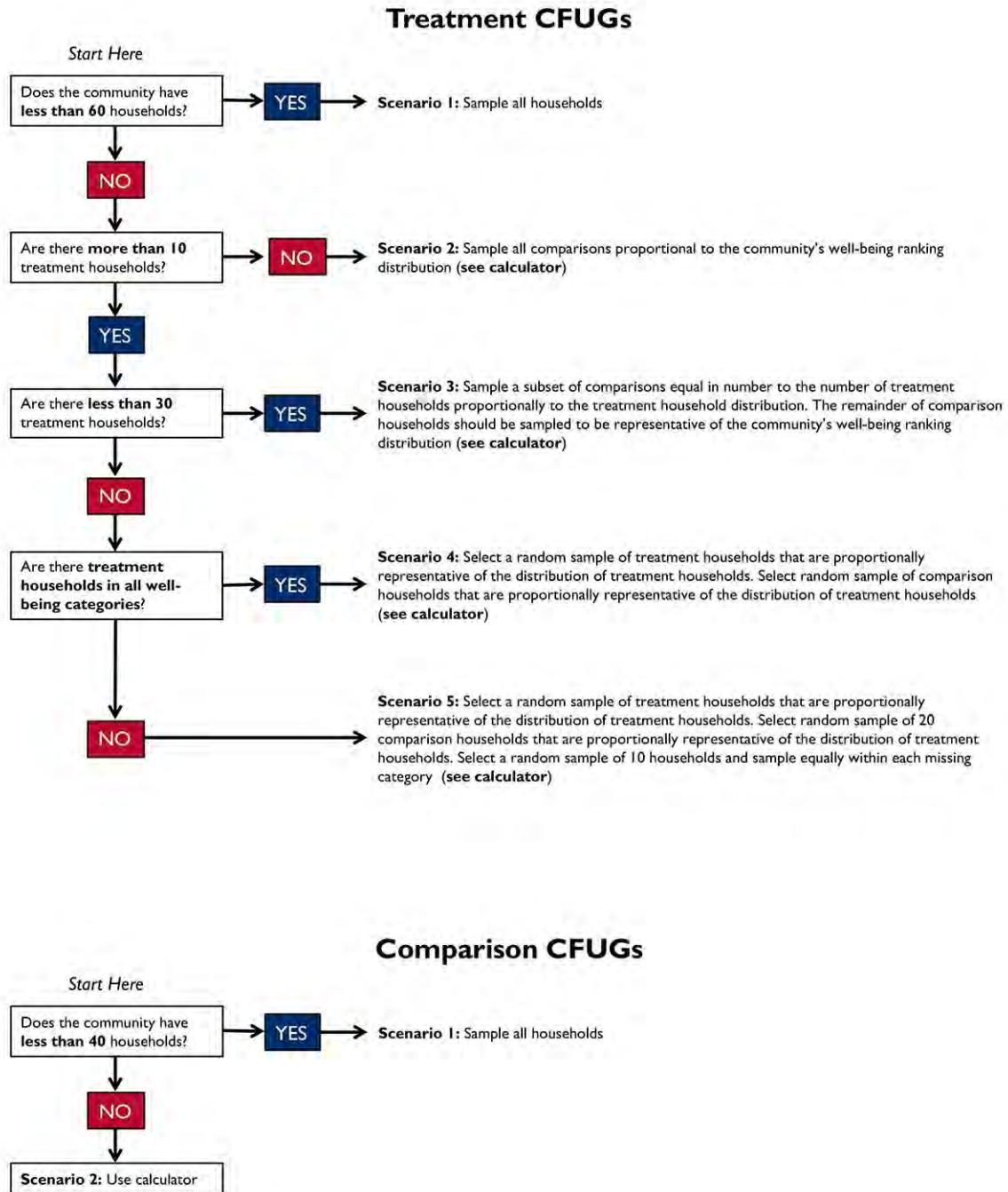
Question	Key Measures	Methodology Data Sources/Method	Selection Criteria
	- Selected tree characteristics - Biomass of live trees > 10cm - Biomass of standing dead trees - Growth – biomass - Growth of live gross volume		
Q3. How well do livelihood and resource conservation interventions, undertaken together, improve forest and landscape conservation outcomes?	All of HBII's livelihoods programming overlaps with their other programming. In addition, the current choice for sample frame is to use only HBII interventions as the sampling frame for comparison units to overcome an alternative hypothesis that it is the goodwill from HBII's other work that drives outcomes. Given these two factors, livelihood interventions cannot be parsed alone. Thus, questions 2 and 3 cannot be differentiated and thus will be answered together.		
Q4: What factors affect the success of livelihood interventions with respect to biodiversity conservation outcomes?	- See measures for Q2 - Levels of participation in livelihood interventions - Functionality of the FUG – institutional arrangements, level of activity - Household wealth- baseline poverty - Market access - International migration rates	- Same as Q2 but emphasis on covariates, rather than independent variable. - Household surveys, FUG group survey	
Q5. Is there evidence that some types of livelihood interventions may have better benefitted households and biodiversity conservation?	- Same as Q1-3, but focus on intervention types. - Details about each intervention, including: - the time lag between training, starting the activity and income generation - income generated - Perceived benefits to be discussed in focus groups and group interviews.	- Household survey and FUG interview. - Qualitative focus group discussions and group interviews (mid-term, endline).	Same as Q1

APPENDIX C: SAMPLING DESIGN

Appendix Figure 1: Nested Design of Primary and Secondary Sampling Units in Treatment and Comparison Sites



Appendix Figure 2: Sampling Decision Trees for Treatment and Comparison CFUGs



APPENDIX D: MULTI-DIMENSIONAL POVERTY INDEX

Increasingly, poverty is recognized as a multi-dimensional concept, which cannot be captured by income assessments alone. The Multi-dimensional Poverty Index (MPI) developed by Alkire and Foster at the Oxford Poverty and Human Development Initiative (OPHI) has become a widely used means of assessing multi-dimensional poverty levels. Notably, in 2018, the Government of Nepal created a national MPI alongside the team at the OPHI (GoN and OPHI).

An MPI was therefore constructed using the Alkire and Foster method (Alkire and Foster, 2011) for the households included in the baseline household survey. The MPI has three dimensions: health, education, and living standards. Within each dimension, there are indicators according to which the household is categorized as deprived or not deprived; if the household meets the criteria for an indicator, they are deprived (and given a score of 1), and if they do not they are considered not deprived (and given a score of 0).

The health dimension included child mortality (the death of one or more children aged ≤ 5 years in the past 12 months), weighted at .33. Although nutrition also is included in the health dimension in the global MPI, it was not included in this MPI as the household survey did not measure nutritional status.

The education dimension included 1) years of schooling (no member has received more than 5 years of schooling), and 2) school attendance (at least one household member aged 6-16 years was not attending school). These were each weighted at 0.167.

The living standard dimension included: 1) cooking fuel (the household cooks with fuelwood, dung or carbon), 2) sanitation (the household shares a toilet or uses a not improved toilet⁴³), 3) drinking water (the household does not have access to safe drinking water⁴⁴ or safe drinking water is more than a 30 minutes round-trip on foot from home), 4) electricity (the household has no electricity), 5) floor material (the household has a floor made from dirt, sand or dung), and 5) assets (the household does not own a car or truck and does not own more than one of the following assets: radio, television, telephone, bicycle, scooter or refrigerator). Each of these five were weighted at 0.056%.

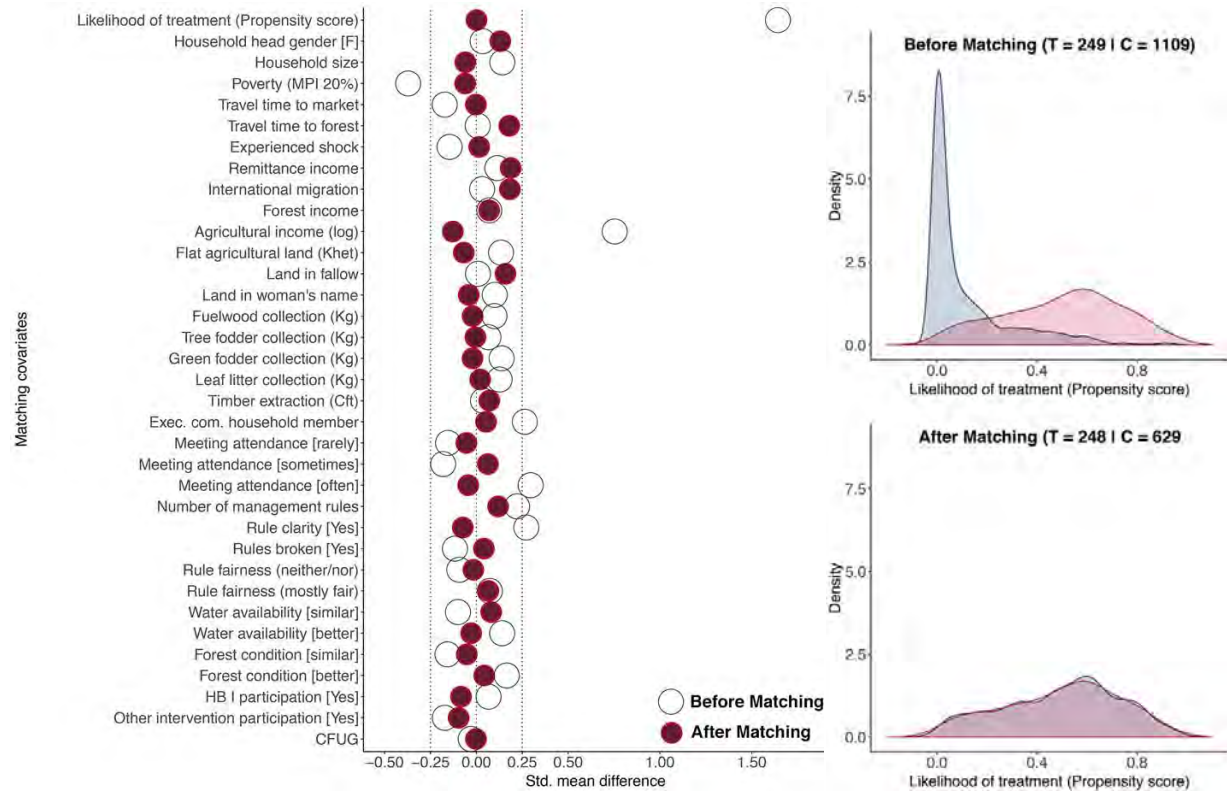
To calculate the MPI score per household, each indicator score was multiplied by the weights listed above and added together to provide an overall index score. The MPI typically uses a threshold of 0.33; households with a score equal to or greater than 0.33 are considered multi-dimensionally poor. However, thresholds of .2 and .4 may also be used. Here, households were considered multi-dimensionally poor if the sum of the weighted indicators is greater than or equal to 0.2.

⁴³ Improved and non-improved sanitation facilities were defined as per the Millennium Development Goal Guidelines (see Bartram et al., 2014). Non-improved sanitation facilities are flush to somewhere else (not to piped sewer system, septic tank or pit latrine), a pit latrine without slab, a bucket, a hanging toilet or no facility.

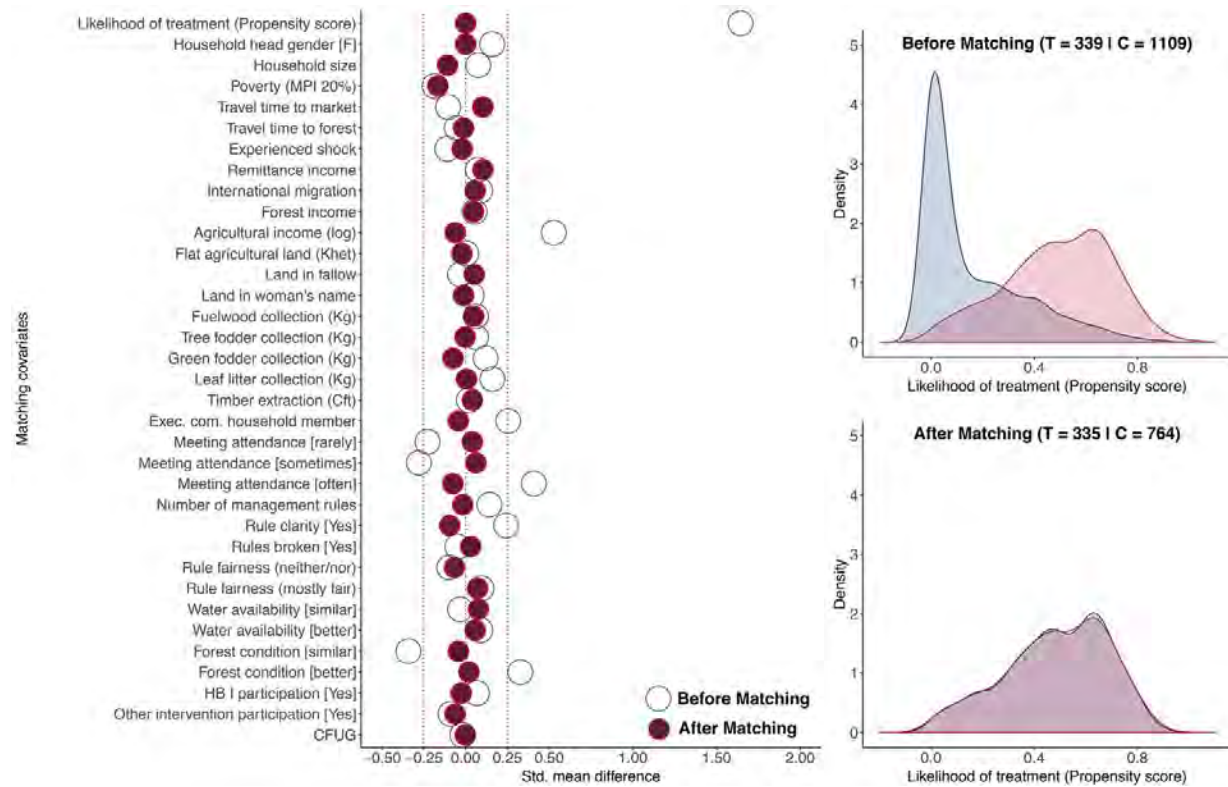
⁴⁴ Safe drinking water was also defined using the Millennium Development Goal Guidelines. Non-safe drinking water sources are an unprotected well, an unprotected spring, a tanker truck, a cart with a small tank and surface water (river/dam/lake/pond/Stream/canal/irrigation channel).

APPENDIX E: MATCHING FIGURES AND TABLES

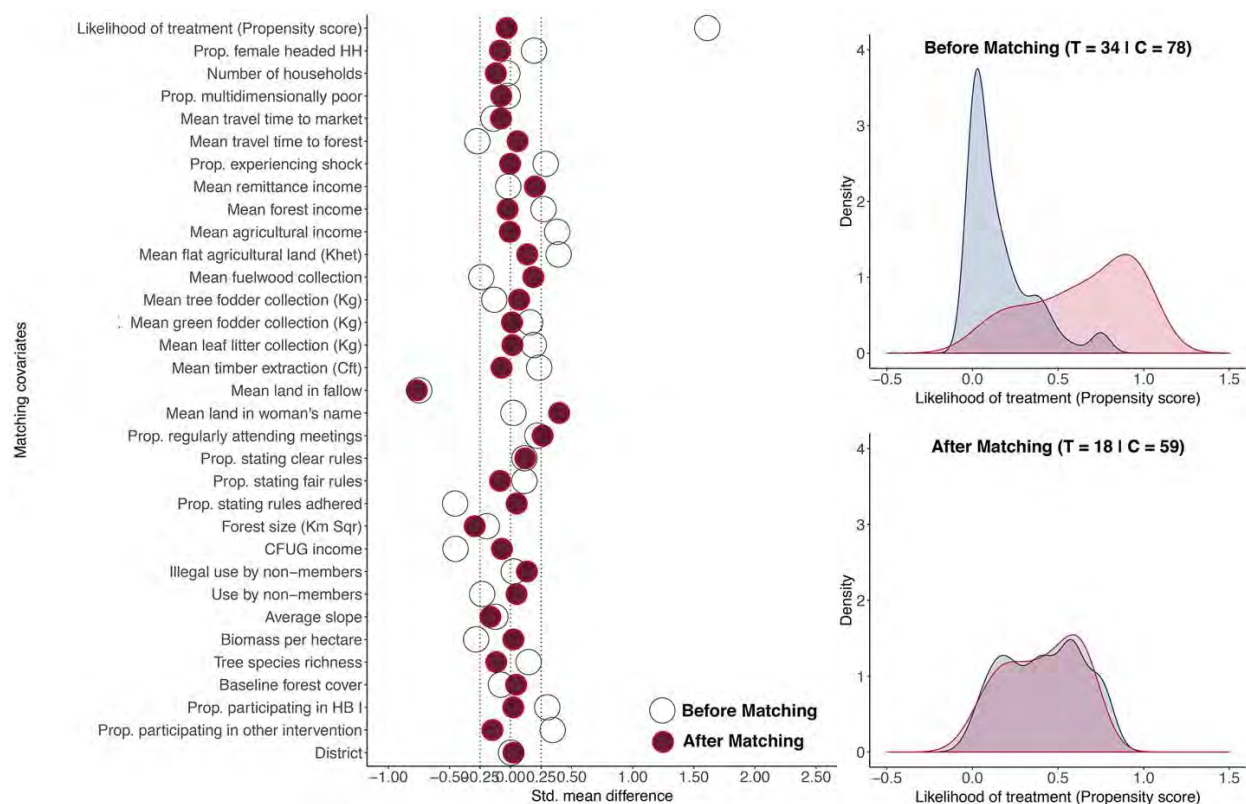
Appendix Figure 3: Difference Before and After Matching for Treatment and Comparison Households Participating in Cultivation-based HBII Livelihood Interventions.



Appendix Figure 4: Difference Before and After Matching for Treatment and Comparison Households Participating in HBII Small Group-based Livelihood Interventions



Appendix Figure 5: Difference Before and After Matching for Treatment and Comparison CFUGs Participating in Any HBII Group-based Livelihood Intervention



Appendix Table I: Means and standard deviations for key variables in treatment and comparison households taking part in any HBII group-based livelihood activities.

Covariate	Treatment (Mean)	Treatment (SD)	Comparison (Mean)	Comparison (SD)
Household head gender [F]	0.41	0.49	0.35	0.48
Household size	4.0	1.8	3.9	1.8
Poverty (MPI 20%)	0.09	0.29	0.15	0.36
Travel time to market [minutes]	32	34	36	45
Travel time to forest [minutes]	23	21	25	46
Experienced shock	0.44	0.50	0.46	0.50
Remittance income [NPR]	180163	351220	153807	404406
International migration	0.29	0.45	0.26	0.44
Forest income [NPR]	947	14097	263	5877
Agricultural income [NPR]	29704	61885	19619	171355
Flat agricultural land [Khet - m2]	1938	2267	1827	2436
Land in fallow [m2]	466	1275	478	1358
Land in woman's name [m2]	850	2199	687	2036
Fuelwood collection [Kg]	1735	4828	1370	2511
Tree fodder collection [Kg]	7857	82228	3795	7527
Green fodder collection [Kg]	23476	137571	9957	69005
Leaf litter collection [Kg]	337	966	138	595

Timber extraction [Cft]	3.8	46	3.8	75
Exec. com. household member	0.20	0.40	0.08	0.27
Meeting attendance [never]	0.01	0.12	0.05	0.22
Meeting attendance [rarely]	0.01	0.12	0.05	0.21
Meeting attendance [sometimes]	0.12	0.33	0.21	0.41
Meeting attendance [often]	0.85	0.36	0.70	0.46
Number of management rules	9.6	2.5	9.2	2.5
Rule clarity [Yes]	0.91	0.29	0.86	0.34
Rules broken [Yes]	0.11	0.31	0.09	0.29
Rule fairness [unfair]	0.04	0.20	0.04	0.20
Rule fairness [neither/nor]	0.42	0.49	0.46	0.50
Rule fairness [mostly fair]	0.54	0.50	0.50	0.50
Forest condition [worse]	0.02	0.13	0.02	0.15
Forest condition [similar]	0.14	0.34	0.18	0.39
Forest condition [better]	0.85	0.36	0.80	0.40
Water availability [worse]	0.43	0.50	0.44	0.50
Water availability [similar]	0.46	0.50	0.46	0.50
Water availability [better]	0.11	0.31	0.11	0.31
HBI participation [Yes]	0.11	0.31	0.06	0.24
Other intervention participation [Yes]	0.13	0.33	0.17	0.37

Note: These tables list all variables included in regressions to calculate the propensity scores for the statistical matching, except for CFUG-level fixed effects.

Appendix Table 2: Means and standard deviations for key variables in treatment and comparison CFUGs taking part in any HBI group-based livelihood activities.

