

Welfare and Forests

Lessons from Assessments of the FIP Co-funded Projects
in Lao PDR and Mexico

March 2021



This publication was commissioned by the Climate Investment Funds (CIF), however, the views expressed do not necessarily represent those of the CIF or the World Bank. While reasonable efforts have been made to ensure that the contents of this publication are factually correct, the CIF and the World Bank do not take responsibility for the accuracy or completeness of its contents and shall not be liable for loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this publication.

The findings, interpretations, and conclusions expressed in these chapters are entirely those of the authors. They do not necessarily represent the views of the CIF, International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

© 2021 International Bank for Reconstruction and Development / The World Bank

1818 H Street NW
Washington DC 20433

Telephone: 202-473-1000
Internet: www.worldbank.org

The material in this work is subject to copyright. Because the World Bank encourages dissemination of its knowledge, this work may be reproduced, in whole or in part, for noncommercial purposes as long as proper attribution to this work is given.

Cover Photos: (left) Photo by Suriya99/Shutterstock (right) Photo by Gaston Piccinetti/Shutterstock

Welfare and Forests

Lessons from Assessments of the FIP Co-funded Projects
in Lao PDR and Mexico

March 2021





Contents

Acknowledgments	ix
Acronyms	xi
Executive Summary	1
Introduction	7
Literature Review on Links Between Forests and Welfare	13
Description of the Two Forestry Projects	17
Research Designs	23
Contributions of FIP-(co)funded Projects to Household and Community Welfare	21
Discussion	26
Conclusion	31
References	32
Appendix A. An Assessment of the FIP Contribution to the SUFORD-SU Project in Lao PDR	35
Annex A1: VLDG Village Profiles	79
Appendix B. An Assessment of the FIP Contribution to the PBCC in Mexico	95
Annex B1. Variables in the Quantitative Analysis	123
Annex B2. Received Support in PEPY in <i>Ejidros/Comunidades</i>	124
Annex B3. Instruments Used in the Qualitative Fieldwork	126
Figures	
Figure A.1 Timeline of SUFORD Projects in Lao PDR	39
Figure A.2 Main VLDG Activities Across All Provinces	41
Figure A.3 Main SUFORD-SU Activities by Gender	42
Figure A.4 Distribution of Farm Activities by Province (%)	54
Figure B.1 Multidimensional Poverty in Municipalities of Selected Localities by State, 2010–2015	108
Tables	
Table 1 Sources of Income and Share to Household Total Income	22
Table A.1 SUFORD-SU Villages in Protected Forest Areas (%)	40
Table A.2 Main VLDG Activities by Province	43

Table A.3 Average Amount of Approved Grants by Main VLDG Activity	44
Table A.4 Distribution of the Surveyed Population in SUFORD-SU, 2016	46
Table A.5 Distribution of the Interviewed Households and FGDs of the Qualitative Study, 2019	48
Table A.6 Welfare Quintiles in SUFORD-SU Provinces, 2016 (% of Households)	50
Table A.7 Overall Characteristics of Surveyed Population in SUFORD-SU, 2016	52
Table A.8 Distribution of Forest and Farm Activities for All Households (%)	53
Table A.9 Sources of Income and Share to Household Total Income	55
Table A.10 Participation in Forest and Non-forest-Related Activities by Welfare Status (% of Households)	56
Table A.11 Combination of Livelihood Activities by Welfare Status (% of Households)	57
Table A.12 Main NTFPs for Home Consumption and for Sale (% of Households)	58
Table A.13 Total Number of NTFPs Collected by Welfare Quintiles	59
Table A.14 Participation and Nonparticipation in VLDG Interventions by Welfare Status (% of Households)	60
Table A.15 Characteristics of Participating/Nonparticipating Households in VLDG Interventions	61
Table A.16 Sources of Income for Participating/Nonparticipating Households	62
Table A.17 Type of VLDG Activities Implemented by Beneficiaries (%)	63
Table A.18 Perceptions on Welfare Impacts of VLDGs	66
Table A1.1 NTFPs Collected by the Surveyed Population, 2016	79
Table A1.2 Share of Households Extracting Main Types of NTFPs by Province (%)	80
Table A1.3 Restoration Activities in SUFORD-Supported Villages	80
Table A1.4 Main Agricultural Crops and Income-Generating Activities in SUFORD-Supported Villages	81
Table B.1 Techniques and Participants for Qualitative Analysis in the Yucatán Peninsula	104
Table B.2 Localities, Average Number of Work Programs, and Population by State	107
Table B.3 Description of Household Characteristics in Sampled Localities	107
Table B.4 Locality Population (Total and <i>Ejidatarios</i>) and Area (Total and Conservation)	109
Table B.5 Household Income Sources for the Communities Analyzed	110
Table B.6 Synthesis of Factors Analyzed	111
Table B.7 Concepts Associated by Participants to Welfare	117
Table B1.1 Variables Included in the Consulted CONAFOR Data Sets	123
Table B3.1 Main Questions for the Focus Group Discussions	126
Table B3.2 Main Questions for the Life Histories	127
Table B3.3 Main Questions for the Semi-structured Interviews	128

Boxes

Box A.1 The Revolving Fund in Villages Receiving the VLDG	44
Box A.2 General Description of the Surveyed Villages	49
Box A.3 Measuring Welfare Using an Asset Index	51
Box A.4 Why Revolving Funds Instead of Grants?	64
Box B.1 <i>Ejidors and Comunidades</i> in Mexico	97

Maps

Map A.1 Poverty Headcounts (District Level), 2012/13	37
Map A.2 Forest Cover Loss (District Level), 2000–2012	37
Map A.3 Restoration Sites Near Kangpea Village, Khammouane District	45
Map B.1 Localities in the Program by Starting Year in Yucatán Peninsula	100
Map B.2 Income Poverty Reduction for Localities in PEPY	101
Map B.3 Selected Highlighted Municipalities in the Yucatán Peninsula	102
Map B.4 Selected Localities for Qualitative Study	103

Photographs

Photo A.1 “Sinh,” a