Covariate	Treatment (Mean)	Treatment (SD)	Comparison (Mean)	Comparison (SD)
Prop. female headed household	0.37	0.11	0.34	0.14
Mean number of households	157	118	161	121
Prop. poor (MPI 20%)	0.15	0.1	0.15	0.12
Mean travel time to market [minutes]	36	19	39	31
Mean travel time to forest [minutes]	25	13	29	27
Prop. experienced shock	0.47	0.21	0.41	0.22
Mean remittance income [NPR]	156346	95711	158212	73034
Mean forest income [NPR]	398	1090	104	359
Mean agricultural income [NPR]	25451	42991	9058	9739
Mean flat agricultural land [Khet - m2]	1881	809	1563	1050
Mean land in fallow [m2]	485	378	768	768
Mean land in woman's name [m2]	746	531	734	475
Mean fuelwood collection [Kg]	1513	782	2453	4883
Mean tree fodder collection [Kg]	5204	7508	6208	12507
Mean green fodder collection [Kg]	15749	53263	7251	6321
Mean leaf litter collection [Kg]	186	322	125	233
Mean timber extraction [Cft]	4.0	8.9	1.9	4.1

Prop. meeting attendance [often]	0.73	0.16	0.69	0.2
Prop. rule clarity [Yes]	0.86	0.12	0.85	0.14
Prop. rules broken [Yes]	0.09	0.09	0.13	0.11
Prop. rule fairness [mostly fair]	0.49	0.19	0.47	0.2
Prop. Illegal use by non-members	0.18	0.39	0.17	0.38
Prop. Use by non-members	0.15	0.36	0.23	0.42
Prop. HBI participation [Yes]	0.07	0.1	0.04	0.08
Prop. other intervention participation [Yes]	0.17	0.19	0.1	0.13
Mean CFUG income [NPR]	552267	1313981	814738	2456634
Mean forest size (Km Sqr)	0.85	1	1.05	0.94
Mean slope [degree]	27	8	28	7
Mean baseline forest cover [%]	48	32	51	34
Forest condition indicators				
Mean biomass per hectare	99	55	114	61
Mean tree species richness	19	7	17	8
Mean deforestation [%]	0.46	1.98	0.27	0.51

Note: This table lists all variables included in regressions to calculate the propensity scores for the statistical matching, except for CFUG-level fixed effects.

Appendix Table 3: Binomial regression results of household participation in any Hariyo ban II activity, cultivation activities, and small activities as a function of key covariates

Covariate	Participation in HB II				Participation in HB II cultivation activities				Participation in HB II small activities			
	Logit Coef.	Std. Error	Statistical Significance	Average Marginal Effect (%)	Logit Coef.	Std. Error	Statistical Significance	Average Marginal Effect (%)	Logit Coef.	Std. Error	Statistical Significance	Average Marginal Effect (%)
(Intercept)	-6.1	1.3			-23	1339			-6.2	1.4	***	
Household size	0.05	0.04			0.08	0.05			0.10	0.05	*	1
Household head gender [M]	-0.39	0.14	**	-6	-0.27	0.21			-0.46	0.17	**	-6
Poverty (MPI 20%)	-0.35	0.21			-0.92	0.35	**	-8	-0.10	0.27		
International migration	-0.04	0.16			-0.13	0.23			0.12	0.19		
Remittance income	-1.1E-07	1.8E-07			1.1E-07	2.7E-07			-1.9E-07	2.2E-07		
Experienced shock	0.28	0.14			0.34	0.21			0.30	0.17		
Travel time to forest	-3.1E-03	2.7E-03			1.4E-03	2.2E-03			-3.2E-03	2.6E-03		
Travel time to market	-2.1E-03	2.4E-03			-4.1E-03	4.2E-03			1.7E-03	2.4E-03		
Exec. com. household member	0.80	0.19	***	14	0.60	0.28	*	6	0.55	0.24	*	7
Land in woman's name (hectares)	1.6E-05	3.2E-05			6.5E-06	4.8E-05			-1.2E-05	4.5E-05		
Meeting attendance [rarely]	0.07	0.62			0.43	0.74			0.05	0.69		
Meeting attendance [sometimes]	0.94	0.48	*	11	0.72	0.60			0.53	0.52		
Meeting attendance [often]	1.7	0.47	***	23	1.4	0.59	*	11	1.3	0.51	**	15
Number of management rules	-0.05	0.04			3.3E-03	0.07			-0.06	0.05		
Rule clarity [yes]	0.31	0.22			0.44	0.35			0.28	0.29		
Rules broken [yes]	0.15	0.22			-0.23	0.37			-0.01	0.29		
Rule fairness [neither/nor]	0.47	0.34			0.01	0.44			0.11	0.40		
Rule fairness [mostly fair]	0.51	0.33			0.47	0.44			0.32	0.40		
Flat agricultural land (Khet - hectares)	3.5E-05	3.2E-05			2.9E-05	4.4E-05			0.0	0.0		
Land in fallow (hectares)	-4.2E-05	5.4E-05			-4.3E-05	8.0E-05			0.0	0.0		
Agricultural income	6.9E-07	4.3E-07			0.17	0.02	***	< 0.01	0.11	0.02	***	< 0.01
Fuelwood collection (Kg)	3.3E-05	1.8E-05			4.3E-05	2.4E-05			2.9E-07	2.8E-05		
Tree fodder collection (Kg)	1.9E-06	5.2E-06			3.2E-07	3.2E-06			6.1E-06	9.5E-06		

Appendix Table 3: continued												
Covariate	Logit Coef.	Std. Error	Statistical Significance	Average Marginal Effect (%)	Logit Coef.	Std. Error	Statistical Significance	Average Marginal Effect (%)	Logit Coef.	Std. Error	Statistical Significance	Average Marginal Effect (%)
Green fodder collection (Kg)	4.1E-07	7.1E-07			5.9E-07	7.4E-07			9.6E-07	7.4E-07		
Leaf litter collection (Kg)	8.3E-05	9.0E-05			8.8E-05	1.4E-04			-8.4E-06	1.1E-04		
Timber extraction (Cft)	4.9E-04	9.0E-04			9.0E-04	1.1E-03			9.7E-04	1.0E-03		
Forest income	2.0E-06	6.1E-06			1.3E-07	6.9E-06			8.9E-07	6.7E-06		
Forest condition [similar]	0.02	0.51			-0.17	0.71			-0.30	0.63		
Forest condition [better]	0.22	0.50			-0.24	0.68			0.25	0.59		
Water availability [similar]	0.20	0.15			0.06	0.22			0.25	0.18		
Water availability [better]	0.01	0.24			0.09	0.33			0.21	0.28		
HB I participation [yes]	0.50	0.25	*	8	0.46	0.43			-0.03	0.33		
Other intervention participation [yes]	0.11	0.22			0.21	0.33			0.11	0.27		

Note: Statistical significance: *** = $P < 0.001$, ** = $P < 0.01$, * = $P < 0.05$

Appendix Table 4: Binomial regression results of CFUG participation in any Hariyo Ban II activity, cultivation activities and small activities as a function of key covariates

Covariate	Logit Coef.	Std. Error	Statistical Significance	Average Marginal Effect (%)
(Intercept)	1.8	9.1		
No. of Households	4.9E-03	5.8E-03		
Proportion of female-headed HH	4.3	4.0		
Proportion of multidimensionally poor HH	-2.8	6.6		
Mean income of remittances	4.9E-06	9.3E-06		
Proportion of households experiencing a shock	7.5	3.3	*	68
Average travel time to forest	-0.04	0.04		
Average travel time to market	0.04	0.02		
Mean land in woman's name (hectares)	1.6	5.0		
CFUG income	-2.4	1.3	*	-27
Proportion of HH attending meetings often	-7.8	3.6	*	-71
Proportion of HH stating rules are clear	6.0	5.3		
Proportion of HH stating rules are fair	1.1	2.4		
Proportion of HH stating rules are broken	-15	6.6	*	-136
Mean flat agricultural land (Khet - hectares)	2.3E-04	6.2E-04		
Mean land in fallow (Khet - hectares)	-1.5E-03	9.5E-04		
Mean income from agriculture	4.8E-05	2.5E-05		
Mean firewood collection (Kg)	-1.3	1.2		
Mean tree fodder collection (Kg)	-6.8E-06	6.6E-05		
Mean green fodder collection (Kg)	3.2E-05	6.6E-05		
Mean leaf litter collection	1.6E-03	2.5E-03		
Mean timber extraction (Cubic ft)	0.12	0.10		
Mean forest income	-4.1	1.8		
Forest used by non-members	1.3	1.3		
Illegal forest use by non-members	7.4E-04	9.3E-04		
Average slope of community forest	-1.7	1.0	*	-0.02
Community forest size	-0.01	0.01		
Community forest biomass (Tonnes per hectare)	0.25	0.10		
Tree species richness	0.03	0.02	*	0.2
Percent forest cover	1.8	9.1		
Proportion of households participating in HBI	-4.6	3.6		
Proportion of households participating in other livelihood interventions	-0.25	0.10		

Note: Statistical significance: *** = $P < 0.001$, ** = $P < 0.01$, * = $P < 0.05$

Appendix Table 5: Log-linear and binomial regression results of fuelwood collection modeled as a function of remittance income and key covariates.

Covariate	Continuous Response [n = 4299]			Binary Response [Above the third tercile = 1529]		
	Coef.	Std. Error	Statistical Significance	Logit coef.	Std. Error	Statistical Significance
Remittances	-1.6E-07	4.9E-08	**	-3E-07	1.4E-07	*

Statistical significance: *** = $P < 0.001$, ** = $P < 0.01$, * = $P < 0.05$

Appendix Table 6: Binomial and log-linear regression results of land in fallow modeled as a function of remittance income and key covariates.

Covariate	Binary Response [With land in fallow = 1068]			Continuous Response [n = 1068]		
	Logit coef.	Std. Error	Statistical Significance	Logit coef.	Std. Error	Statistical Significance
Remittances	3.1E-07	1.3E-07	*	5.9E-08	7.1E-08	NS

Statistical significance: *** = $P < 0.001$, ** = $P < 0.01$, * = $P < 0.05$, NS = Non-Significant

Appendix Table 7: Ordinal logistic regression results of participation in CFUG meetings as a function of remittance income and key covariates.

Covariate	Continuous Predictor [n = 4299]			Binary Predictor [High = 1952, Low = 2347]			Full Matching [High = 1902, Low = 2347]		
	Logit coef.	Std. Error	Statistical Significance	Logit Coef.	Std. Error	Statistical Significance	Logit Coef.	Std. Error	Statistical Significance
Remittances	-0.02	0.009	*	-0.26	0.10	*	-0.29	0.08	***

Statistical significance: *** = $P < 0.001$, ** = $P < 0.01$, * = $P < 0.05$

Appendix Table 8: Linear and binomial regression results of forest condition indicators modeled as a function of key covariates

Covariate	Tree Species Richness			Biomass (Tonnes per hectare)			Percent Deforestation			
	Coef.	Std. Error	Statistical Significance	Coef.	Std. Error	Statistical Significance	Coef.	Std. Error	Statistical Significance	Average Marginal Effect (%)
(Intercept)	3.1	7.1		81	61		-5.5	5.2		
CFUG number of households	-0.002	0.008		0.16	0.07	*	-0.004	0.006		
Proportion male-headed households	2.5	5.3		35	46		7.6	4.6		
Proportion multidimensionally poor households	0.25	7.4		-118	63		0.39	4.7		
Mean household remittance income	-9.7E-06	1.1E-05		2.9E-05	9.8E-05		-1.1E-05	9.9E-06		
Proportion of households experiencing a shock	-1.8	3.7		2.2	32		-2.3	2.7		
Mean household travel time to community forest	-0.07	0.03	*	-0.27	0.25		-0.01	0.02		
Mean household travel time to nearest market	0.02	0.02		0.04	0.22		-0.04	0.02	*	0.3
Proportion of households regularly attending meetings	4.7	4.2		30	37		-5.5	3.3		
Proportion of households stating rules are clear	-2.9	6.2		-53	54		5.0	4.5		
Proportion of households stating rules are fair	-0.54	3.6		-42	31		1.6	2.5		
Proportion of households stating rules are broken	2.2	7.5		17	65		6.6	7.0		
Mean flat land (Khet) owned by households (hectares)	0.001	0.001		0.01	0.01		0.0005	0.001		
Mean fallow land owned by households (hectares)	-0.001	0.001		0.003	0.01		0.0005	0.001		
Mean household agricultural income (NPR)	-8.0E-06	2.5E-05		0.0001	0.0002		-3.6E-05	4.4E-05		
Mean household fuelwood collection (Kg)	0.001	0.001		0.01	0.004		0.0001	0.000		
Mean household tree fodder collection (Kg)	-0.0001	0.0002		-0.004	0.002	*				
Mean household green fodder collection (Kg)	2.1E-06	3.0E-05		0.0004	0.0003		-0.0001	0.0001		
Mean household leaf litter collection (Kg)	-1.8E-06	0.003		-0.04	0.03		-0.001	0.003		
Mean household timber collection (CFt)	0.13	0.10		0.39	0.91		-0.20	0.18		
Mean household forest income (NPR)	-0.0004	0.001		0.00	0.01					
CFUG income (NPR)	5.04E-07	4.15E-07		1.0E-05	3.4E-06	**	8.9E-07	5.7E-07		
Non-member use of CFUG [Yes]	0.81	1.6		-15	13		1.4	1.2		
Illegal use of forest by others [Yes]	1.7	1.7		20	15		0.88	1.1		
Mean household land in woman's name	-0.003	0.001	*	-0.02	0.01		0.001	0.001		

Appendix Table 8: continued									
	Coef.	Std. Error	Statistical Significance	Coef.	Std. Error	Statistical Significance	Coef.	Std. Error	Statistical Significance
Participation in HBII [Yes]	2.6	1.4		-1.9	1.3		-0.60	1.0	
Proportion of households participating in HBI	-8.3	7.4		0.60	6.5		5.5	6.0	
Proportion of households participating in other interventions	5.2	5.5		-7.4	4.7		1.1	4.4	
Forest slope	0.41	0.12	***	3.1	1.0	**	0.06	0.10	
Forest size	5.6	0.85	***	2.4	9.3		-0.04	0.71	
Biomass (Tonnes per hectare)	-0.02	0.01					-0.01	0.01	
Tree species richness				-1.5	0.99		0.05	0.08	
Percent forest cover in 2000	0.03	0.03		0.52	0.22	*	0.02	0.02	

APPENDIX F: ADDITIONAL RECOMMENDATIONS

I. Recommendations for a Midline Study

USAID should consider undertaking a small qualitative midline study to clarify further the longer-term value of pursuing an endline data collection and to provide additional insights on key relationships found during the baseline. A qualitative study would provide a far deeper insight into some of the key findings from the baseline regarding who participates in HBII livelihood interventions and how changes in livelihoods are affected forest use and management. As these pertain to socio-economic changes, institutions and power dynamics, they would best be explored through qualitative methods, namely focus group discussions and semi-structured interviews. A sub-section of treatment CFUGs that include a range of intervention types should be selected for this study. Suggested participants in each CFUG for the mid-line are as follows:

- o People who did and did not participate in HBII interventions. Careful attention should be paid to including diverse perspectives, including by age, gender, socio-economic status, of female-headed households and those with little to no land.
- o Of those that participated in HBII livelihood interventions, a diverse range of experiences should be captured, including those who did not start the intervention, those who started and stopped and those who started and continue with the intervention.
- o Key informants who can provide insight into the CFUG, most obviously members of the CFUG executive committee.

The evaluation team recommends a midline study to answer the following research questions:

1. In each CFUG, how was the decision as to who would participate in HBII livelihood interventions made?
2. What were the reasons why people and households did or did not participate in a HBII livelihood intervention?
3. What are the reasons why households did or did not generate income from the HBII livelihood intervention?
4. How does income generation, including whether households decided to generate income from the activity and if so the quantity they generated, vary between the types of interventions?
5. Do those that participated and started the HBII livelihood intervention expect to continue the activity in the future and what are their reasons?
6. Are changes in forest dependence affecting community forest management institutions and if so how?

The midline could be combined with further inquiry and liaison with implementing partners to determine:

- a) Whether the IP has information suggesting any other comparison CFUGs that received treatment (resulting in reduced statistical power that may hinder the ability to detect intervention effects at endline).

- b) Gathering updated information from other donors in Kathmandu about potential contamination by other donor-funded livelihoods-related programming in program areas.

The suggested list of topics to be covered in qualitative data collection at the mid-line are as follows:

- ☐ The decision to participate or not to participate in HBII livelihood interventions at the CFUG level
 - ☐ Who made the decision as to which households could participate in HBII livelihood interventions?
 - ☐ On what criteria/reasons were these decisions based?
 - ☐ Community members views of the decision-making process
- ☐ The decision to participate or not to participate in HBII livelihood interventions at the household level
 - ☐ Reasons for deciding to participate which might include perceived benefits and power dynamics (if asked to participate)
 - ☐ Reasons for deciding not to participate, which might include human resources, financial resources, land availability, skills (actual or perceived requirements) and whether people had the option to participate.
- ☐ Income generation
 - ☐ Reasons for not generating income from the livelihood intervention
 - ☐ Reasons for stopping generating income from the livelihood intervention
 - ☐ Experiences surrounding income generation including ease and expected continuation
- ☐ Forest dependence and forest management
 - ☐ Perceived changes in forest use and dependence in the household and CFUG and the reasons why
 - ☐ Changes to forest management including composition of the executive committee, attendance at community forest user group meetings, how the forest is managed (e.g. rigidity of rules) and participation in forest management activities and the reasons behind these changes.

2. Recommendations for the Endline Study

The evaluation team proposes the following revised questions for the end-line:

4. What effect do livelihood interventions *and other sources of income (including remittances)* have on household wealth, forest dependence, resource use, and pro-conservation behaviors?
5. How do livelihood programming- and increased income (including remittances) affect community forest institutions, and do these effects translate into forest outcomes inside and outside of community forests?
6. What is the relative magnitude of potentially divergent effects (reduced forest dependence; reduced engagement with CF institutions; reduced agricultural dependence) on forests inside and outside of community forests?

To answer these questions, the following topics would need to be covered in the endline:

- ☐ Household composition
 - ☐ Household members and gender, age, level of education, migration status
 - ☐ Profile of the head of the household
- ☐ Income sources

- ☐ From HBII livelihood interventions
 - ☐ Income from all other sources, including: agriculture, forest products, remittances, other forms of employment, other livelihood interventions
- ☐ Household wealth
 - ☐ Income
 - ☐ Indicators used in the multi-dimensional poverty index
- ☐ Resource use
 - ☐ Area of land owned and area of each type of land
 - ☐ Land area cultivated in the past 12 months
 - ☐ Land area in fallow
 - ☐ Expenditure on agriculture
 - ☐ Changes in land use due to changes in remittances, for example reduced the area of land cultivated, increase the intensity of production
- ☐ Forest dependence
 - ☐ Fuelwood use – quantity and whether used as primary fuel source
 - ☐ Quantity of other forest products collected
 - ☐ Perceived change in dependence and factors
- ☐ Pro-conservation behaviors
 - ☐ Whether household members engage in key behaviors (including anti-poaching patrols, invasive species control, fireline construction and controlled burning, enrichment planting of firewood, fodder, and timber species)
 - ☐ Household members that participate in each activity
- ☐ Forest management institutions
 - ☐ Participation in the executive committee
 - ☐ Attendance at meetings
 - ☐ Participation in forest management activities
- ☐ Forest outcome
 - ☐ Forest outcomes within community forests and outside

3. Five potential improvements to data quality and database management.

The evaluation team recommends that HBII should improve the quality of data and database management by better regulating and increasing uniformity and accuracy of data entered through five improvements to data entry and data cleaning. This would be undertaken through five potential improvements as follows:

- I. HBII should develop and share with field teams a uniform list that they request the field use for inputting monitoring data or else hire a staff member whose responsibility is to clean monitoring data. This uniform list should ensure that:
 - a. CFUG names, municipal names, and district names in the records of livelihood training activities are uniform and free of spelling mistakes. The names of community forest user groups, municipalities and districts should be uniform across all datasets and among different implementing partners.
 - b. Accurate record-keeping of which interventions are being implemented by which agency, in which CFUG, and include a record of who the participants are, and what activities they participated in (please consider the ethical implications of collecting this data, including free, prior and informed consent). If possible, also include financial information (how much was spent in each CFUG on training activities, this enable the generation of a potential “intensity measure” that could be used to measure evaluation impacts.

2. HBII should produce a simple procedural document on what the standard entries should be and share it with data entry operators.
3. Consider narrowing the room for errors by having forms that require as many options as feasible to be selected from a drop-down list or separate spreadsheet/tab to copy and paste rather than entered by typing, especially as the number of additional areas will decrease at this phase.
4. Link governance, climate change adaptation activities and biodiversity conservation components' regular monitoring data with livelihoods data through CFUG, intervention location, and HH matching. This would produce a database of CFUGs, locations, and whether they have received each type of intervention.
5. Recruit more M&E staff or interns in the central M&E team to clean the uploaded monitoring data.

Implementing these recommendations, would require a careful review of current data collection and management practices and consideration of the most appropriate means of collecting and uploading data. One potential means of increasing the standardization of entries would be to develop an excel template which contained a series of drop-down options from standardized lists, contained in the document. An illustrative example is shown in Figure I.

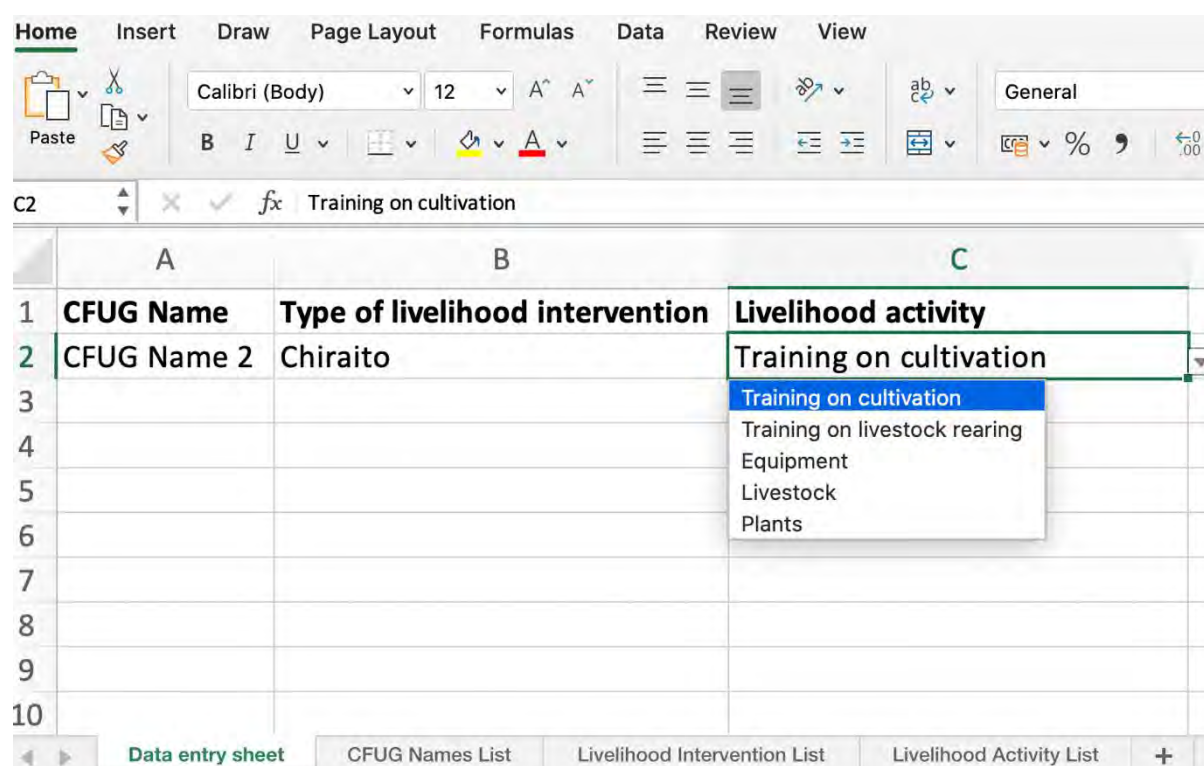


Figure I: An illustrative example of how a template might be generated to standardize data entry. The cells in the data entry sheet are linked to standardized lists of entries contained in the other sheets.

Some suggestions as to what data might be collected about HBII activities at the CFUG level and how this data would be recorded are as follows:

- o **GPS location:** standard format
- o **CFUG Name:** standardized list from which the CFUG is selected.
- o **Municipal name:** standardized list from which the name is selected.
- o **District name:** standardized list from which the name is selected

- o **Type of livelihood intervention** the CFUG is participating in standardized list from which the type of intervention is selected. For example, beekeeping, cardamom plantation, skills-training. As some CFUGs participate in more than one type of intervention, multiple responses should be possible. For example, there could be columns for livelihood intervention 1 and 2 and a standardized way of inputting this data, such as alphabetically.
- o **Agency implementing the activity:** standardized list of all the implementing agencies.
- o **Number of people participating in the activity**
- o **Number of households participating in the activity**
- o **Date of the activity:** calendar type specified
- o Activities supported: Details about the activities would be recorded using a standardized list of entries.
 - o **Type of activity supported**, for example,
 - Training- cultivation
 - Material provision- agricultural equipment
 - Material provision – livestock
 - Material provision – plants
 - o Key details about the activity would also be recorded, for example:
 - **Training topic** e.g. organic fertilizer use (from a standardized list)
 - **Duration** of training in a specified unit (e.g. days)
 - **Type of material support** provided e.g. plastic for vegetable tunnel, goat, buffalo (from standardized list)
 - **Number provided** (for equipment and livestock)
- o **Money spent** on this activity in the CFUG

In certain cases, it may be necessary to periodically update the standardized lists. For example, if a new type of activity is introduced which was not anticipated when the list was devised. How lists are updated and shared would need to be considered as part of this process.

Recording who participates in each activity and being able to identify participants across datasets is crucial to understanding the effect of HBII activities including livelihood interventions. How best to do this requires careful consideration, both ethical implications of recording names and the practical issues.

APPENDIX G: MEASURES RECOMMENDED TO MAINTAIN CONFIDENTIALITY OF DATA PRIOR TO UPLOAD TO THE DIGITAL DATA LIBRARY

The following represent recommendations from the study team to maintain confidentiality of identities before upload of the data to the DDL. The final set of recommendations actually applied is subject to negotiation with DDL and therefore are not known at the time of publication of this document, so this information suggests to future open data users what to consider in using the public database. Further, please be aware that the 112 CFUGs represented in the database come from among all 278 CFUGs in CHAL represented in the area in which HBII operates without specific CFUGs represented in order to maintain better confidentiality.

A proposed anonymization plan below is based on key suggestions from the book “The Anonymisation Decision-making Framework” by Elliot et al. (2016), and a personal consultation with Mark Elliot (lead author of the book). The approaches outlined in the book are fully consistent with European data regulations and follows the 2018 EU data regulation *The General Data Protection Regulation*.

Key definition: “Anonymization is a process to allow data to be shared or disseminated ethically and legally, thereby realising their huge social, environmental and economic value, whilst preserving confidentiality” (Elliot et al. 2016, page 7).

The disclosure forms used during this study promise participants confidentiality and not anonymity. Anonymization is a strategy to reduce the risk of identification and information disclosure of an individual or household. However, the complete elimination of risk is considered impossible. Risk is positively associated with the amount of information that is released. The more information is released, the higher the risk. Anonymization therefore requires balancing risk reduction with the release of sufficient information so as to not negate the public good associated with making data available to a wider number of potential users.

Several considerations and processes can help identify the level of risk of a data breach, either by inadvertent or accidental disclosure, or malicious targeted attacks. This includes assessments of:

- The data and the data structure – are there individuals within the dataset that are unique, and are there any characteristics included that would help identify them by association
- Key variables that might in combination with auxiliary information enable the identification and disclosure of data subjects, such as datasets containing sufficiently similar information from the same population; information that is publicly available - for example social media information; and information from local or personal knowledge, or physical observations.

The HBII baseline data is a combination of hierarchically structured datasets (community-level environmental and socioeconomic data, and nested household-level data) containing more than 3500 variables. Hierarchical data is considered to have a higher risk of disclosure because there is a greater likelihood that the data will contain information that will make the data subject unique (Elliot et al. 2016, page 83). Moreover, because the data will be available with minimal access restrictions, DDL will have to determine the extent to which they are concerned with the risk that end users might have “response knowledge” (they know that a person participated in the survey). The team do not believe the probability is high, but if any end users did have response knowledge, this would substantially increase the risk of identification. There are also various other datasets, held both by stakeholder agencies (HBII partners) and other institutions (e.g., the national census, the NLSS, and DHS data), that provide low levels of anonymization and that, theoretically, could increase the risk of identification and disclosure of a household were a researcher to spend the time to map similar survey questions and responses.

Because it is impossible to completely eliminate the risk of disclosure and cannot guarantee anonymity, the actions below provide a series of steps to help reduce the risk of disclosure without fully compromising data usability. Note, while the suggestions below have followed key approaches, Elliot et al. (2016) also suggest additional approaches, e.g. data imputation and performing a penetration test. The research team expect that many actions listed will be undertaken, while some, such as item 11, may not be.

Key Actions

Review variables and select only those that need to be included in the final dataset, and give specific consideration to information about caste and religion, which are classed as special category data in the European Union.

1. Remove all direct identifiers, e.g. names and telephone numbers.
2. Remove key direct and indirect locational identifiers, e.g. name of settlement, VDC, ward and geo-locations. Replace labels for municipality, CFUG forests, and working site/block with codes.
3. Remove all household member-specific data, and generate aggregate household member variables: household size, gender ratio, members above and below 16 years, binned number of migrants. We suggest doing so because even the combination of standard variables such as household members' age, sex and occupation can identify unique households if they are above a certain size (Elliot et al. 2016). Doing this also reduces the risk of households being identifiable due to unusual characteristics (e.g. a 16 year-old widow with a female child).
4. Conduct a search for unique cases by household size, aggregate household information, ethnicity and caste, and potentially merge rare categories to avoid unique cases.
5. Only include the aggregate Hariyo Ban participation variables. This is because Hariyo Ban participation by specific participation type is very small, thus greatly increasing the risk of identification and disclosure. This detailed information is also less useful for the end user
6. Create coarse aggregate categories of CFUG variables: Forest size, CFUG year, year of PWBR classification, nr of CFUG households, nr of CFUG households according to PWBR classification, % of households which belong to each caste (4 variables), and average slope should be turned into categorical variables, with 2-4 categories. The final number of categories should be adjusted so that there are no unique combinations across CFUGs based on the variables mentioned here.
7. Aggregate forest plot elevation to a 3-4 category.
8. Only include the year of data collection, remove day and month. This is particularly to reduce the risk generated by someone with response knowledge.
9. Remove all open-ended questions, besides open-ended species variables in the forest plot data. These should be coded into Species 1, Species 2, etc. so that species richness can still be calculated.
10. Release a sub-sample for DDL upload. This "sampling" strategy reduces disclosure risk by creating uncertainty about whether a particular individual or household is represented in the data (Elliot et al. 2016, page 43). We propose to first randomly remove 25% of selected CFUGs (and containing households). We propose to randomly remove a further 25% remaining households (lead to a combined removed 50% of households). Sampling both CFUGs and households would generate uncertainty at both community and household level.

References

Elliot, Mark, Elaine Mackey, Kieron O'Hara, and Caroline Tudor. 2016. UKAN Publications *The Anonymisation Decision-Making Framework*.

I. Specific actions for Household level data

N O	Original variable name	Data type	Data anonymization plan	Remarks
1	[Q_3]	String_GPS	Remove variable	Include in encryption data set
2	[Q_4]	String_GPS	Remove variable	Include in encryption data set
3	[HH_1]	String_ Enumerator ID	Remove variable	Include in encryption data set
4	[HH_2]	String_ Supervisor ID	Remove variable	Include in encryption data set
5	Q3_HHID	String_ Household ID	Remove variable	Include in encryption data set
6	Q5_Date	String_ Date	Modify: only include the year	
7	Q8_Block	String_ Working site/block	Remove label from codebook	
8	Q9_Municipality	String_ Municipality	Remove label from codebook	
9	Q10_Ward	String_ Ward number	Remove variable	Include in encryption data set
10	Q11_VDC	Character_ Former VDC	Remove variable	Include in encryption data set
11	Q12_Village	Character_ Name of settlement	Remove variable	Include in encryption data set
12	Q13_CFUG	String_ Name of CFUG	Remove label from codebook	
13	[HH_18]	Character_ Name of the respondent	Remove variable	Include in encryption data set
14	[T_HH_19_1] [T_HH_19_2]	String_ Contact phone numbers	Remove variable	Include in encryption data set
15	Q21_Religion	String_ Religion head	Modify: merge category 3 (Islam, n=3) with category -96 (Other)	
16	Q22_Caste	String_ Caste head	Modify: merge category 2 (Terai/Madheshi/Other terai/madheshi castes, n=3) and category 6 (Muslim, n=2) with category 7 (Other)	
17	Q25_No.Years	Numeric_ Yrs family lived in village	Modify: bin years, i.e. <10, 10-20, 20+	
18	Q26_From	String_ Where did family come from?	Remove variable	Will be available in full, cleaned dataset
19	Q26_District	String_ Where did family come from_District	Remove variable	Will be available in full, cleaned dataset
20	Q26_VDC	Character_ Where did family come from_VDC	Remove variable	Will be available in full, cleaned dataset
21	Q27D_TotalHH	Numeric_ Total Member	Modify: bin, i.e. 1, 2, 3-4, 5-8, 9+	
22	Q27A_InHH	Numeric_ Currently living in this household	Remove variable	Aggregate household size information can be found in other Q27/migration variables

23	Q27B_AbsentN	Numeric_Absent in Nepal	Remove variable	New variable “homeMgrnt_bin” gives information about household migration
24	Q27C_AbsentOutsideN	Numeric_Absent outside of Nepal	Remove variable	New variable “abrdMgrnt_bin” gives information about household migration
25	Q27_OutsideN	String_does the household have a member living outside of Nepal	Remove variable	New variable “abrdMgrnt_bin” gives information about household migration
26	[I_1HH_28] to [I_20HH_28]	Character_Name of household members	Remove variables	Include in encryption data set
27	Q29_I1_Gender to Q29_I20_Gender	String_Gender household member	1) Generate a household gender ratio (Q29_GenderRatio): (nr. males/nr. females)*100 2) Remove original variables	
28	Q30_I1_Relation to Q30_I20_Relation	String_Relationship to head	Remove variables	Will be available in full, cleaned dataset
29	Q31_I1_Age to Q31_I20_Age	Numeric_Age	1) Generate a household aggregate dependency ratio (Q31_dpdny_ratio): nr. dependent members (ages 0-15 and 65+) / adults (ages 16-64) 2) Remove original variables	
30	Q32_I1_EduBackground to Q32_I20_EduBackground	String_Educational background	Remove variables	For household education see “MDPI_I2_YearsSchooling” (“no household member has completed five years of schooling = Deprived)
31	Q33_I1_EduLevel to Q33_I20_EduLevel	String_highest Level of education completed	Remove variables	For household education see “MDPI_I3_SchoolAttend” (Any school-aged child (6-16) is not attending school)
32	Q34_I1_Occupation to Q34_I20_Occupation	String_Primary Occupation	Remove variables	
33	Q34_I1_OtherSpec to Q34_I20_OtherSpec	Character_Primary Occupation other, specify	Remove variables	
34	Q35_I1_Away to Q35_I20_Away	String_Is currently living away from home?	Remove variables	For household migration information see “homeMgrnt_bin” and “abrdMgrnt_bin” (created under point 37-41)
35	Q36_I1_Reason to Q36_I20_Reason	String_Reason for absence	Remove variables	For household migration information see “homeMgrnt_bin” and “abrdMgrnt_bin” (created under point 37-41)
36	Q36_I1_OtherSpec to Q36_I20_OtherSpec	Character_Other reason for absence	Remove variables	
37	Q37_I1_Location to Q37_I20_Location	String_Destination migrant	1) Generate a household aggregate National migration variable	

38	Q37_I1_OtherSpec to Q37_I20_OtherSpec	Character_Other destination migrant	(homeMgrnt_bin): count of nr. of members above 16 years that have been away for 3 months or more within Nepal, binned to 0,1,2 and >2 2) Generate a household aggregate International migration variable (abrdMgrnt_bin), binned to 0,1,2 and >2 3) Remove original variables (Q35, Q36, Q37, Q38)	
39	Q37_I1_District to Q37_I20_District	String_Destination district		
40	Q37_I1_Municipality to Q37_I20_Municipality	String_Destination municipality		
41	Q38_I1_Months to Q38_I20_Months	Numeric_Consecutive months away from home on this occasion		
42	Q142_O1_Type to Q142_OtherSpec	String_Participation in Hariyo-Ban supported activity	Remove variables	For HB2 participation information see aggregate: AnyLivelihood and AnyLivelihood2years, "Q142_HBII_TypeSummary" and "Q142_HBII_Scale_Summary", and for all HB (1 and 2) see "Q142_HB_TypeSummary" and "Q142_HB_Scale_Summary"
43	Q143_I1_Bee_When to Q143_I31_Other_When	String_How long ago did you participate?	Remove variables	Rather see aggregate information: "Q143_2years", "Q143_Plus2years", "Q143_Summary", "Q143_HBII_Livelihood", "Q143_HBI_Livelihood", "Q143_HBII_Skills", "Q143_HBI_Skills"
44	Q144_I1_O1_Bee_HH to Q144_I31_O2_Other_HH	String_Which member(s) of the household participated in this activity?	Remove variables	All household member specific information needs to be taken out
45	Q145_I1_O1_Bee_Why to Q145_I31_OtherSpec	String_Why did your household/ this household member decide to participate in this livelihood intervention?	Remove variables	Rather see aggregate information: "Q145_O1_IncomeHBII", "Q145_O2_MarketHBII", "Q145_O3_NewSkillsHBII", "Q145_O4_OthersDidHBII", "Q145_O5_AskedToHBII", "Q145_O6_HBIHBII", "Q145_O7_EnvironmentHBII", "Q145_O8_OtherHBII", "Q145_O1_Income", "Q145_O2_Market", "Q145_O3_NewSkills", "Q145_O4_OthersDid", "Q145_O5_AskedTo", "Q145_O6_HBI", "Q145_O7_Environment", "Q145_O8_Other"
46	Q146_I1_O1_Bee_What to Q146_I31_OtherSpec	String_What training and/or support did your household receive from Hariyo Ban?	Remove variables	

47	Q147_II_Days to Q147_I3I_Days	Numeric_In total, how many days training did the member(s) of your household receive?	Remove variables	
48	Q148_II_VisitDays to Q148_I3I_VisitDays	Numeric_How many days did the member of your household spend on the cross-learning visit?	Remove variables	
49	Q149_II_OI_Bee_Material to Q149_I3I_OtherSpec	String_What type of material support did your household receive?	Remove variables	
50	Q150_II_Bee_Loan to Q150_I3I_Other_Loan	String_Has your household received a loan to cover the costs of starting the activity your household received training or support from Hariyo Ban?	Remove variables	
51	Q151_II_OI_Bee_Source to Q151_I3I_OI_Other_Source	String_Where did your household receive the loan for this activity from?	Remove variables	
52	Q152_II_Bee_LoanSize to Q152_I3I_Other_LoanSize	Numeic_What was the size of the loan that your household received for this activity?	Remove variables	
53	Q153_II_Bee_Start to Q153_I3I_Other_Start	String_Has your household started to undertake the activity they received training or support from Hariyo Ban?	Remove variables	Rather see aggregate information: "Q153_Started", "Q153_StartedHBII", "Q153_StartedContinue", "Q153_StartedContinueHBII"
54	Q154_II_OI_Bee_Why to Q154_I3I_OtherSpec	String_Why does your household not plan to undertake this activity or why has it stopped?	Remove variables	Rather see aggregate information: "Q154_O1_NotInterestedHBII", "Q154_O2_LackLandHBII", "Q154_O3_LackMoneyHBII", "Q154_O4_LackMaterialHBII", "Q154_O5_LackLabourHBII", "Q154_O6_LackKnowledgeHBII", "Q154_O7_OtherHBII", "Q154_O1_NotInterested", "Q154_O2_LackLand", "Q154_O3_LackMoney", "Q154_O4_LackMaterial", "Q154_O5_LackLabour", "Q154_O6_LackKnowledge", "Q154_O7_Other"

55	Q155_II_Bee_Group to Q155_I3I_Other_Group	String_Has your this household undertaken this livelihood activity as part of a group?	Remove variables	
56	Q156_II_Bee_StartIncome to Q156_I3I_Other_StartIncome	String_Has your household used the training/support to generate income?	Remove variables	Rather see aggregate information: Q156_StartedIncome
57	Q157_II_Bee_Months to Q157_I3I_Other_Months	Numeric_How many months ago did your household start receiving income from this livelihood activity?	Remove variables	
58	Q158_II_Bee_Income to Q158_I3I_Other_Income	Numeric_In the past 12 months, how much income has your household made from this activity?	Remove variables	Rather see aggregate information: "Q158_TotalIncome","Q158_TotalIncome_HBII","Q158_TotalIncome_HBI"
59	Q159_II_Bee_Spoken to Q159_I3I_Other_Spoken	String_Has anyone from this household spoken about the livelihood activity to other CFUG members that did not receive this training or support?	Remove variables	
60	Q160_II_Bee_OthersStarted to Q160_I3I_Other_OthersStarted	String_Have the CFUG members you spoke to started this livelihood activity?	Remove variables	
61	Q161_II_Bee_NoHHs to Q161_I3I_Other_NoHHs	Numeric_How many households have already started this activity?	Remove variables	
62	Q162_II_OI_Bee_TotalInc to Q162_I3I_OtherSpecI	String_Since your household's involvement in this Hariyo Ban - supported livelihood activity have the following increased, decreased or stayed the same: total income and type specific income	Remove variables	Rather see aggregate information: "Q162_OI_IncIncomeHBII", "Q162_OI_DcrIncomeHBII", "Q162_O2_IncAgrilIncomeHBII", "Q162_O2_DcrAgrilIncomeHBII", "Q162_O3_IncLivestockIncomeHBII", "Q162_O3_DcrLivestockIncomeHBII", "Q162_O4_IncForestPIncHBII", "Q162_O4_DcrForestPIncHBII", "Q162_O5_IncFoodHBII", "Q162_O5_DcrFoodHBII", "Q162_O6_IncLivestockHBII", "Q162_O6_DcrLivestockHBII",

				"Q162_O7_IncGrazeHBII", "Q162_O7_DcrGrazeHBII", "Q162_O8_IncFuelwoodHBII", "Q162_O8_DcrFuelwoodHBII", "Q162_O9_IncFodderHBII", "Q162_O9_DcrFodderHBII", "Q162_O10_IncTreesHBII", "Q162_O10_DcrTreesHBII"
63	Q165_O1_Type to Q165_OtherSpec	String_Which livelihood activity/activities did your household start?	Remove variables	
64	Q166_I1_Bee to Q166_I22_Other	Numeric_In the past 12 months, how much income has your household made from this activity?	Remove variables	Rather see aggregate information: Q166_TotalIncome
65	Q169_O1_Type to Q169_OtherSpec	String_What type of activity did your household receive support for?	Remove variables	Rather see aggregate information: "Q169_No.OtherInterventions", "Q169_TypeSummary"
66	Q170_I1_Bee_Provide to Q170_I20_Other	String_Who provided this support?	Remove variables	
67	Q171_I1_O1_Bee_Support to Q171_I20_OtherSpec	String_Support received	Remove variables	
68	Q172_I1_Bee_Income to Q172_I20_Other_Income	Numeric_Income generated from this activity in the past 12 months	Remove variables	Rather see aggregate information: Q172_TotalIncome, TotalIncome_All, TotalIncome_HBIIOther
69	Q175_YearsCFUG	Numeric_For how many years have you been a member of this CFUG ?	Modify: bin years, i.e. 0-5, 6-10, 11- 20, >20	
70	Q187_OtherCFUG	String_Is your household also a member of another community forest user group?	Remove variable	Added several unique cases, and is not an essential variable
71	Remaining "OtherSpec" variables, i.e. OPEN-ENDED (text) DATA	Character_All remaining text variables of "OtherSpec" type	Remove variables	

2. Specific actions for CFUG level data

NO	Original variable name	Data type	Data anonymization plan	Remarks
1	[Q_5]	String_Enumerator ID	Remove variable	Include in encryption data set
2	[Q_6]	String_Supervisor ID	Remove variable	Include in encryption data set
3	Q_7_Date	String_Date	Modify: only include the year	
4	Q_10_Block	String_Working site/Block	Remove label from codebook	
5	Q_11_Municipality	String_Municipality	Remove label from codebook	
6	Q_12_Ward	String_Ward number	Remove variable	Include in encryption data set
7	Q_13_VDC	Character_Former VDC	Remove variable	Include in encryption data set
8	Q_14_CFUG	String_CFUG name	Remove label from codebook	
9	[I_1Q14] to [I_15Q14]	Character_Name of committee members participating in the discussion	Remove variables	Include in encryption data set
10	Q15_II_Position to Q15_II0_Position	String_Committee position	Remove variables	Include in encryption data set
11	Q16_II_Gender to Q16_II0_Gender	String_Gender of person	Remove variables	Include in encryption data set
12	[T_Q17_1], [T_Q17_2], [T_Q17_3]	String_Phone numbers	Remove variables	Include in encryption data set
13	Q18_ForestSize	Numeric_Size community forest	Modify: bin, i.e. <=100, 101-200, >200	
14	Q20_YrEstablished	String_Year of community forest user group establishment	Modify: bin, i.e. <=2050, 2051-2060, >2060	
15	Q24_YrFOP	String_In which year was the last Forest Operational Plan prepared for this forest user group?	Modify: bin, <= 2072, and >2072	
16	Q28_No. HHs	Numeric_Nr households that belong to user group	Modify: bin, <=100, 100-200, >200	

17	Q29_PercentBrahmin Q29_PercentDalit Q29_PercentJanjati Q29_PercentOthers	Numeric_Nr households belong to each caste – made into % of HHs	1) Modify: make binary, i.e. >50% = 1, else 0. PS. new names: Q29_PercentBrahmin_bin, Q29_PercentDalit_bin, Q29_PercentJanjati_bin, Q29_PercentOthers_bin 2) Remove all original variables	
18	Q31_YrPWBR	String_Year that PWBR was carried out	Modify: bin, <= 2072, and >2072	
19	Q32_HHsPWBR	NumericHow many households in CFUG (according to last PWBR)	Modify: bin, <=100, 100-200, >200	
20	Q33_PercentWellOff Q33_PercentMiddle Q33_PercentPoor Q33_PercentExtremelyPoor	Numeric_How many households were in each well-being category?	1) Modify: make binary, i.e. >50% = 1, else 0. PS. new names: Q33_PercentWellOff_bin, Q33_PercentMiddle_bin, Q33_PercentPoor_bin, Q33_PercentExtremelyPoor_bin 2) Remove all original variables	
21	Q34_No.EC	Numeric_How many people are on the executive committee of this CFUG?	Modify: bin, <= 10, and >10	
22	Q35_I1_PositionEC to Q35_I20_PositionEC	String_Position	Remove variables	
23	Q36_I2_GenderEC to Q36_I20_GenderEC	String_Gender committee members	1) Modify: make binary, i.e. >50% = 1, else 0. New names: Q36_PercentMale_bin, Q36_PercentFemale_bin 2) Remove all original variables	
24	Q37_I1_CasteEC to Q37_I20_CasteEC	String_Caste committee members	1) Modify: make binary, i.e. >50% = 1, else 0. New names: Q37_PercentBrahmin_bin, Q37_PercentDalit_bin, Q37_PercentJanajati_bin, Q37_PercentOther_bin 2) Remove all original variables	
25	Q106_HBII	String_In the past 2 years, has anyone in this CFUG	Remove variable	Rather see variable: Q_I5_TreatmentControl

		participated in any Hariyo Ban II program group-based livelihood activities?		
26	Q107_OI_Bee to Q107_O22_Other and Q107_No. HBII	String_ Which group-based livelihood activities have members of the CFUG been involved in	Remove variables	For HB information rather see household-level data
27	Q110_OtherHHs	String_ Have CFUG members that did not receive training or support for this group-livelihood activity, also started the activity?	Remove variables	For HB information rather see household-level data
28	Q111_No. OtherHHs	Numeric_ Approximately how many households have started the activity/these activities?	Remove variables	For HB information rather see household-level data
29	Q112_HBI	String_ Did anyone in this CFUG participate in activities under the first phase of the Hariyo Ban program?	Remove variables	For HB information rather see household-level data
30	Q113_HBILivelihood	String_ Did anyone in this CFUG receive training or support for livelihood activities under the first phase of Hariyo Ban?	Remove variables	For HB information rather see household-level data
31	Q114_OI_Bee to Q114_O20_DontK	String_ What type of activities did members of this CFUG participate in?	Remove variables	For HB information rather see household-level data
32	HBLivelihoodInt	String_ Did the CFUG receive a livelihood intervention under HBI or HBII	Remove variables	For HB information rather see household-level data
33	Q115_HBIRFund	String_ Did this CFUG receive funding from a Hariyo Ban I revolving fund?	Remove variables	For HB information rather see household-level data
34	Q116_OtherRFund	String_ Does this CFUG have a revolving fund provided by another organization, other than Hariyo Ban or the CFUG?	Remove variables	For HB information rather see household-level data
35	Q116_OtherSpec	Character_ Other revolving fund, specify	Remove variables	For HB information rather see household-level data

36	Q117_CFUGLivelihood	String_ In the past 2 years, did the CFUG committee provide any support for livelihood activities?	Remove variables	For HB information rather see household-level data
37	Q118_O2_Broom to Q118_O20_Other	String_ What type of livelihood activity did the CFUG committee provide support for?	Remove variables	For HB information rather see household-level data
38	Q119_I2_O1_RecBroom to Q119_I20_O2_RecOther	String_ What did participants receive?	Remove variables	For HB information rather see household-level data
39	Q120_I2_HHsBroom to Q120_I20_HHsOther	Numeric_ How many households participated?	Remove variables	For HB information rather see household-level data
40	Q121_I2_TargetBroom to Q121_I20_TargetOther	String_ Was the activity targeted at certain groups? (E.g. by gender, wealth, poverty, caste)	Remove variables	For HB information rather see household-level data
41	Q122_I8_VegGrp to Q122_I20_OtherGrp	String_ Which groups were targeted for this activity?	Remove variables	For HB information rather see household-level data
42	Q123_OtherLivelihood	String_ In the past 2 years, did any members of this CFUG receive any support for any other livelihood activities from any other organizations, other than Hariyo Ban and the CFUG committee?	Remove variables	For information on Other interventions rather see household-level data
43	Q124_O1_Bee to Q124_O20_Other	String_ What type of livelihood activity did other organizations provide support for?	Remove variables	For information on Other interventions rather see household-level data
44	Q125_I1_O1_RecBee to Q125_I20_O2_RecOther	String_ What did participants receive?	Remove variables	For information on Other interventions rather see household-level data
45	Q126_I1_O1_ProvidBee to Q126_I20_O1_ProvidOther	String_ Who provided this support?	Remove variables	For information on Other interventions rather see household-level data
46	Q127_I1_HHsBee to Q127_I20_HHsOther	Numeric_ How many households participated?	Remove variables	For information on Other interventions rather see household-level data
47	LivelihoodInt	String_ Have CFUG members received any type of livelihood intervention in the past 2 years? (Hariyo Ban, CFUG or from another organization)	Remove variables	For information on interventions rather see household-level data

48	No.LivelihoodInt	Numeric_Total number of livelihood interventions received in the past 2 years (Hariyo Ban, CFUG or from another organization))	Remove variables	For information on interventions rather see household-level data
49	Q132_I_CC to Q132_I4_Other3	String_In the past 2 years, did members of this CFUG receive training on the following topics?	Remove variables	For information on training rather see household-level data
50	Q133_II_OI_ProvideCC to Q133_II4_OI_ProvideOther3	String_Who provided this training?	Remove variables	For information on training rather see household-level data
51	Q133_HBProvide	String_Did Hariyo Ban provide any training in the CFUG?	Remove variables	For information on training rather see household-level data
52	HBInteraction2yr	String_Has the CFUG had any interaction with Hariyo Ban in the last 2 years? (Hariyo Ban II Livelihood or training)	Remove variables	For information on training rather see household-level data
53	HBInteraction	String_Has the CFUG even had any interaction with Hariyo Ban? (livelihood interventions, revolving fund, training)	Remove variables	For information on training rather see household-level data
54	OI_Bee2yr to O23_Stall2yr	String_Has the CFUG received this type of livelihood intervention in the last 2 years? (Hariyo Ban, CFUG and interventions by other organisations)	Remove variables	For information on training rather see household-level data
55	avg.slope	Numeric_Average slope	Modify: bin, <= 20, 21-30, and >30	
56	All "Other, specify" variables	Character_OPEN-ENDED DATA	Remove variables	

3. Specific actions for plot-level data

NO	Original Variable Name	Data Type	Data Anonymization Plan	Remarks
1	SbjNum	String_ID	Remove variable	(vii_PLOTNO will rather be used as main ID)
2	Latitude, Longitude	String_Latitude/Longitude	Remove variables	Include in encryption data set
3	iv_MUNI	String_Rural municipality	Remove label from codebook	
4	v_FORESTNAME	String_Forest name	Remove label from codebook	
5	[viii_FTL_NAME]	Character_Field Team Leader	Remove variable	Include in encryption data set
6	ix_DATE	Character_Date	Modify: only include the year	
7	A1_UTM, A2_NORTH, A2_EAST, A2_EPE	String_GPS position of the plot	Remove variables	Include in encryption data set
8	A3_ELEVATION	Numeric_Elevation of the plot	Modify: bin, <= 500, 501-1000, 1001-2000, and >2000	
9	F2_NOTE	Character_Take note of any interesting observations of interest that pretend to plot condition [eg. fire, trampling damage, evidence of charcoal burning etc].	Remove variable	
10	Other, spec	Character_Other, specify. All relate to species names (open-ended) data	Modify: turn into generic species names, i.e. Species 1, Species 2 etc. (so that species richness can still be calculated)	

4. Specific actions for Forest Overview/Forest Use data

NO	Original Variable Name	Data Type	Data Anonymization Plan	Remarks
1	Latitude, Longitude	String_Latitude/Longitude	Remove variables	Include in encryption data set
2	i_DATE	String_Date	Modify: only include the year	
3	v_MUNI	String_Municipality	Remove label from codebook	
4	vi_FORESTNAME	String_CFUG name	Remove label from codebook	
5	[viii_INTERVIEWER]	Character_Enumerator	Remove variable	Include in encryption data set
6	All A10 variables	Character_OPEN-ENDED (text) DATA	Remove variable	
7	Other, spec	Character_All "Other, specify" open-ended variables	Remove variable	

APPENDIX H: SURVEY INSTRUMENT - FOREST PLOT FORM

Hariyo Ban II Impact Evaluation Baseline Survey 2018 FOREST PLOT FORM

Plots are demarcated areas useful for studying the ecology of a forest. Researchers use them to identify the trees, saplings found in the forests they are examining.

- i. Province Name: 1) Province 3 2) Province 4
- ii. District: 1) Gorkha 2) Lamjung 3) Tanahun
 4) Kaski 5) Syangja 6) Chitwan
- iii. Landscape Type: 1) CHAL
- iv. Municipality/rural municipality: _____
- v. Name of Forest: _____
- vi. Forest Management Type: 1) Community Forest
- vii. Plot No: _____
- viii. Name of Field Team Leader: _____
- ix. Date of data collection (mm-dd-yy): _____
- x. Is the plot included or excluded for sampling:
 1) Included (skip to no. xii) 2) Excluded
- xi. If the plot is excluded for sampling please provide the reasons (multiple answer may apply)
- 1) In road
 - 2) In agricultural field (out of forest boundary)
 - 3) In steep slope (more than 45 degree)
 - 4) In water bodies
 - 5) Difficult to sample due to wildlife/wasps
 - 6) Difficult to access due to deep gorge
 - 7) Plot is in the forest boundary
 - 8) Others (specify if any) _____
- xii. Please take a photograph of the plot from North to South (2-3 meter away from 10 m radius).
- xiii. Please take a photograph of the plot from West to East (2-3 meter away from 10 m radius).

A. Geographic and Positioning Information

While using GPS technology to collect data for this section, Field Team Leaders ensure all GPS units are set to the same Datum and Spheroid while collecting data across all plots. Use WGS 84 and UTM system to record the data.

A1. UTM zone: i) 44R ii) 45R

A2. GPS Position of the Plot

(1) What is the Northing (latitude) of this plot? Record all seven digits [Without decimal].

(2) What is the Easting (longitude) of this plot? Record all seven digits [Without decimal].

(3) What is the Estimated Position Error (EPE) for this position? [1-10 m] _____

A3. Plot elevation in meters [100 to 4000 m]. _____

B. Conditions of the plot *[Observation to be made for whole plot]*

B1. What is the substrate type within the forest plot? *Mark only one answer.*

(1) Soil (2) Rock (3) Sandy

B2. What is the leaf litter cover? *Mark only one answer. [Observe from the center of the plot]*

(1) Low (Upto 10%)
(2) Medium (11% - 30%)
(3) High (31% - 50%)
(4) Very high (above 50%)

B3. What is the steepness of the slope in degrees? [0 to 45 degree] _____

B4. If the plot is on a slope, what direction does the plot face? *Mark only one answer.*

(1) North	(5) South	(9) Plot not in a slope
(2) North-East	(6) South-West	
(3) East	(7) West	
(4) South-East	(8) North-West	

B5. Is there evidence of active soil erosion in the forest plot? *Mark only one answer.*

(1) No
(2) Yes, minor erosion; surface vegetation and humus layer are absent
(3) Yes, major erosion; large gullies are present in barren soil.

B6. Is there evidence of livestock use within the forest plot? *Mark only one answer.*

(1) No

(2) Yes

B7. What is the percentage of crown cover in this plot [Refer to Figure 3 in the Field Manual] [Enter 0% - 100% at an interval of 10, i.e. 0%, 10%, 20%, 30% ..., 100%]? _____

B8. Observe epiphytes and select if epiphytes are: (Observe within 10-meter plot radius.)

(1) Absent

(2) Few

(3) Abundant

B9. Are any bamboo Species present in the plot (10-meter radius)?

(1) Yes

(2) No (skip to Section C)

B9a. How many bamboo species do you see in the plot (10-meter radius)? (*max 3 rows*) _____

B9b. Name and cover of bamboo species in (10-meter radius) plot.

[For cover, enter 0% - 100% at an interval of 10, i.e. 0%, 10%, 20%, 30% ..., 100%].

B9bi. Name of species	B9bii. Local Name	B9biii. Cover (%) 1-10 %, 11-20 % 91-100 %

C. Disturbance and Invasive Species

C1. Is there evidence of tree removal (cut stump) in the plot? Observe within 10-meter plot radius.

1) Yes _____

2) No _____ [If No Skip to C2]

C1a. For how many tree species can you see evidence of removal (cut stumps)? _____

C1b. Provide the details of the trees that have been removed. [Refer to the provided species list to correctly enter the species name.] **NB! For this case, measure the diameter with a liner tape in the cut stump.**

C1bi. Name of species	C1bii. Local Name	C1biii. Diameter (cm) (10 cm to 200 cm)	C1biv. Stump height (cm) (10 cm to 100 cm)

C2. Are saplings cut? (Saplings are individuals DBH bigger than 2.5cm and smaller than 10cm.)

Observe within 10-meter plot radius. (max 10 rows)

1) Yes _____

2) No _____ [If No skip to C3]

C2a. How many saplings are cut? _____

[Count and measure cut saplings that are shorter than 137 cm.]

C2b. Provide details of the cut saplings. Measure diameter of cut saplings at 10 cm above ground surface.

C2bi. Name of species	C2bii. Local Name	C2biii. Diameter (cm) (2.5 to 9.9 cm)	C2biv. Stump height (cm) (10 cm to 137 cm)

C3. Are any invasive Species present in the plot (3-meter radius)?

1) Yes

2) No [If No Skip to Section D]

C3a. How many invasive species do you see in the plot (3-meter radius)? (*max 5 rows*) _____

C3b. Name and cover of invasive species in (3-meter radius) plot. _____

C3bi. Name of species	C3bii. Local Name	C3biii. Cover (%)

D. Shrub, Sapling, Palm, And Woody/Herbaceous Climber Information

D1. How many shrubs do you see in the 3-meter radius plot? (max 10 rows) _____

D2. Record the botanical and local names of each shrub found in the circle of 3-meter radius. For saplings and palms, record DBH (Diameter at Breast Height – 1.37 m) and height in metric units.

[Starting at the center of the plot, create a circle with a 3-meter radius. For each sapling, shrub, palm, and woody/herbaceous climber species in this area, answer the questions below. Remember that a sapling is defined as a young tree with a DBH greater than 2.5 cm but less than 10 cm.]

Name of Species		D2iii. Is this a shrub or Palm?	D2iv. Maximum stem diameter of the shrub or palm or DBH of the palm (2.5 to 9.9 cm)	D2iv. Estimated height of the shrub or palm (m) (1m to 10 m)
D2i. Botanical	D2ii. Local			

D3. How many Climber do you see in the 3-meter radius plot? _____

D4. Record the botanical and local names of each climber found in the circle of 3-meter radius. Record maximum diameter in metric units.

Name of Species		D4iii. Maximum Stem Diameter of the Climber (2.5 to 9.9 cm)
D4i. Botanical	D4ii. Local	

D5. How many sapling do you see in the 3 M radius plot? (*max 10 rows*) _____

D6. Record the botanical and local names of each sapling found in the circle of 3-meter radius.

Name of Species		D6iii. DBH (2.5 to 9.9 cm) of Sapling	D6iv. Estimated Height of Sapling (1.5 m to 10 m) Allow decimals.	D6v. Condition i) Dead ii) Damaged iii) Neither	D6vi. If dead or damaged, write reason: • i) Pest • ii) Fire • iii) Natural death • iv) Lopping • v) Wind throw
D6i. Botanical	D6ii. Local				

Name of Species		D6iii. DBH (2.5 to 9.9 cm) of Sapling	D6iv. Estimated Height of Sapling (1.5 m to 10 m) Allow decimals.	D6v. Condition i) Dead ii) Damaged iii) Neither	D6vi. If dead or damaged, write reason: • i) Pest • ii) Fire • iii) Natural death • iv) Lopping • v) Wind throw
D6i. Botanical	D6ii. Local				

E. Tree, palm and woody climber information

E1. How many woody climbers do you see in the 10-meter radius plot? (max 10 rows) _____

E2. Record the botanical and local names of each woody climber found in the circle of 10-meter radius.

Name of Species		E2iii. Max. stem diameter for woody climber(cm)
E2i. Botanical	E2ii. Local	

E3. How many trees do you see in the 10-meter radius plot? _____

E4. Record the botanical and local names of each tree found in the circle of 10-meter radius. For each tree record its DBH and height in metric units. Also record data for dead trees (standing dead or fallen) [Trees, DBH>10 cm]

SN	Name of Species		E4iii. DBH for Tree (cm) (10 cm to 200 cm, allow decimals as well)	E4iv. Estimated height of the Tree (m) (2 m to 35 m, allow decimals as well)	E4v. Condition of the trees i) Dead ii) Fallen iii) Damaged iv) Neither (Skip to next row)	E4vi. If Dead / Fallen / Damaged write reason i) Pest ii) Fire iii) Natural death iv) Lopping v) Wind Throw
	E4i. Botanical	E4ii. Local				
I.						

F1. Are there any unidentified species in the plot?

(1) Yes (Take photographs)

(2) No

F2. Take note of any interesting observations of interest that pertain to plot condition [eg. fire, trampling damage, evidence of charcoal burning etc or any issues during the data collection in the plot. (skip to End of survey)]

[END of forest plot survey.]

[Data takers should save the collected information, field team leader checks all the information whether correctly filled and save the information for later uploading.]

APPENDIX I: SURVEY INSTRUMENT - FOREST OVERVIEW FORM

Hariyo Ban II Livelihoods Impact Evaluation FOREST OVERVIEW FORM

i. Date (mm-dd-yy):

--	--	--	--	--	--	--	--

ii. Province Name:

1) Province 3

2) Province 4

iii. District:

1) Gorkha

2) Lamjung

3) Tanahun

4) Kaski

5) Syangja

6) Chitwan

v. Municipality/rural municipality:

vi. Name of Forest:

viii. Name of Enumerator (Field Team Leader) :

ix) How many Forest Plot Forms were completed for this forest? _____ [Field team leader to verify from the survey log]

A1. What is the vegetation type of the forest that is being investigated? *Mark only one answer. Based on the field team's observation*

- (1) _____ Shorea robusta forest
- (2) _____ Schima-Castanopsis forest
- (3) _____ Tropical deciduous riverine forest
- (4) _____ Pine forest
- (5) _____ Oak forest
- (6) _____ Terminalia forest
- (7) _____ Subtropical evergreen forest
- (8) _____ Oak-Laurel forest
- (9) _____ Other, Specify

A2. What is the topography of the land on which this forest is located? *Mark only one answer. Based on the field team's observation*

- (1) _____ Primarily flat
- (2) _____ Mostly flat with some rolling terrain
- (3) _____ Primarily rolling terrain
- (4) _____ Mostly rolling terrain with some steep portions
- (5) _____ Primarily steep

A3. Which of the following are the major ecosystem types found in the forest? *Multiple answers may be applicable, read options and probe the responses.*

- (1) _____ Wetland
- (2) _____ Forest
- (3) _____ Fallow lands
- (4) _____ Streams
- (5) _____ Pond
- (6) _____ Others, Specify
- (7) _____ Others, Specify
- (8) _____ Others, Specify

A4. Please provide a general description of the site (accessibility, connectivity to road and market and landscape type). (Field teams to fill in the descriptions in long text).

Accessibility to settlement descriptions (255 character) will be entered here

--

Connectivity to all weather road descriptions (255 character) will be entered here

--

Connectivity to market descriptions (255 character) will be entered here

--

Landscape type descriptions (255 character) will be entered here

--

APPENDIX J: SURVEY INSTRUMENT – HOUSEHOLD SURVEY FORM

Hariyo Ban II Impact Evaluation Baseline Survey- 2018 Household Survey Questionnaire

Survey Details

1. Enumerator I.D		
2. Supervisor I.D		
3. Household I.D		
4. Household well-being category (from PWBR)	Well-off	1
	Middle Income	2
	Poor	3
	Extremely poor	4
5. Date	Day Month Year	
6. Province	Province 3	1
	Province 4	2
7. District	Chitwan	1
	Gorkha	2
	Kaski	3
	Lamjung	4
	Syangja	5
	Tanahun	6
8. Working Site		
9. Municipality/Rural Municipality		
10. Ward Number		
11. Former VDC		
12. Name of the settlement where the respondent lives		
13. Name of the CFUG	Name	
	Not listed. (If not listed, confirm again and end survey)	95
14. Is the CFUG expected to be a treatment or control CFUG?	Treatment	1
	Control	2
15. Is the household a member of this CFUG?	Yes	1
	No (if selected, the survey ends)	2
16. Is this household expected to be a treatment or control household? (Check from household listing and select appropriate option)	Treatment	1
	Control	2

Informed consent

Namaste. My name is [interviewer name]. I am working with New ERA, who has been commissioned to conduct a survey about the use of the forest, livelihoods and participation in the USAID-funded Hariyo Ban program. We are surveying approximately 5,400 households across approximately 115 forest user groups. The aim of this survey is to understand how changes to livelihoods affect people's use of the forest and the consequent outcomes for biodiversity.

You have been asked to participate due to your knowledge of this Community Forest User Group. **[Read only to treatment HHs: Your CFUG has been included in this survey as we understand it is currently receiving support from the Hariyo Ban II program.]**

As part of the survey, I will ask you a series of questions about your household, your household's agricultural production and livelihood, the forest and the user-group, and your participation in Hariyo Ban activities. I will record your responses and answering these questions will take approximately 2-2.5 hours.

Please note, that this survey is completely voluntary. You are under no obligation to participate. Not participating will not affect your or your forest user group's involvement in the Hariyo Ban program or any other initiative. If you choose to participate, and I ask you any questions that you do not want to answer, you can skip on to the next question. If you change your mind, you may stop the interview at any time. If you have any questions, please stop me and ask.

There are no immediate broader benefits for participating, although you will receive N\$200 in phone credit to say thank you. We hope that this work will provide insight into how to design better programmes in the future.

Your personal identifying information will be kept strictly confidential. It will only be used for the purposes of the coordination of this study and any related follow up surveys. Your responses will not be discussed with any other household, member of the user group or anyone else. Your responses may be quoted in subsequent analyses and published reports, but you will remain anonymous.

This research is being funded by the United States Agency for International Development and co-ordinated by CAMRIS International, which will act as data controller and retain all personal identifying information for 12 years. Fieldwork is being conducted by New ERA. and researchers at the University of Manchester and Sheffield in England will conduct the analysis. This project has been reviewed by the University of Sheffield's Ethics Review Procedure and is being undertaken with permission of the Ministry of Forests and Environment. Other researchers may find the data collected to be useful in answering future research questions. Anonymized information provided by you will not be shared with other researchers without your agreement to questions at the end of this introduction.

I will give a copy of the information I have read to you with some additional details for you to keep. In case you need more information about the survey or make complaint about the survey, you may contact the people listed on the sheet.

Do you have any questions?

☐ Yes

o No

If the respondents say Yes, ask them their questions and clarify again. Ensure all participants have understood what you have explained so far and that they do not have further questions. Then only proceed.

17. I will now ask you a series of questions to see if you agree to participate. Please answer yes or no to each question. **Ask the participants each of these questions. Please ensure you get an answer from each participant. If any participant does not agree, then stop the survey with them and continue with those that do agree.**

	1.Yes	2.No
1.Has the project been explained to you?		
2.Have you been given the opportunity to ask questions about the project?		
3.Do you understand that by agreeing to take part in this study, you will be asked questions and that your responses will be recorded?		
4.Do you understand that your participation is voluntary and that you can stop at any time, without reasons, and there will be no adverse consequences to stop?		
5.Do you understand that there are no immediate benefits or harms for you for participating?		
6.Do you understand that your personal details such as name and phone number will not be revealed to people outside the research?		
7.Do you agree to your anonymized responses being shared with other researchers?		

If yes is selected for 1-6, the survey can begin.

May I begin the survey now?

Section A: Respondent and Household

I will begin by asking you questions about the members of your household and the house that you live in. By household, I am referring to those that live under the same roof and share food from the same kitchen.

18. Name of the respondent		
19. Contact phone numbers	1	Phone number not available
		95
	2	Phone number not available
		95
20. Are you the head of the household?	Yes	1
	No	2
21. What is the religion of the head of the household?	Hinduism	1
	Buddhism	2
	Islam	3
	Christianity	4
	Other (specify) _____	96
22. What is the caste of the head of the household?	Brahmin/ Chhetri	1
	Other Terai/Madheshi castes	2
	Dalits	3
	Newar	4
	Janajati	5
	Muslim	6
	Others	96
23. What is the marital status of the household head?	Married	1
	Unmarried	2
	Divorced/separated	3
	Widow/widower	4
24. Has your family always lived in this village?	Yes (skip to Q27)	1
	No	2
25. For how many years has your family lived in this village?	Number of years	
	Don't know	98
26. Where did your family move from?	Within Nepal (specify District, VDC)	1
	India	2
	Bhutan	3
	China/Tibet	4
	Other (specify) _____	96
27. How many people are members of this household? (Absent members are those that are considered household members but currently live away from the household, also those who are living away but currently on visit (e.g. leave) should be marked living away. Absent members should be expected to return in the future.)	Currently living in this household	
	Absent, living within Nepal	
	Absent, living outside Nepal	
	Total (autofill)	

First list the names of people currently living in this household, starting with the household head then their spouse, children, grandchildren, parents and then other members. Then list the names of absent members. Once the names are listed, complete the details for each household member.

	28. Name	29. Gender 1. Male 2. Female 3. Third Gender	30. Relationship to the household head 1. Household head 2. Spouse 3. Son or Daughter 4. Son- in law or daughter-in-law 5. Mother or father 6. Father in law or Mother-in-law 7. Grandson or Granddaughter 8. Brother or sister 96. Other (specify)	31. Age Number of completed years (If <5 years, skip to next member)	If 5 years and above: 32. What is their educational background? 1. Never attended school 2. Attended school in the past 3. Currently attending school 98. Don't know	33. What is the highest level of education they have completed? 00. Pre-school/kindergarten 1. Class 1 2. Class 2 3. Class 3 4. Class 4 5. Class 5 6. Class 6 7. Class 7 8. Class 8 9. Class 9 10. SLC/SEE complete 11. I I. IA/IO+2 12. Bachelor degree 13. Masters level or higher 14. Technical / Vocational Education 15. Literate (no level) 16. Illiterate 98. Don't know	34. In the past 12 months, what has been their primary occupation? 1. Not working/une mployed 2. Retired 3. Student 4. Non-paid work (e.g. housewife, volunteer, etc) 5. Wage laborer 6. Agriculture 7. Business self-employed (non-agriculture) 8. Private salary work 9. Government salary work 10. Foreign employment 96. Other (specify) 98. Don't know
1 Household Head							
2							
3							
4							
5							
6							

Household roster continued

Name (autofill)	35. Is [name] currently living away from home? Note: HH members currently living away but who have returned for a visit (e.g., because they are on leave) should be marked as living away. 1. Yes 2. No (skip to next person)	36. What is the main reason for their absence? 1. Employment 2. Education 96. Other (specify)	37. Where do they currently live? 1. In Nepal (specify district, municipality) 2. Malaysia 3. Qatar 4. Saudi Arabia 5. UAE 6. Kuwait 7. India 8. Outside of Nepal (don't know where) 96. Other (specify) 98. Don't know	38. For how many consecutive months have they lived away from home on this occasion? Number of months _____ 98. Don't know

(From your own observation) 39. What is the flooring material of the house in which the respondent is living?	Earth/sand	1
	Dung	2
	Wood planks	3
	Palm/bamboo	4
	Polished wood/parquet	5
	Vinyl/asphalt strips	6
	Ceramic tiles	7
	Cement	8
	Carpet	9
	Other (specify)	96
(If it is not possible to determine the type of toilet through discussion, ask to observe the facility.) 40. What type of toilet does your household use?	Flush to piped sewer system	1
	Flush to septic tank	2
	Flush to pit latrine	3
	Flush to somewhere else	4
	Flush to somewhere else, don't know where	5
	Ventilated improved pit latrine	6
	Pit latrine with slab	7
	Pit latrine without slab/open pit	8
	Composting toilet	9
	Bucket toilet	10
	Hanging toilet/hanging latrine	11
	No facility/bush/field (skip to Q42)	12
	Other (specify)	96
41. Do you share this toilet facility with other households?	Yes	1
	No	2
42. What is your household's main source of drinking water?	Piped into dwelling (skip to Q44)	1
	Piped to yard/plot	2
	Piped to neighbor	3
	Public tap/standpipe	4
	Tube well/borehole	5
	Protected well	6
	Unprotected well	7
	Protected spring	8
	Unprotected spring	9
	Rainwater	10
	Tanker truck	11
	Cart with small tank	12
	Surface water (river/dam/lake/pond/Stream/canal/irrigation channel)	13
	Bottled water	14
	Other (specify)	96
43. How long does a round trip to collect water take? (going, collecting and returning) (in minutes)	Time (minutes)	
	Don't know	998
44. What is the major source of light in this house?	Electricity	1
	Kerosene	2
	Bio-gas	3
	Solar	4
	Other (specify)	96
45. What type of fuel does your household usually use for cooking?	Electricity	1
	LPG	2
	Natural gas	3
	Biogas	4
	Kerosene	5
	Coal, lignite	6
	Charcoal	7
	Wood	8

	Straw/shrubs/grass	9
	Agricultural crop/ crop residue	10
	Animal dung	11
	No food cooked in the household	95
	Other (specify)	96
46. Does your household own your own house?	Yes	1
	No	2

47. Does your household own the following?

	1. Yes	2.No
Electricity		
Radio		
A television		
A cable connection / Dish		
A non-mobile telephone (landline)		
A computer/laptop		
A refrigerator		
A table		
A chair		
A cupboard		
A clock		
A fan		
An inverter		
A dhiki/janto		
Internet connection		
A mobile phone (non-smart phone)		
A smartphone		
A bicycle/rickshaw		
A motorcycle/motor scooter		
An animal-drawn cart		
A car/truck/tractor		
A three-wheel tempo/E-rickshaw		

48. How far away from your home is the market where your household sells most of your produce and buys daily necessities? (in meters)	Distance (m)	
	Don't know	98
49. How do you usually travel to the market?	On foot	1
	Bicycle	2
	Motorcycle	3
	Bus	4
	Car	5
	Microbus/van/jeep	6
	Other (specify)	96
50. How long does it take to get from your home to the market?	Time (minutes)	
	Don't know	998
51. How far is your home from the edge of the community forest? (in meters)	Distance (m)	
	Don't know	998
52. How long does it take to walk from your home to the edge of the community forest?	Time (minutes)	
	Don't know	998

Now I would like to ask you about your household's food supply during the past 12 months. When answering, please think back from now to the same time last year.

53. In the past 12 months, was there a time when members of your household did not have enough food or enough money to buy food?	Yes	1
	No (skip to Section B)	2
	Don't know (skip to Section B)	98
54. Which were the months during which your household did not have enough food to meet your family's needs? (Do not read the list of months. For each month mentioned by the respondent, select the month from the list.)	Baishakh	1
	Jestha	2
	Ashad	3
	Shrawan	4
	Bhadra	5
	Ashwin	6
	Kartik	7
	Mangsir	8
	Poush	9
	Magh	10
	Falgun	11
	Chaitra	12
	Don't know	98
55. Why was your household unable to produce or buy sufficient food? (Do not read the options. Multiple response possible.)	No household food production	1
	Insufficient household food production	2
	Insufficient income to purchase food	3
	Food not available in the market	4
	Other (specify)	96

56. In the last 12 months, when your household did not have enough food or money to buy food, did your household or anyone in your household do any of the following to cope? (**Probe for other responses**)

	1.Yes	2.No
Reduced the quantity of food per meal		
Relied on less preferred/less expensive food		
Reduced the number of meals consumed per day		
Went entire days without eating		
Borrowed food or money		
Purchased food on credit		
Gathered wild food from the forest to eat		
Gathered additional forest products to sell		
Used savings		
Sold assets (e.g. livestock, jewellery)		
Temporarily migrated		
Other (specify)		
Other (specify)		
Other (specify)		

Section B: Land ownership

I am now going to ask you about your household's land ownership.

57. Does your household have access to land? Select all that apply If response 1 (owned) is selected either as one response or with other response/s ask 58	Yes, owned (ask Q58)	1
	Yes, rented (ask Q68)	2
	Yes, other (ask Q68)	3
	No (skip to section C)	4

If Q57=1, ask Q58, otherwise skip to Q68.

	Fully irrigated khet	1
--	----------------------	---

58. Which types of land does your household own? <u>(Select all that apply. Probe for other types.)</u>	Partially irrigated khet	2
	Non-irrigated khet	3
	Bari	4
	Khar-bari	5
	Plantation forest (planted trees)	6
	Natural forest (non-planted)	7
	Pond	8
	Household plot	9
	Other (specify) _____	96

Type of land (Selected in Q58)	59. Area of land owned 1. Ropani 2. Bigha 98. Don't know			
	1		2	
	Ropani	Aana	Kattha	Dhur

Type of land (Selected in Q58)	60. Area self-cultivated in the past 12 months 1. Ropani 2. Bigha 95. Not applicable (Did not cultivate) 96. Don't know			
	1		2	
	Ropani	Aana	Kattha	Dhur

Type of land (Selected in Q58)	61. Area rented/leased out to others in the past 12 months 1. Ropani 2. Bigha 95. did not rent / lease out / share crop 98 Don't know			
	1		2	
	Ropani	Aana	Kattha	Dhur

62. Is any of the land that your household owns registered in a woman's name?	Yes, registered only in women's name		1	
	Yes, women's and men's name, jointly (skip to Q64)		2	
	No (skip to Q64)		3	
	Prefer not to answer (skip to Q64)		95	
63. How much land is registered in a woman's name?	System: 1. Ropani 2. Bigha 95. Don't know			
	1	Ropani		
		Aana		
	2	Kattha		
		Dhur		

64. Of the land that you have access to, is any of it currently in fallow?	Yes		1	
	No (skip to section C, if Q57= only 1)		2	
	Don't know (skip to section C, if Q57=only 1)		98	
65. What area of land is currently left fallow?	System: 1.Ropani 2.Bigha 95.Don't know			
	1	Ropani		
		Aana		
	2	Kattha		
		Dhur	An empty block	
66. How many months has this land been left fallow?	Total number of months			
	Don't know		98	
67. Why has the land been left fallow? (Do not read the options. Multiple answers are possible.)	Not enough household labor to farm		1	
	Not required to be cultivated, needs met using other land		2	
	Household is less reliant on agricultural production than it used to be		3	
	Other (specify)		96	
	Don't know		98	

If the household rented land or “other” in Q57 ask question Q68. Otherwise, skip to section C.

68. What type(s) of land that you do not own did your household use in the past 12 months? (Select all that apply)	Fully irrigated khet	1
	Partially irrigated khet	2
	Non-irrigated khet	3
	Bari (upland farm)	4
	Khar-bari	5
	Other (specify)	96

69. What area of land was used but not owned during the past 12 months?

Type of land (Selected in Q68)	1.Ropani 2.Bigha 98.Don't know			
	1		2	
	Ropani	Aana	Kattha	Dhur

Section C: Agricultural production and livestock

I will now ask you about your household's agricultural production and livestock ownership in the last 12 months past agricultural year.

70. In the past 12 months, did your household grow the following types of crop? **Probe for other types of crops. (If no is selected for all, skip to Q82).**

	1.Yes	2.No
Paddy		
Maize		
Millet		
Wheat		
Barley		
Buckwheat		
Oil crops		
Potato		
Pulses		
Coffee		
Tea		
Cardamom		
Cinnamon		
Other spices		
Broomgrass		
Chiraito		
Vegetables		
Citrus fruit		
Non-citrus fruit		
Other (specify) _____		
Other (specify) _____		
Other (specify) _____		

71. In the past 12 months, what were the two most economically important crops and the two most important subsistence crops that your households grew? **(Select from Q70)**

Most important economically	
Second most important economically	
Most important for household consumption	
Second most important for household consumption	

Type of Crop (Selected from Q71)	72. What area was under crop in the past 12 months?(total area) If the area of production is very small and under 1 Aana, write 0			
	1		2	
	Ropani	Aana	Kattha	Dhur
Most important economically				
Second most important economically				
Most important for household consumption				
Second most important for household consumption				

Type of Crop (If yes is selected in Q71)	73. Quantity produced in the past 12 months		74. Quantity sold in the past 12 months Quantity 9998.Don't know	75. Price per unit (If the crop has not been sold, ask the value of the crop per unit) Amount (Rs) 9998. Don't know If '0' in 74, go to Q Q77	76. Total income from sales in the past 12 months (Rs) (auto-fill, Q74 x Q75)	77. Was the quantity produced in the past 12 months typical? 1. Yes, similar quantity each year. 2. No, usually more. 3. No, usually less. 98.Don't know
	Unit 1.kg 2.Quintal 3.Mana 4.Pathi 5.Muri 96.Other (Specify)	Quantity 9998.Don 't know				
Most important economically						
Second most important economically						
Most important for household consumption						
Second most important for household consumption						

78. In the past 12 months, what was your household's total income from the sale of agricultural products? <i>This should measure all income from agricultural products and might include income from products not listed in Q71</i>	Amount (Rs)		
	Don't know		9999998

79. When did your household last harvest crops?	Month		Year (BS)					
	Don't know							98

80. Has your household spent any money on any of the following for agricultural production in the past 12 months? (**Probe for other expenditure. Exclude own household stock/input. Include expenditure even if there was no production. (if no is selected for all, skip to Q82)**)

	1.Yes	2.No
Seeds		
Chemical fertilizers and pesticides		
Manure		
Hired labor (cash and value of in-kind payment)		
Draught power		
Hired machinery		
Transportation and marketing costs		
Other costs (specify) _____		
Other costs (specify) _____		
Other costs (specify) _____		

81. In the past 12 months, how much money did your household spend on:

Expenditure (If yes is selected in Q80)	Amount (Rs) .							
	999998. Don't know							

82. Has your household owned the following types of livestock at any point in the past 12 months?
Probe for other types. (If no is selected for all, skip to Q102)

	1. Yes	2.No
Buffalo		
Cow/Bull		
Yak/Nak		
Goat		
Sheep		
Pig		
Chicken		
Other bird (e.g. duck, pigeon)		
Rabbit		
Bees		
Other (specify) _____		
Other (specify) _____		
Other (specify) _____		

83. Of the livestock that you hold, which two are the most economically important and which two are the most important for your household's own use? (**Select from Q82**)

Most important economically	
Second most important economically	
Most important for household use	
Second most important for household use	

Livestock type (If yes is selected in Q83)	84. Number currently held Number (no. hives for bees) 9998.Don't know	85. Number purchased in the past 12 months Number (no. hives for bees) 9998.Don't know (If 0, skip to Q87)	86. Cost of purchases Amount (Rs) _____ 999998. Don't know	87. Number sold in the past 12 months Number (no. of hives for bees) 9998. Don't know (If 0, skip to next type)	88. Income from sales (Include money that has been agreed to but not yet received) Amount (Rs) _____ 999998.Don't know
Most important economically					
Second most important economically					
Most important for household use					
Second most important for household use					

89. In the past 12 months, what was your household's total income from the sale of livestock? (Include income from all livestock kept by the household.)	Amount (Rs) 9998. Don't know
---	---

Livestock type (If yes is selected in Q83)	90. In the past 12 months, did you graze this livestock in the community forest? 1.Yes 2.No (skip to Q92) 95. Not applicable (skip to Q92) 98.Don't know (skip to Q92)	91. In the past 12 months, for how many months did you graze this livestock in the community forest? Number of months _____ 98.Don't know	92. In the past 12 months, did you feed this livestock fodder from the community forest? 1.Yes 2.No (skip to next type) 95. Not applicable No (skip to next type) 98.Don't know No (skip to next type)	93. In the past 12 months, for how many months did you feed this livestock fodder from the community forest? Number of months _____ 98.Don't know
Most important economically				
Second most important economically				
Most important for household use				
Second most important for household use				

94. Did your household produce the following livestock products in the past 12 months? **Probe for other types. (If no is selected for all, skip to Q100)**

	1. Yes	2. No
Milk		
Yoghurt		
Ghee		
Wool		
Egg		
Manure		
Leather		
Honey		
Other (specify)		
Other (specify)		

95. Of the livestock products that you produce, which two are the most economically important and which two are the most important for your household's own use? **(Select from Q94)**

Most important economically	
Second most important economically	
Most important for household use	
Second most important for household use	

Livestock product (if yes is selected in Q95)	96. Quantity produced in the past 12 months		97. Quantity sold in the past 12 months Quantity ____ (If 0, skip to next) 9998. Don't know	98. Total income from sales in the past 12 months Income (Rs) _____ 999998. Don't know
	Unit 1.Litre 2.Kg 3.Number 4. Number of pieces	Quantity ____ 9998. Don't know		
Most important economically				
Second most important economically				
Most important for household use				
Second most important for household use				

99. In the past 12 months, what was your household's total income from the sale of livestock products? (If No is selected in Q82 and Q94, Go To Q102.)	Amount (Rs) 999998. Don't know
--	-----------------------------------

100. If "No" is selected for all in Q82 and Q94 skip to Q102 Has your household spent any money on the following for the rearing of livestock, or the production of livestock products in the past 12 months? **Probe for other expenditure. (If no is selected for all, skip to Q102)**

	1.Yes	2.No
Feed/fodder(including transportation of feed)		
Rental of grazing land		
Medicine/vaccination/ Veterinary services		
Costs of maintaining barns and enclosures		
Hired labor (cash and value of in-kind payment)		
Transportation of livestock/ livestock products to the market		

Other costs (specify) _____		
Other costs (specify) _____		
Other costs (specify) _____		

101. In the past 12 months, how much money did your household spend on the following:

Expense (If yes is selected in Q100)	Amount (Rs) 999998. Don't know
E.g. Feed/fodder (including transportation of feed)	

102. In the past 12 months, did anyone in your household catch fish?	Yes	1
	No (skip to Section D)	2
	Don't know (skip to Section D)	3
103. Where did your household catch fish from? (Select all that apply)	Rivers/lakes	1
	Ponds (natural)	2
	Ponds (man-made)	3
	Don't know (skip to Q108)	98

104. Did you sell any of the fish you caught?	Yes	1
	No (skip to Section D)	2
	Don't know (skip to Section D)	98

Source (from Q103)	105. Quantity sold in the past 12 months Quantity (kg) _____ 98. Don't know	106. Total Income from sales in the past 12 months Income (Rs) _____ 999998. Don't know	107. Costs of producing and selling fish (e.g. hired labour, transport) Amount (Rs) _____ 999998. Don't know

Section D: Forest-based income generation

Now I will ask you about your use of forest. Please tell me about any type of forest that your household has used (community, private or farmland).

108. Did your household collect the following forest products in the past 12 months from any sources? (**If no is selected for all, skip to Q116**)

	1. Yes	2. No
Fuelwood		
Tree fodder		
Cut-grass fodder		
Leaf-litter		
Timber		

Forest product (If yes is selected in Q108)	109. Quantity collected in the past 12 months		110. Quantity from sampled community forest Amount ____ 9995. Not collected from this source 9998. Don't know	111. Quantity from another non- private forest (e.g. another community forest, government forest) Amount ____ 9995. Not collected from this source 9998. Don't know	112. Quantity from private forest or own farmland Amount ____ 9995. Not collected from this source 9998. Don't know
	Unit	Quantity			
	1. Bhari	_____			
	2. Doko	9998.			
	3. Bora	Don't			
	4. Kg	know			
	5. C.ft				
	6. Quintal				
	7. Other (specify)				
E.g. Fuelwood					
E.g. Tree fodder					
E.g. Cut-grass fodder					

Product (If yes is selected in Q108)	113. Quantity sold in the past 12 months Amount ____ (If 0, skip to next product) 9998. Don't know	114. Total income from sales in the past 12 months Amount (Rs) ____ 999998. Don't know	115. Costs of selling the product (e.g. transport) in the past 12 months Amount (Rs) ____ 999998. Don't know
E.g. Fuelwood			
E.g. Tree fodder			
E.g. Cut-grass fodder			

116. Did your household purchase the following in the past 12 months? **(If none are selected skip to Q119)**

	1. Yes	2. No
Fuelwood		
Tree fodder		
Cut-grass fodder		
Leaf-litter		
Timber		

Forest Product (If yes is selected in Q116)	117. Quantity purchased in the past 12 months		118. Total cost of purchases in the past 12 months Amount (Rs) _____ 98. Don't know
	Unit 1. Bhari 2. Doko 3. Bora 4. Kg 5. C.ft 96. Other (specify)	Quantity _____ 98. Don't know	
E.g. Fuelwood			

119. In the past 12 months, did your household collect the following forest products? **Probe whether any other products were collected. (If no is selected for all, skip to Q124).**

	1. Yes	2. No
Thatching grass		
Wooden Poles		
Bamboo poles		
Mushrooms		
Wild vegetables		
Wild fruit		
Wild animals (including birds)		
Medicinal plants		
Sal saplings		
Sal leaves		
Allo		
Argeli		
Amriso (broomgrass)		
Bamboo (<i>choya, nigalo</i>)		
Bamboo (<i>tama</i>)		
Dhasingare/machhino		
Gheekumari		
Lokta		
Camomile		
Citronella		
Lemongrass		
Other (specify) _____		
Other (specify) _____		
Other (specify) _____		

120. Of these forest products, which two are the most economically important for your household and which two are the most important for your household's own use? **(Select from Q119)**

Most important economically	
Second most important economically	
Most important for household use	
Most important for household use	

Product (If yes is selected in Q120)	121.Source product collected from (Select all that apply) 1. Sampled Community forest 2. Another community forest 3. Government forest 4. Own forest 5. Farm land 96.Other (specify) _____ 98. Don't know	122.Percentage sold in the past 12 months Percentage (If 0, skip to next product) 98. Don't know	123.Total income from sales in the past 12 months Amount (Rs) _____ 9998.Don't Know (skip to next product)
Most important economically			
Second most important economically			
Most important for household use			
Most important for household use			

Section E: Household Expenditure and Other Sources of Income

I will now ask you about your household's overall expenditure and income. First, I will ask about your expenditure on food and non-alcoholic drinks.

124. How much does your household typically spend on food and non-alcoholic drink per week?	Amount (Rs)	
	Don't know	9998

Now I am going to ask you about your household's expenditure and income over the past 12 months. When answering, I want you to think back over the past year, until this time last year.

125. In the past 12 months, did your household spend money on the following? **(If no is selected for all, skip to Q127)**

	1. Yes	2. No
Kerosene (including containers)		
LPG (including containers)		
Other fuel sources (excluding firewood, LPG and kerosene)		
Water		
Electricity		
Education (all costs, including fees, exam and admission costs, uniform, books, and allowances for expenses)		
Clothes and footwear (including both ready-made and material for making clothes)		
Household items for personal care (soap, shampoo) and cleaning		
Health (modern and traditional medicines, health services)		
Entertainment		
Transportation (excluding purchase of a vehicle)		
Communication (telephone, mobile, internet)		
Alcohol		
Tobacco products		

126. In the past 12 months, how much did you spend on the following:

Expense (If yes selected in Q125)	Amount (Rs) _____ 999998. Don't know

127. In the past 12 months, did your household spend money on the following? *Probe other expenditure. (If no is selected for all, skip to Q129).*

	1. Yes	2. No
Durable goods (e.g. vehicle, furniture, television, bicycle, jewelry)		
Purchase of land		
Purchase of house		
Rent of land		
Rent of house		
Payment of loans and loan interest		
Foreign employment		
CFUG membership fees		
Repair/maintenance/construction of the house		
Marriage, birth and death expenses		
Legal expenses and insurance		
Taxes (income, land, housing or property)		
Gifts/charity/ remittance		
Religious/social activities		

Other (specify) _____		
Other (specify) _____		
Other (specify) _____		

128. In the past 12 months, how much did your household spend on:

Expense (Yes selected in Q127)	Amount (Rs) 999998. Don't know

129. In the past 12 months, did your household receive income from: **Probe for other income sources. (If no is selected for all, skip to Q131)**

	1. Yes	2. No
Remittances		
Sale of processed forest products (e.g. furniture, rope, paper, bamboo basket etc.)		
Rent of land/house		
Sale of land/house		
Rent of animals or agricultural equipment		
Wage earning from farm labor		
Wage earning from forest-based employment (e.g. guard, forest product collection)		
Wage earning from other labor		
In-kind labor payments or produce from sharecropping		
Salary from job		
Sale of assets (e.g. jewelry)		
Pension (in Nepal and external)		
Tourism		
Other enterprise/ business/self-employment (excluding tourism)		
Interest from loan		
Social assistance (e.g. old age pension, widow pension disability allowance, food for work programme) [cash income and/or food received]		
Payment for forest-related activities: e.g. PES, Water user agreements, carbon sequestration		
Scholarship/charity/donation		
Compensation for human wildlife attack		
Other (specify) _____		
Other (specify) _____		
Other (specify) _____		

130. In the past 12 months, how much income did your household receive from (If in-kind payment is on Q129, record its value):

Income Source (from Q129)	Amount (Rs) 99998 Don't know

131. Over the past 12 months, what was your household's total income?	Amount (Rs)								
	Don't know								999998

132. How much does your household owe on cash loans in total?	Amount Rs)								
	Don't know								999998
133. Does anyone in this household have a savings account?	Yes								1
	No (skip to Section F)								2
	Don't know (skip to Section F)								98
134. Which institution does a household member have a savings account with? (Multiple responses are possible).	Savings group								1
	Formal institution (bank)								2
	Other (specify)								96
	Don't know								98

Section F: Shocks

I will now ask you a few questions about events that have affected your household in the past 12 months.

135. In the past 12 months, did this household or anyone in this household experience the following shocks? **(Probe for other shocks. If no is selected for all, skip to Section G)**

	1.Yes	2.No
Loss of household member		
A serious illness (adult unable to work for one month or more due to illness/ due to caring for an ill family member)		
Loss of livestock		
Loss of crops (e.g. due to drought, flood, pests)		
Loss of employment or non-payment of wages/salary		
Loss of farmland or a house		
An attack by a wild animal (to humans, crops or property)		
A natural calamity (e.g. flood, earthquake, landslide)		
Conflict/forced migration		
Theft		
A fire		
A large fall in the sale prices for crops		
A large rise in food prices		
A large rise in the price of agricultural inputs (e.g. fertilizer, seeds)		
Other (specify)		

136. What were the most important ways your household dealt with these shocks/losses?
(Do not read the options. Multiple options possible. A maximum of three options can be selected)

Shock (Yes selected in Q135)	1. Harvest more forest products for own consumption 2. Harvest more forest products for sale 3. Spend savings 4. Take a loan 5. Sell land, livestock or other assets 6. Do extra casual labor 7. Migration 8. Change occupation 9. Seek help from friends or relatives 10. Seek help from organizations e.g. NGOs 11. Reduce household spending 12. Cleared forest for shelter reconstruction 95. Did not take action to cope with shock/loss
-------------------------------------	---

	96. Other (specify) 98. Don't know
E.g. A serious illness	

If loss of a household member is selected in Q135. Otherwise go to Section G

137. In the past 12 months, how many members of this household passed away?	Number	
	Prefer not to discuss (skip to Section G)	95

Description of persons passed way in the past 12 months

	138. Gender	139. Age
	1. Male 2. Female 3. Third gender	(completed years)
1		
2		

Section G: Hariyo Ban II Livelihood Interventions

140. Before today, had you heard of the Hariyo Ban programme?	Yes	1
	No	2

Now I will ask about the Hariyo Ban programme, which has been operating in this area since Asadh 2068. As part of Hariyo Ban, World Wildlife Fund Nepal (WWF Nepal), Cooperative for Assistance and Relief Everywhere (CARE Nepal), Federation of Community Forestry Users Nepal (FECOFUN) and the National Trust for Nature Conservation (NTNC) have conducted training and have provided support for income-generating activities.

141. Has your household received any livelihood training or support from Hariyo Ban?	Yes	1
	No (skip to Q163)	2
	Don't know (skip to Q164)	98

142. What Hariyo-Ban supported activity or activities did a member of your household participate in? (Select all that apply)	Bee-keeping	1
	Broomgrass cultivation	2
	Cardamom cultivation	3
	Cinnamon cultivation	4
	Chiraito cultivation	5
	Citrus fruit cultivation	6
	Coffee plantation	7
	Ecotourism	8
	Cow farming	9
	Goat farming	10

	Pig farming	11
	Poultry farming	12
	Wool spinning	13
	Fish farming	14
	Sal leaf plate making	15
	Tea plantation	16
	Clay jewelry making	17
	Nature guide training	18
	Bel juice enterprise	19
	Sisnu powder enterprise	20
	Vegetable farming	21
	Banana farming (HB I only)	22
	Buffalo farming (HB I only)	23
	Agriculture (Skills training)	24
	Beautician (Skills training)	25
	Cook (Skills training)	26
	Electrician (Skills training)	27
	Veterinary technician (Skills training)	28
	Shop (any type) (HB I only)	29
	Other skills training (specify) _____	30
	Other (specify) _____	96
	Don't know _____	98

Questions 143- 162 will appear for each activity selected.

143. How long ago did you participate?	Less than two years ago	1
	More than two years ago	2
	Don't know	98
144. Which member(s) of the household participated in this activity? (Select all that apply)	List of household members (Pick from roster)	
	Household member not at home	95
145. Why did your household/ this household member decide to participate in this livelihood intervention? (Do not read the options. Multiple responses are possible.)	To get higher incomes	1
	To get market access	2
	To learn new/better skills	3
	Friends and neighbors participated	4
	Asked to by CFUG	5
	Participated in HB	6
	To protect forests/environment	7
	Other (specify) _____	96
146. What training and/or support did your household receive from Hariyo Ban? (Read the options. Select all that apply)	Don't know	98
	Record keeping training (ask Q147)	1
	Business plan training (ask Q147)	2
	Technical training/ enterprise development training (ask Q147)	3
	Cross-learning visit (ask Q148)	4
	Equipment and/or material support (ask Q149)	5
	Home improvement (ecotourism) (skip to Q150)	6
	Other (specify) _____ (skip to Q150)	96
147. In total, how many days training did the member(s) of your household receive?	Number of days	
	Don't know	98

(If 4 responses in if 4 in Q146 ask Q148 and if 5 in Q146 ask Q149) otherwise skip to Q150)		
148. How many days did the member of your household spend on the cross-learning visit? (If 5 response in Q146 ask Q149 otherwise skip to Q150)	Number of days	
	Don't know	98
149. What type of material support did your household receive? (Select all that apply)	Seedlings	1
	Seeds	2
	Manure	3
	Grass cutter	4
	Stationary materials	5
	Wool weaving machine	6
	Livestock (e.g. kid, piglet)	7
	Agricultural equipment (e.g. <i>hazari</i>)	8
	Other (specify) _____	96
150. Has your household received a loan to cover the costs of starting the activity your household received training or support from Hariyo Ban?	Yes, already have	1
	No, applied but have not received (skip to Q153)	2
	No, but plan to do so in the future (skip to Q153)	3
	No and do not plan to do so (skip to Q153)	4
	Don't know (skip to Q153)	98
151. Where did your household receive the loan for this activity from? (Select all that apply)	Co-operative- HB revolving fund	1
	Co-operative - not funded by Hariyo Ban	2
	Co-operative- source of funding unclear	3
	CFUG	4
	Bank	5
	Microfinance organization	6
	Local moneylenders	7
	Relatives/neighbors	8
	Other (specify) _____	96
152. What was the size of the loan that your household received for this activity?	Amount (Rs)	
	Don't know	999998
153. Has your household started to undertake the activity they received training or support from Hariyo Ban? (e.g. growing a specific crop, keeping livestock)	Yes, and continuing (skip to Q155)	1
	Yes, but I have stopped	2
	No, but plan to do so in the future (skip to Q159)	3
	No, and do not plan to do so in the future	4
	Don't know (skip to Q159)	98
154. Why does your household not plan to undertake this activity or why has it stopped? (Do not read options. Multiple responses possible. (skip to Q159))	Not interested	1
	Do not have land	2
	Do not have the financial resources	3
	Do not have the material resources	4
	Labor shortage	5
	Insufficient technical knowledge	6
	Other (specify) _____	96
155. Has your household undertaken this livelihood activity as part of a group?	Yes	1
	No	2
	Don't know	98

156. Has your household used the training/support to generate income?	Yes, already have	1
	No, but plan to do so in the future (skip to Q159)	2
	No and do not plan to (skip to Q159)	3
	Don't know (skip to Q159)	98
157. How many months ago did your household start receiving income from this livelihood activity? (Calculate from the month and year they started earning)	Number of months	
	Don't know	98
158. In the past 12 months, how much income has your household made from this activity?	Amount (Rs)	
	Don't know	9999998
159. Has anyone from this household spoken about the livelihood activity to other CFUG members that did not receive this training or support?	Yes	1
	No (skip to Q162)	2
	Don't know (skip to Q162)	98
160. Have the CFUG members you spoke to started this livelihood activity?	Yes	1
	No (skip to Q162)	2
	Don't know (skip to Q162)	98
161. How many households have already started this activity?	Number	
	Don't know	98

162. Since your household's involvement in this Hariyo Ban - supported livelihood activity have the following increased, decreased or stayed the same? **Probe for other impacts.**

	1. Increased	2. Stayed the same	3. Decreased	95. Not applicable	98. Don't know
Total household income					
Household income from agriculture					
Household income from livestock					
Household income from the sale of forest products					
Amount of food available at home					
Number of livestock owned					
Number of livestock grazed in the forest					
Quantity of fuelwood collected from the community forest					
Quantity of fodder collected from the community forest					
Number of trees for fodder on private land					
Other impact (specify)					
Other impact (specify)					
Other impact (specify)					

If the answer to Q141 is no, then ask Q163. Otherwise, skip to Q164

	Did not take place in this CFUG	1
	Not informed of the Hariyo Ban activity	2

163. Why did your household not participate in a Hariyo Ban livelihood intervention? <u>Do not read the options.</u> <u>Multiple answers are possible.</u>	Wanted to participate but the implementing NGO did not permit it	3
	Not interested in the activity	4
	No need for the intervention	5
	Did not think the training would be useful	6
	Did not have the time to participate due to work commitments	7
	Did not have the time to participate due to family commitments	8
	Already involved in another intervention	9
	Other (specify) _____	96
	Don't know	98

164. In the past 2 years, did anyone in this household start a livelihood activity because someone else in the CFUG received direct training/support for this activity under the Hariyo Ban II program?	Yes	1
	No (skip to Section H)	2
	Don't know (skip to Section H)	98
165. Which livelihood activity/activities did your household start? <u>Select all that apply.</u>	Bee-keeping	1
	Broomgrass cultivation	2
	Cardamom cultivation	3
	Cinnamon cultivation	4
	Chiraito cultivation	5
	Citrus fruit cultivation	6
	Coffee plantation	7
	Ecotourism	8
	Cow farming	9
	Goat farming	10
	Pig farming	11
	Poultry farming	12
	Wool spinning	13
	Fish farming	14
	Sal leaf plate making	15
	Tea plantation	16
	Clay jewelry making	17
	Nature guide training	18
	Bel juice enterprise	19
	Sisnu powder enterprise	20
	Vegetable farming	21
	Other (specify) _____	96

166. In the past 12 months, how much income has your household made from this activity?

Activity (from Q165)	Amount (Rs)
	9995. Have not started to generate income yet.
	9998. Don't know

167. Have any of the following increased, decreased or remained same due to your household's involvement in livelihood activity? (**Probe for other impacts**).

	1. Increased	2. Stayed the same	3. Decreased	95. Not applicable	98. Don't know
Total household income					

Household income from agriculture					
Household income from livestock					
Household income from the sale of forest products					
Amount of food available at home					
Number of livestock owned					
Number of livestock grazed in the forest					
Quantity of fuelwood collected from the community forest					
Quantity of fodder collected from the community forest					
Number of trees for fodder on private land					
Other impact (specify)					
Other impact (specify)					
Other impact (specify)					

Section H: Other Initiatives

I am now going to ask you about the involvement of members of your household in other initiatives and activities in the past 2 years.

First, I would now like to know about your household's participation in any other livelihood interventions. This means any training, material or financial support your household has received for an activity to generate income.

(If participated in a HB I and II livelihood programme)

I am referring to any training or support other than the HB I and II livelihood initiatives that we have already discussed.

168. In the past 2 years, has anyone in this household received any training or support for livelihood activities other than those provided under the Hariyo Ban program?	Yes	1
	No (skip to Q173)	2
	Don't know (skip to Q173)	98
169. What type of activity did your household receive support for? Select all that apply.	Bee-keeping	1
	Broomgrass cultivation	2
	Cardamom cultivation	3
	Cinnamon cultivation	4
	Chiraito cultivation	5
	Citrus fruit cultivation	6
	Coffee plantation	7
	Vegetable farming	8
	Ecotourism	9
	Cow farming	10
	Goat farming	11
	Pig farming	12
	Poultry farming	13
	Wool spinning	14
	Fish farming	15
	Tea plantation	16
	Nature guide training	17

	Non-agricultural business e.g. shop	18
	Skills training (e.g. cook, carpenter)	19
	Other (specify) _____	96

Activity support was received for (from Q169)	170. Who provided this support? 1. CFUG 2. Community Learning Action Centre 3. NGO (specify) 96. Other (specify) 98. Don't know	171. What type of support has your household received? Select all that apply. 1. Training 2. Financial support-loan 3. Financial support-grant 4. Material 96. Other (specify) 98. Don't know	172. How much income did your household generate from this activity in the past 12 months Amount (Rs) 999988. Don't know

I am now going to ask about the involvement of household members in other training activities.

(If received HBII livelihood intervention)

The training you received may have been provided by the same organization that provided the livelihood training/support.

173. In the past 2 years, did a member of your household receive training about the following topics?
Probe for other topics. (If no is selected for all, skip to Section I)

	1. Yes	2. No
Climate change adaptation		
Dealing with animals (e.g. crop-raiding)		
Poaching		
Grazing		
Forest product management		
Forest management		
Water management		
Soil management		
Capacity building for women		
Domestic violence		
Another topic (specify) _____		
Another topic (specify) _____		
Another topic (specify) _____		

174. Who provided the training? **Select all that apply.**

	1. Hariyo Ban
--	---------------

Training topic (from Q173)	2. CFUG 3. Community Learning Action Centre (CLAC) 4. Other NGO (specify) 96. Other (specify) 98. Don't know

Section I: Forest Groups

I will now ask you a series of questions about your participation in this CFUG and about how the forest is managed by the CFUG committee.

175. For how many years have you been a member of this CFUG?	Number of years	
	Don't know	98
176. Is any member of this household currently on the executive committee of the CFUG?	Yes	1
	No	2
	Don't know	98
177. Did anyone in your household attend the last general assembly meeting?	Yes	1
	No (skip to Q180)	2
	Don't Know (skip to Q180)	98
178. Did any member of this household raise an issue at the last general meeting?	Yes	1
	No (skip to Q180)	2
	Don't know (skip to Q180)	98
179. How did others respond when someone from this household raised issues at the general meeting?	Nobody listened	1
	Listened but did not affect decisions	2
	Listened and affected decisions	3
	Other (specify) _____	96
	Don't know	98
180. How frequently does your household attend CFUG meetings?	Always (skip to Q182)	1
	Often (skip to Q182)	2
	Sometimes	3
	Rarely	4
	Never	5
	Don't know (skip to Q182)	98
181. Why do members of your household not attend more meetings of the user group? Do not read the options. Multiple responses are possible. (If never selected in Q180, skip to Q183)	Not interested	1
	The meetings are not useful	2
	Not informed of the meeting	3
	Unable to attend due to work	4
	Unable to attend due to family commitments	5
	Other (specify) _____	96
	Don't know	98
182. Which household members typically attend meetings of the forest user group? <i>Select all that attend.</i>	List of household members (Pick from roster)	
	HH member no longer at home	94

183. Does the CFUG committee have rules on the following activities?

	1. Yes	2. No	98. Don't know
Green fuelwood collection			
Dry fuelwood			
Tree fodder collection			
Timber collection			
Grass collection			
Leaf-litter collection			
Medicinal plant collection			
Other NTFP collection			
Catching wild animals			
Livestock grazing in forest			
Quarrying/mining			
Charcoal production			
Other (specify) _____			

Other (specify) _____			
-----------------------	--	--	--

184. To your household, are the rules on forest use clear and well known or unclear and not well known?	Clear and known	1
	Unclear and not well known	2
185. In the past 12 months, has anyone in the CFUG broken the rules on forest-based activities?	Yes	1
	No	2
	Don't know	98
186. What is your opinion on the fairness of the rules for forest use? Read the options.	They are unfair	1
	They are more or less fair	2
	They are completely fair	3
	Don't know	98

187. Is your household also a member of another community forest user group?	Yes	1
	No	2

Section J: Conservation Activities and Forest/Biodiversity Outcomes

I am now going to ask you about your household's forest use, involvement in the management of the forest and your views on changes in this area in recent years.

188. In the last 12 months, did your household clear any forest land?	Yes	1
	No (skip to Q194)	2
	Don't know (skip to Q194)	98
189. What type of forest did your household clear? Select all that apply.	Sampled community forest	1
	Another community forest	2
	Government forest	3
	Own forest	4
	Other (specify) _____	96
	Don't know	98

Type of forest (from Q189)	190. What area of land was cleared?			
	Unit 1. Ropani 2. Bigha 98. Don't know			
	1		2	
	Ropani	Aana	Kattha	Dhur

Type of forest (from Q189)	191. Was the forest land that was cleared fallow forest land? 1. Yes 2. No 98. Don't know	192. For what purpose was the land cleared? (Select all that apply) 1. Crops (subsistence) 2. Crops (commercial) 3. Pasture 4. Settlement 96. Other (specify)	193. How was the forest cleared? 1. Burned 2. Cut 3. Both cut and burned 96. Other (specify) 98. Don't know

194. In the past 12 months, did your household plant trees on your own land?	Yes	1
	No	2
	Not applicable, do not have land	95
	Don't know	98

195. Is anyone in this household a member of an anti-poaching unit?	Yes	1
	No	2
	Don't know	98

196. In the past 12 months, did anyone in this household receive forest-based employment from the CFUG committee?	Yes	1
	No (skip to Q198)	2
	Don't know (skip to Q198)	98
197. What type(s) of forest-based employment did a member/members of your household receive in the past 12 months? Select all that apply.	Forest guard/watcher	1
	Nursery naika	2
	Forest product collection (e.g. Timber, firewood, NTFP collection)	3
	Office secretary	4
	Transportation of forest products	5
	Labor for community development activities (e.g. road maintenance, construction)	6
	Tree planter	7
	Other (specify) _____	96a
	Other (specify) _____	96b
	Don't know	98

198. In the past 12 months, did anyone from your household participate in the following activities in the community forest? (**If no is selected for all, skip to Q202**)

	1. Yes	2. No
Anti-poaching patrols		
Construction / Maintenance of fire lines		
Controlled burning		
Management of invasive species		
Weeding/thinning /pruning		
Harvesting (cutting timber, poles, firewood)		
Planting of trees		
Watershed management		
Animal species management		
Forest guard (voluntary)		

Activity (from Q198)	199. Who organized the activity? Select all that apply 1. CFUG 2. Hariyo Ban II implementing partner 3. Other NGO (specify) 96. Other (specify) 98. Don't know	200. Which household members participated? Select all that apply. List of household members from household roster. 94. Household member no longer at home	201. In the past 12 months, in total how many days did members of your household spend participating in this activity? (Total days of all members) Number of days 998. Don't know

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202. In the past 5 years, have you experienced any problems with wild animals?	Yes	1
	No (skip to Q204)	2
	Don't know (skip to Q204)	98
203. Over the past 5 years, has the frequency of problems with wild animals in your village increased, decreased or stayed the same?	Increased	1
	Stayed the same	2
	Decreased	3
	No problems with animals	95
	Don't know	98
204. Over the past 5 years, has water availability in the nearby ponds, rivers, streams, and wells increased, stayed the same or decreased?	Increased	1
	Stayed the same	2
	Decreased	3
	Don't know	98
205. Over the past 5 years, has the condition of the community forest improved stayed the same or degraded?	Improved	1
	Stayed the same (skip to Q208)	2
	Degraded (skip to Q207)	3
	Don't know (skip to Q208)	98
206. What are the main reasons for the improvement? (Do not read the options. Multiple responses are possible) (Skip to Q208)	Decreased harvesting of forest products due to changes in need	1
	Decreased harvesting of forest products due to increased restrictions	2
	Less grazing in the forest	3
	Plantation	4
	Improved management	5
	Other (specify) _____	96
207. What are the main reasons for the degradation? Do not read the options. Multiple responses are possible.	Increased harvesting of forest products by members of the user group	1
	Increased harvesting of forest products by non-members	2
	Increased number of households using the forest	3
	Increased grazing in the forest	4
	Increased clearing of the forest for agriculture	5
	Drought	6
	Fire	7
	Decreased management	8
	No management	9
	Other (specify) _____	96

208. Over the past 5 years, has the availability of the following forest products increased, stayed the same or decreased? **(If stayed the same/don't know is selected for all, skip to Q211).**

	1.Increased	2.Stayed the same	3.Decreased	98.Don't know
Fuelwood				
Tree fodder				
Cut-grass fodder				
Leaf-litter				
Timber				

209. What are the reasons for the increase in availability?

Do not read the options out. Multiple answers are possible.

Forest Product (Selected 'increased' in Q208)	1. Less clearing of the forest for agriculture 2. Fewer people collecting forest products due to changes in livelihood 3. Fewer people collecting forest products due to labor shortages caused by overseas migration
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	4. Fewer people collecting forest products due to labor shortages caused by migration within Nepal 5. Smaller quantities collected due to decreased need 6. Increased rainfall 7. Increased restrictions on use 8. More trees in the forest 9. Trees in the forest are bigger 10. Less rearing of livestock 96. Other (specify) 98. Don't know

210. What are the reasons for the decrease in availability?

(Do not read the options out. Multiple answers are possible)

Forest Product (Selected 'decreased in Q208)	1. Increased small-scale clearing of the forest for agriculture 2. Increased large-scale clearing of the forest (e.g. for plantations or settlements) 3. Increased use of forest products by CFUG members 4. Increased use of forest products by outsiders 5. Reduced restrictions on use by the CFUG committee 6. Drought 7. Trees in the forest are bigger 8. Increased frequency of fires 96. Other (specify) 98. Don't know

211. What do you consider to be the top 3 problems facing this forest?

(Do not read the options)

	1. Overharvesting of forest products 2. Grazing 3. Invasive Species 4. Flood/Landslide 5. Wild fire 6. Poaching of animals (including wild birds 7. Poaching of wild plants 8. Encroachment 9. Infrastructure development 10. Sand/stone/gravel extraction 11. Pests 12. Clearing land 13. Drought 96a. Other (specify) 96b. Other (specify) 98. Don't know
1. Most significant problem	
2. Second most significant problem	
3. Third most significant problem	

We have now reached the end of the survey. Many thanks for taking the time to participate.

Do you have any questions?

APPENDIX K: SURVEY INSTRUMENT – CFUG SURVEY FORM

Hariyo Ban II Impact Evaluation Baseline Survey 2018 CFUG Questionnaire

Survey details

1. Supervisor I.D.		
2. Enumerator I.D.		
3. Date		
	Day	Month
	Year	
4. Province	Province 3	1
	Province 4	2
5. District	Chitwan	1
	Gorkha	2
	Kaski	3
	Lamjung	4
	Syangja	5
	Tanahun	6
6. Working site/Block		
7. Municipality/Rural Municipality		
8. Ward Number		
9. Former VDC (multiple entries are possible)		
10. CFUG Name	Name	
11. Is the CFUG expected to be a control or treatment CFUG?	Treatment	1
	Control	2

Informed consent

Namaste. My name is [interviewer name]. I am working with New ERA, who has been commissioned to conduct a survey about the use of the forest, livelihoods and participation in the USAID-funded Hariyo Ban program. We are surveying approximately 5,400 households across approximately 115 forest user groups. The aim of this survey is to understand how changes to livelihoods affect people's use of the forest and the consequent outcomes for biodiversity.

You have been asked to participate due to your knowledge of this Community Forest User Group.

As part of the survey, I will ask you a series of questions about the forest and the user group, and Hariyo Ban activities. I will record your responses and answering these questions will take approximately 2-2.5 hours.

Please note, that this survey is completely voluntary. You are under no obligation to participate. Not participating will not affect your or your forest user group's involvement in the Hariyo Ban program or any other initiative. If you choose to participate, and I ask you any questions that you do not want

to answer, you can skip on to the next question. If you change your mind, you may stop the interview at any time. If you have any questions, please stop me and ask.

There are no immediate broader benefits for participating but we hope that this work will provide insight into how to design better programmes in the future.

Your personal identifying information will be kept strictly confidential. It will only be used for the purposes of the coordination of this study and any related follow up surveys. Your responses will not be discussed with any other household, member of the user group or anyone else. Your responses may be quoted in subsequent analyses and published reports, but you will remain anonymous.

This research is being funded by the United States Agency for International Development and coordinated by CAMRIS International, which will act as data controller and retain all personal identifying information for 12 years. Fieldwork is being conducted by New ERA and researchers at the University of Manchester and Sheffield in England will conduct the analysis. This project has been reviewed by the University of Sheffield's Ethics Review Procedure and is being undertaken with permission of the Ministry of Forests and Environment. Other researchers may find the data collected to be useful in answering future research questions. Anonymized information provided by you will not be shared with other researchers without your agreement to questions at the end of this introduction.

I will give a copy of the information I have read to you with some additional details for you to keep. In case you need more information about the survey or make complaint about the survey, you may contact the people listed on the sheet.

Do you have any questions?

- ☐ Yes
- ☐ No

If the respondents say Yes, ask them their questions and clarify again. Ensure all participants have understood what you have explained so far and that they do not have further questions. Then only proceed.

12. I will now ask you a series of questions to see if you agree to participate. Please answer yes or no to each question. **Ask the participants each of these questions. Please ensure you get an answer from each participant. If any participant does not agree, then stop the survey with them and continue with those that do agree.**

	1.Yes	2.No
1.Has the project been explained to you?		
2.Have you been given the opportunity to ask questions about the project?		
3.Do you understand that by agreeing to take part in this study, you will be asked questions and that your responses will be recorded?		
4.Do you understand that your participation is voluntary and that you can stop at any time, without reasons, and there will be no adverse consequences to stop?		
5.Do you understand that there are no immediate benefits or harms for you for participating?		

6. Do you understand that your personal details such as name and phone number will not be revealed to people outside the research?		
7. Do you agree to your anonymized responses being shared with other researchers?		

If yes is selected for 1-6, the survey can begin.

May I begin the survey now?

Section A: The Participants and the User Group

13. How many people is this discussion being held with?	Number (3-10)	
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List the details of the people the discussion is being held with.

14. Full Name	15. Position 1. Chairperson 2. Vice-chairperson 3. Secretary 4. Vice Secretary 5. Treasurer 6. Vice Treasurer 7. Office Secretary 8. Other executive committee member 9. CFUG member (former executive committee member) 10. CFUG member (never on the committee)	16. Gender 1. Male 2. Female 3. Third Gender

17. Phone numbers of key people

	Phone number 95. Not provided
CFUG Landline	
Chairperson	
Vice-chairperson	

18. What is the size of this community forest?	Area (hectares)	
19. What is the nature of the forest stand origin?	Natural	1
	Planted	2
	Originally natural, some planted	3
20. In which year was the forest user group officially established?	Year (BS)	
	Don't know	9998
21. Is the community forest physically accessible all year round?	Yes, for all members (skip to Q23)	1
	No, some members cannot access at some time during the year	2
	No, all members cannot access at some time during the year	3
	Don't know (skip to Q23)	98
22. For how many months of the year is the community forest inaccessible?	Number of months	
	Don't know	98
23. Does a road run through the community forest?	Yes	1
	No	2

24. In which year was the last Forest Operational Plan prepared for this forest user group?	Year (BS)	
	Don't know	9998
25. Has the group developed any plan to adapt to climate change?	Yes	1
	No (skip to Q27)	2
26. Is the climate change adaptation plan in the forest operational plan?	Yes, incorporated in forest operational plan	1
	No, in a separate climate change adaptation plan	2
	No, other (specify) _____	96

27.		
28. How many households belong to this user group?	Number	
29. How many households belong to each caste?	Brahmin/ Chhetri	
	Dalits	
	Janajati	
	Other (specify)	
	Other (specify)	
30. Has the CFUG conducted participatory well-being ranking (PWBR)?	Yes	1
	No (skip to Q34)	2
31. In which year was the PWBR last conducted?	Year (BS)	
	Don't know	9998
32. How many households are in this CFUG according to the last PWBR?	Number	

33. How many households were in each well-being category?

	Number (if no HHs write "000") 995. Category not used
Well-off	
Middle income	
Poor	
Extremely poor	

34. How many people are on the executive committee of this CFUG?	Number
--	-----------------------------

Starting with those in key positions, record the position, gender and caste of the executive committee.

	35. Position	36. Gender	37. Caste/ Ethnicity	1. Brahmin/ Chhetri 2. Other Terai/Madheshi castes 3. Dalits 4. Newar 5. Janajati 6. Muslim 7. Others
	1. Chairperson	1. Male	Refer to caste categories in the field manual and categorize accordingly.	
	2. Vice-chairperson	2. Female		
	3. Secretary	3. Third Gender		
	4. Vice Secretary			
	5. Treasurer			
	6. Vice Treasurer			
	7. Other executive committee member			
1				
2				
3				

4			
5			
6			
7			
8			
9			
10			
11			

38. How many general assembly meetings were held in the past 12 months?	Number		
39. How many people attended the last general assembly meeting?	Number		
	Don't know		98
40. Was the number of people that attended the last general assembly meeting typical?	Yes		1
	No, usually more		2
	No, usually less		3
41. How many other meetings with CFUG members were held in the past 12 months?	Number		

Now I am going to ask you about the CFUG rules on forest product collection and the activities that can be undertaken in the community forest. **(If not regulated, skip to Q52)**

42. Are the following activities regulated in this CFUG? **Probe for other activities that are regulated.**

	1.Yes	2.No
Green fuelwood collection		
Dry fuelwood collection		
Tree fodder collection		
Timber collection		
Grass collection		
Leaf-litter collection		
Medicinal plant collection		
Wild vegetable collection		
Other NTFP collection		
Catching wild animals		
Livestock grazing in forest		
Quarrying/mining		
Charcoal production		
Other (specify) _____		
Other (specify) _____		
Other (specify) _____		

Product (autofill from "Yes" responses in Q42)	43. Is the collection amount for the [product] restricted? 1.Yes, HH are allowed to collect some 2. Yes, collection is entirely prohibited (<u>skip to next product</u>) 3.No	44. Is the collection of [product] restricted in designated areas only? 1.Yes 2.No	45. Is the collection of [product] restricted to certain time of the year? 1.Yes 2.No

46. What proportion of the CFUG members adhere to the rules on forest use?	All (skip to Q49)	1
	Most of them	2
	About half	3
	A few	4
	None	5
47. Typically, CFUG members of which well-being categories violate the rules? (Select all that apply)	Well-off user group members	1
	Middle-income user group members	2
	Poor user group members	3
	Extremely poor group members	4

48. Why do members violate the rules? (Do not read the options. Multiple answers possible.)	Do not understand the rules	1
	Need additional products for domestic use	2
	To generate cash income due to poverty	3
	To generate additional income (non-poor)	4
	Nowhere else to graze livestock	5
	Other (specify) _____	96
49. Are there penalties for breaking the forest rules?	Yes	1
	No (skip to Q52)	2
50. How often are penalties for breaking the rules enforced?	Always	1
	Sometimes	2
	Rarely	3
	Never (skip to Q52)	4
	Rules are not broken (skip to Q52)	95
51. What penalties are given for breaking the rules? (Select all that apply)	Warning	1
	Fine	2
	Return any money made from the sale of forest products	3
	Expulsion from the group	4
	Return of the product(s)	5
	Labor for the CFUG	6
	Other (specify) _____	96
52. Do people that are not members of this user group harvest products from this forest? (members of other user groups or people that are not a member of any group)	Yes	1
	No (skip to Q56)	2
53. Do these groups/individuals have a right to harvest from this forest?	Yes (skip to Q56)	1
	No	2
54. Which products are harvested illegally by non-members? (Select all that apply)	Green Fuelwood	1
	Dry fuelwood	2
	Tree-fodder	3
	Timber	4
	Grasses	5
	Wild animals including birds	6
	Wild vegetables	7
	Bamboo	8
	Other (specify) _____	96
55. Is the illegal harvest of products by non-members a problem?	Yes, a minor problem	1
	Yes, a significant problem	2
	No, it is not a problem	3
56. Which system is in place to monitor forest use?	Salaried forest guard	1
	Volunteer forest guards from CFUG	2
	No guard, households should follow rules	3

	Forest use is not monitored	4
	Other (specify) _____	96

57. In the past 2 years, did the CFUG committee undertake or provide support for the following activities for poor/disadvantaged households? **Probe for other activities.**

	I.Yes	2.No
School scholarship for children		
School uniform and/or books		
Soft Loan		
Skills-training		
Cash incentives to attend training		
Priority to attend training		
Free forest products		
Discounted forest products		
Free CFUG membership		
Discounted CFUG membership		
Provision of land		
Provision of employment		
Support for disabled household member		
Other (specify) _____		
Other (specify) _____		
Other (specify) _____		

58. In the past 2 years, did the CFUG executive committee undertake the following development activities? **Probe for other activities.**

	I.Yes	2.No
School construction/maintenance		
Pay teachers' salaries		
Road construction/maintenance		
Temple construction (also monastery, church or mosque)		
Community building construction		
Irrigation system construction/maintenance		
Drinking water facilities provision / fences		
Loans provision		
Other (specify) _____		
Other (specify) _____		
Other (specify) _____		

59. What was the total income of the CFUG in the 2073/2074 financial year? (see the record)	Amount (Rs)	
	Do not wish to disclose	95
	Don't know	98
60. What was the CFUG expenditure in the 2073/2074 financial year? (see the record)	Amount (Rs)	
	Do not wish to disclose	95
	Don't know	98

61. Do members of this user group also use other forests?	Yes	1
	No	2
	Don't know	98

Section B: Forest Use among members

62. In the past 12 months, has any of the forest been cleared by members of the CFUG?	Yes		1	
	No (skip to Q67)		2	
63. In the past 12 months, how much forest land has been cleared?	System: 1.Ropani 2.Bigha 3. Hectares 98. Don't know			
	1	Ropani		
		Aana		
	2	Kattha		
		Dhur		
	3	Hectares		
64. In the past 12 months was any forest land cleared by burning?	Yes		1	
	No (skip to Q67)		2	
65. In the past 12 months, how much land was cleared by burning?	System: 1.Ropani 2.Bigha 3. Hectares 98. Don't know			
	1	Ropani		
		Aana		
	2	Kattha		
		Dhur		
	3	Hectares		

66. For what reasons has land been cleared in the past 12 months? Select all that apply.	Crops (subsistence)	1
	Crops (commercial)	2
	Pasture	3
	Settlement	4
	Land distribution	5
	Other (specify) _____	96
67. In the past 12 months, how much timber was collected from the community forest? (See the record).	Amount (c.ft)	
	Not recorded	95

68. Over the past 5 years, has the availability of the following forest products in the community forest increased, decreased or stayed the same?
(If stayed the same/don't know is selected for all, skip to Q71)

	1.Increased	2.Stayed the same	3.Decreased	98.Don't know
Fuelwood				
Tree fodder				
Cut-grass fodder				
Leaf-litter				
Timber				

69. Why has the availability of [forest product] increased?
Do not read the options. Multiple answers are possible.

Forest product (Increased selected in Q68)	1. Less clearing of the forest for agriculture 2. Fewer people collecting forest products due to changes in livelihood 3. Fewer people collecting forest products due to labor shortages caused by overseas migration 4. Fewer people collecting forest products due to labor shortages caused by migration within Nepal 5. Smaller quantities collected due to decreased need 6. Increased rainfall 7. Increased restrictions on use 8. More trees in the forest 9. Trees in the forest are bigger 10. Less rearing of livestock 11. Fewer invasive species 96. Other (specify) 98. Don't know

70. Why has the availability of [forest product] decreased?
Do not read the options. Multiple answers are possible.

Forest Product (Decreased selected in Q68)	9. Increased small-scale clearing of the forest for agriculture 10. Increased large-scale clearing of the forest (e.g. for plantations or settlements) 11. Increased use of forest products by CFUG members 12. Increased use of forest products by outsiders 13. Reduced restrictions on use by the CFUG committee 14. Drought 15. Trees in the forest are bigger 16. Increased frequency of fires 17. Increase in invasive species 96. Other (specify) 98. Don't know
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71. In the last 2 years, were any trees planted in the community forest?	Yes	1
	No (<u>skip to Q75</u>)	2
	Don't know (<u>skip to Q75</u>)	98
72. Who organized the planting? (<u>Select all that apply</u>)	The CFUG committee	1
	Members of the CFUG	2
	Hariyo Ban II Partner (WWF, CARE, NTNC and FECOFUN)	3
	Other NGO (specify) _____	4
	Other (specify) _____	96
	Don't know	98
73. For what purpose(s) were trees planted in the community forest? (<u>Select all that apply</u>)	Timber	1
	Fuelwood	2
	Fodder	3
	Forest restoration	4
	Carbon sequestration	5
	To control landslides	6
	Other (specify) _____	96
	Don't know	98
	System: 1. Ropani 2. Bigha 3. Hectares	
	98. Don't know	

74. What was the total area of trees planted in the past 2 years?	1	Ropani				
		Aana				
	2	Kattha				
		Dhur				
	3	Hectares				

75. In the past 2 years, did the following activities take place in the forest?
(If no is selected for all, skip to Q77)

	1.Yes	2.No
Anti-poaching patrols		
Construction/maintenance of fire lines		
Controlled burning		
Management of invasive species		
Weeding/thinning /pruning		
Harvesting (cutting timber, poles, firewood)		
Watershed management		
Animal species management		

76. Who organized the following activities that occurred in the forest? **(Select all that apply.)**

Activity (If yes selected in Q75)	1. The CFUG committee 2. Members of the CFUG 3. Hariyo Ban II Partner (WWF, CARE, NTNC, FECOFUN) 4. Other NGO (specify) 96. Other (specify) 98. Don't know

I am now going to ask you a few questions about international migration.

77. Are there households in this CFUG in which at least one household member has migrated to another country?	Yes	1
	No (skip to Q84)	2
	Don't know (skip to Q84)	98
78. Has forest use changed as a result of households receiving remittances?	Yes	1
	No (skip to Q84)	2
	Don't know (skip to Q84)	98
79. In what ways has forest use changed due to households receiving remittances? (Do not read the options. Multiple answers possible)	Less use of fuelwood by households receiving remittances	1
	Less use of fodder and leaf-litter by households receiving remittances	2
	Less use of timber	3
	Smaller number of households using the forest as remittances have enabled migration to urban areas	4
	Other (specify) _____	96
80. Has out-migration affected the management of the community forest?	Yes	1
	No (skip to Q84)	2
	Fewer people, resulting in reduced management	1

81. How has out-migration affected forest management? <u>(Do not read the options. Multiple answers possible)</u>	Fewer people, meaning people are spending more time on forest management activities	2
	More women on the executive committee	3
	More women participating in CFUG meetings	4
	More women participating in forest management activities	5
	Changed the caste/ethnicity profile of the executive committee members (specify how)	6
	Other (specify) _____	96
82. Has international migration affected the amount of labor that households in the CFUG have for agricultural production?	Yes, the amount of labor has decreased	1
	No <u>(skip to Q84)</u>	2
	Don't know <u>(skip to Q84)</u>	98
83. How have households coped with the decreased availability of labour caused by international migration? <u>(Do not read the options. Multiple responses are possible)</u>	Household members spend more time on agricultural production	1
	Women spend more time on agricultural production than previously	2
	Reduced the amount of land for agriculture	3
	Hired labor	4
	Used remittances to invest in labor- saving technologies	5
	Other (specify) _____	96
	Don't know	98

Section C: The Environment

84. In the past 12 months, has anyone in the CFUG experienced any problems with wild animals?	Yes	1
	No	2
	Don't know	98
85. Over the past 5 years, has the frequency of problems with wild animals in your village increased, decreased or stayed the same?	Increased	1
	Stayed the same <u>(skip to Q88)</u>	2
	Decreased <u>(skip to Q87)</u>	3
	No problems with animals <u>(skip to Q88)</u>	95
	Don't know <u>(skip to Q88)</u>	98
86. Why did the frequency of problems with wild animals increase? <u>(Do not read the options. Multiple answers possible)</u> <u>(skip to Q88)</u>	Less management than there used to be (e.g. fences collapsed)	1
	More animals	2
	Decrease in the size of habitats (animals in a smaller area)	3
	Increase in forest area	4
	Decrease in the availability of natural prey	5
	People entering the forest more frequently	6
	Increased settlement near the forest	
	Other (specify) _____	96
87. Why did the frequency of problems with wild animals decrease? <u>(Do not read the options. Multiple answers possible)</u>	Improved management (e.g. fences built, restored)	1
	Fewer animals	2
	Increase in the size of habitats (animals in a larger area)	3
	Increase in forest area	4
	Increase in the availability of natural prey	5
	People entering the forest less frequently	6
	Decreased settlement near the forest	
	Other (specify) _____	96
88. Has your CFUG implemented initiatives to manage problems with wild animals in the past 2 years?	Yes	1
	No <u>(skip to Q90)</u>	2
	Improved existing fencing	1
	Built new fences (non-electric)	2

89. Which initiatives has your CFUG implemented to manage problems with wild animals? <u>(Do not read the options. Multiple answers possible. Probe for other responses.)</u>	Built electric fences	3
	Improved livestock storage	4
	Relocation of animals	5
	Killing animals	6
	Guarding agricultural crop	7
	Other (specify) _____	96

90. Over the last 5 years, has the condition of the community forest improved, stayed the same or degraded?	Improved	1
	Stayed the same (skip to Q93)	2
	Degraded (skip to Q92)	3
91. What are the main reasons for the improvement? <u>(Do not read the options. Multiple answers possible.)</u> <u>(skip to Q93)</u>	Decreased harvesting of forest products due to changes in need	1
	Decreased harvesting of forest products due to increased restrictions	2
	Less grazing in the forest	3
	Plantation	4
	Improved management	5
	Other (specify) _____	96
92. What are the main reasons for the degradation? <u>(Do not read the options. Multiple answers possible.)</u>	Increased harvesting of forest products by members of the user group	1
	Increased harvesting of forest products by non-members	2
	Increased number of households using the forest	3
	Increased grazing in the forest	4
	Increased clearing of the forest for agriculture	5
	Drought	6
	Fire	7
	Decreased management	8
	No management	9
	Other (specify) _____	96

93. Has the density of trees on the forest land changed in the past 5 years?	Yes, it has increased	1
	Yes, it has decreased (skip to Q95)	2
	No, it has remained the same (skip to Q96)	3
94. What are the most important reasons for the increase in the density of trees? <u>(Do not read the options. Multiple answers are possible.)</u> <u>(Skip to Q96)</u>	Plantation over time	1
	Increased level of protection	2
	Reduced harvest	3
	Fire control	4
	Other (specify) _____	96a
	Other (specify) _____	96b

95. What are the most important reasons for the decrease in the density of trees? <u>(Do not read the options. Multiple answers are possible.)</u>	Increased harvest	1
	Illegal felling	2
	Fire	3
	Over grazing	4
	Pest outbreak	5
	Other (specify) _____	96

96. Has the density of shrubs and bushes on the forest land changed in the past 5 years?	Yes, it has increased	1
	Yes, it has decreased (skip to Q98)	2
	No, it has remained the same (skip to Q99)	3
97. What are the most important reasons for the increase in the density of shrubs and bushes? (Do not read the options. Multiple answers are possible.)	Lack of weeding	1
	Reduced harvest	2
	Decrease in canopy trees	3
	Reduced grazing	4
	Fire protection	5
	Other (specify) _____	96a
	Other (specify) _____	96b
	Other (specify) _____	96c

98. What are the most important reasons for the decrease in the density of shrubs and bushes? (Do not read the options. Multiple answers are possible.)	Regular thinning	1
	Increased harvest	2
	Increase in canopy cover	3
	Forest fire	4
	Grazing	5
	Other (Specify) _____	96a
	Other (Specify) _____	96b
	Other (Specify) _____	96c

99. Over the last 5 years, have the following increased, stayed the same or decreased?

	1.Increased	2.Stayed the same	3.Decreased	98.Don't know
Prevalence of invasive species				
Forest area				
The number of different types of plants				
The number of different types of animals/birds				

100. What are the top 3 problems that you think are a threat to the forest?

	14. Overharvesting of forest products	23. Sand/stone/gravel extraction
	15. Grazing	24. Pests
	16. Invasive Species	25. Clearing land
	17. Flood/Landslide	26. Drought
	18. Wild fire	96a.Other (specify)
	19. Poaching of animals (including wild birds)	96b. Other (specify)
	20. Poaching of wild plants	98. Don't know
	21. Encroachment	
	22. Infrastructure development	
	Most significant problem	
	Second most significant problem	
	Third most significant problem	

101. In the past 5 years, has the severity of these problems increased, stayed the same or decreased?

Problem selected in Q100		1.Increased	2.Stayed the same	3.Decreased	98.Don't know
1					
2					

3					
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102. Over the past 5 years, has water availability in the nearby ponds, rivers, streams, and wells increased, stayed the same or decreased?	Increased	1
	Stayed the same (skip to section D)	2
	Decreased (skip to Q104)	3
	Don't know (skip to section D)	98
103. What are the main reasons for the increase? (Do not read the options. Multiple answers possible.) (skip to Section D)	Reforestation	1
	Decreased demand from households	2
	Decreased demand from agriculture	3
	Decreased demand from industry	
	Other (specify)	96
	Don't know	98
104. If decreasing, what has been affected? (Select all that apply)	Drinking water	1
	Irrigation	2
	Cattle grazing	3
	Other (specify)	96
105. What are the main reasons for the decrease? (Do not read the options. Multiple answers possible.)	Decreased rainfall	1
	Deforestation	2
	Increased use by households	3
	Increased use by agriculture	4
	Increased use by industry	5
	Other (specify)	96
	Don't know	98

Section D: Hariyo Ban

Now I will ask about the Hariyo Ban II programme, which has been operating in this area since Asadh 2073. As part of Hariyo Ban II, World Wildlife Fund Nepal (WWF Nepal), Cooperative for Assistance and Relief Everywhere (CARE Nepal), Federation of Community Forestry Users Nepal (FECOFUN) and the National Trust for Nature Conservation (NTNC) have conducted training and have provided support for livelihood activities.

One type of livelihood training and support provided under the Hariyo Ban programme focusses on groups of people. Within a CFUG, a group of people receive training and/or support to enable them to start a new income-generating activity. This activity might be agricultural, such as cinnamon or cardamom production or may focus on livestock rearing, for example of goats, pigs and poultry. People might also receive additional training to help them run an enterprise, such as training in record keeping or business plans.

106. In the past 2 years, has anyone in this CFUG participated in any Hariyo Ban II program group-based livelihood activities? (since Asadh 2073)	Yes	1
	No (skip to Q112)	2
	Don't know (skip to Q112)	98
107. Which group-based livelihood activities have members of the CFUG been involved in? (Select all that apply)	Beekeeping	1
	Broomgrass cultivation	2
	Cardamom cultivation	3
	Cinnamon cultivation	4
	Chiraito cultivation	5
	Citrus fruit cultivation	6
	Coffee plantation	7
	Vegetable farming	8
	Ecotourism	9
	Cow farming	10
	Goat farming	11

	Pig farming	12
	Poultry farming	13
	Wool spinning	14
	Fish farming	15
	Sal leaf plate making	16
	Tea plantation	17
	Clay jewelry making	18
	Nature guide training	19
	Bel juice enterprise	20
	Sisnu powder enterprise	21
	Other (specify)	96
	Don't know	98
108. Have these group-based livelihood activities from Hariyo Ban II affected how participating households use the forest?	Yes	1
	No (skip to Q110)	2
	Don't know (skip to Q110)	98
109. In what ways has the use of the forest by participants in group-based livelihood activities from Hariyo Ban II changed? <u>(Do not read the options. Multiple answers possible.)</u>	Decreased quantity of fuelwood collected	1
	Increased quantity of fuelwood collected	2
	Decreased quantity of fodder collected	3
	Increased quantity of fodder collected	4
	Decreased number of trees for fodder on private land	5
	Increased number of trees for fodder on private land	6
	Decrease in the number of livestock grazed in the forest	7
	Increase in the number of livestock grazed in the forest	8
	Decrease in the quantity of wild animals hunted	9
	Increase in the quantity of wild animals hunted	10
	Other (specify)	96
110. Have CFUG members that did not receive training or support for this group-livelihood activity, also started the activity?	Yes	1
	No (skip to Q112)	2
	Don't know (skip to Q112)	98
111. Approximately how many households have started the activity/these activities?	Number	
	Don't know	98

I am now going to ask you about the first phase of the Hariyo Ban program which occurred between 2068 and 2073.

112. Did anyone in this CFUG participate in activities under the first phase of the Hariyo Ban program? (2068-2073).	Yes	1
	No (skip to Q115)	2
	Don't know (skip to Q115)	98
113. Did anyone in this CFUG receive training or support for livelihood activities under the first phase of Hariyo Ban? (2068-2073).	Yes	1
	No (skip to Q115)	2
	Don't know (skip to Q115)	98
114. What type of activities did members of this CFUG participate in? <u>(Select all that apply)</u>	Bee-keeping	1
	Broomgrass cultivation	2
	Cardamom cultivation	3
	Cinnamon cultivation	4
	Chiraito cultivation	5
	Coffee plantation	6
	Ecotourism	7
	Cow farming	8
	Goat farming	9
	Pig farming	10

	Poultry farming	11
	Wool spinning	12
	Sal leaf plate making	13
	Tea plantation	14
	Nature guide training	15
	Bel juice enterprise	16
	Sisnu powder enterprise	17
	Buffalo farming	18
	Other (specify)	96
	Don't know	98

115. Did this CFUG receive funding from a Hariyo Ban I revolving fund?	Yes	1
	No	2
	Don't know	98
116. Does this CFUG have a revolving fund provided by another organization, other than Hariyo Ban or the CFUG?	Yes (specify the organization name)	1
	No	2
	Don't know	98

Section E: Other Interventions

I am now going to ask you about the involvement of members of the CFUG in any other training or livelihood activities in the past 2 years, other than the livelihood interventions from the HBII programme. First, I would like to ask about any other livelihood activities that members of the user group have received. This is training and/or support for any activity that might lead to income generation, such as training in a specific skill or material or financial support to start a new enterprise.

117. In the past 2 years, did the CFUG provide any support for livelihood activities?	Yes	1
	No (skip to Q123)	2
	Don't know (skip to Q123)	98
118. What type of livelihood activity did the CFUG provide support for? (Select all that apply)	Bee-keeping	1
	Broomgrass cultivation	2
	Cardamom cultivation	3
	Cinnamon cultivation	4
	Chiraito cultivation	5
	Citrus fruit cultivation	6
	Coffee plantation	7
	Vegetable farming	8
	Ecotourism	9
	Cow farming	10
	Goat farming	11
	Pig farming	12
	Poultry farming	13
	Wool spinning	14
	Fish farming	15
	Tea plantation	16
	Nature guide training	17
	Non-agricultural business e.g. shop	18
	Skills training (e.g. cook, carpenter)	19
	Other (specify) _____	96

Activity (from Q118)	119. What did participants receive? (Select all that apply)	120. How many households participated? Number 98. Don't know	121. Was the activity targeted at certain groups? (e.g. by gender, wealth, poverty, caste)	122. Which groups were targeted for this activity? Groups targeted (specify)) _____ 98. Don't know
	1. Training 2. Financial support 3. Material support (e.g. equipment, livestock) 96. Other (specify) 98. Don't know		1. Yes 2. No (skip to next activity)	

I now want you to think about any other livelihood support that may have been provided to members of this CFUG in the past two years. This support might have been provided by an NGO, Community Learning Action Center or another organization.

123. In the past 2 years, did any members of this CFUG receive any support for any other livelihood activities from any other organizations, other than Hariyo Ban and the CFUG committee?	Yes	1
	No (skip to Q128)	2
	Don't know (skip to Q128)	98
124. What type of livelihood activity did other organizations provide support for? (Select all that apply)	Bee-keeping	1
	Broomgrass cultivation	2
	Cardamom cultivation	3
	Cinnamon cultivation	4
	Chiraito cultivation	5
	Citrus fruit cultivation	6
	Coffee plantation	7
	Vegetable farming	8
	Ecotourism	9
	Cow farming	10
	Goat farming	11
	Pig farming	12
	Poultry farming	13
	Wool spinning	14
	Fish farming	15
	Tea plantation	16
	Nature guide training	17
	Non-agricultural business e.g. shop	18
	Skills training (e.g. cook, carpenter)	19
	Other (specify) _____	96a
	Other (specify) _____	96b
	Other (specify) _____	96c

Activity (from Q124)	125. What did participants receive? (Select all that apply) 1. Training 2. Financial support 3. Material support (e.g. equipment, livestock) 96. Other (specify) 98. Don't know	126. Who provided this support? (Select all that apply) 1. NGO (specify) 2. Community Learning Action Centre 3. Other (specify)	127. How many households participated? Number 97. Don't know

If Q117 and/or Q122 are answered affirmatively go to Q128, else go to Q130.

128. Have the livelihood activities from the CFUG and/or another organization affected how participating households use the forest?	Yes	1
	No (skip to Q130)	2
	Don't know (skip to Q130)	98
129. In what ways has forest use changed? (Do not read the options. Multiple answers possible.)	Decreased quantity of fuelwood collected	1
	Increased quantity of fuelwood collected	2
	Decreased quantity of fodder collected	3
	Increased quantity of fodder collected	4
	Increased number of trees for fodder on private land	5
	Decrease in the number of livestock grazed in the forest	6
	Increase in the number of livestock grazed in the forest	7
	Decrease in the quantity of wild animals hunted	8
	Other (specify)	96

130. Is the CFUG involved in any other scheme that might affect how households use the forest?	Yes	1
	No (skip to Q132)	2
131. If yes, what scheme is this CFUG involved with?		

I am now going to ask you about the training CFUG members have received in the past 2 years. This includes any training, whether it was done by Hariyo-Ban, the CFUG, or any other organization.

132. In the past 2 years, did members of this CFUG receive training on the following topics? *Probe for other topics. (If no is selected for all, skip to Q134)*

	1.Yes	2.No
Climate change adaptation		
Dealing with animals (e.g., crop-raiding)		
Poaching		
Grazing		
Forest product management		
Forest management		
Water management		
Soil management		
Capacity building for women		
Domestic violence		
Social inclusion		
Other topic (specify)		
Other topic (specify)		

Other topic (specify)		
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Training topic (Yes selected in Q132)	133. Who provided this training? (Select all that apply) 1. Hariyo Ban 2. CFUG 96 Other (specify) _____ 98. Don't know

Section F: Institutions

134. Is there a Community Learning Action Centre in this CFUG?	Yes	1
	No	2
	Don't know	98
135. Is there an anti-poaching unit in this CFUG?	Yes	1
	No	2
	Don't know	98

136. Do the people in this CFUG interact with the following conservation authorities? **(Probe for other responses)**

	1.Yes	2.No, only the CFUG committee interacts with these authorities	3. No, no-one in this CFUG interacts with these authorities
Hariyo Ban			
District/Sector Forest Office			
National Park or Protected Area authority			
Other authority (e.g., NGO - specify)			
Other authority (e.g., NGO - specify)			
Other authority (e.g., NGO - specify)			

Authority (Yes selected in Q136)	137. How do you rate the relationship between this authority and members of the user group? 1. Good (skip to next authority) 2. Fair 3. Poor 98. Don't know (skip to next authority)	138. Why do you think this? Do not read the options. Select all that apply. 1. The authority does not listen to the views of local people. 2. The authority does not act to meet people's needs. 3. The actions of the authority are contrary to people's needs. 96. Other (specify)

We have now reached the end of our survey. Many thanks for taking the time to answer our questions. Do you have any questions?

Section G: Conversion Units

	Mana to kg	Pathi to kg	Muri to kg	Doko to kg	Bhari to kg	Trailer/ Trolley to kg	Kosa
Paddy				-	-	-	-
Maize				-	-	-	-
Millet				-	-	-	-
Wheat				-	-	-	-
Barley				-	-	-	-
Buckwheat				-	-	-	-
Oil crops				-	-	-	-
Potato				-	-	-	-
Pulses				-	-	-	-
Vegetables	-	-	-			-	-
Citrus fruit	-	-	-			-	-
Non-citrus fruit	-	-	-			-	-
Trailer/Trolley	-	-	-	-	-		-
Ghari/Kosa	-	-	-	-	-	-	

	Mana to litre	Mana to kg	Bhari to kg	Doko to kg	Bora to kg
Milk		-	-	-	-
Yoghurt			-	-	-
Ghee			-	-	-
Manure	-	-			
Honey			-	-	-

	Bhari to kg	Doko to kg	Bora to kg
Fuelwood			
Tree fodder			
Cut-grass fodder			
Leaf-litter			

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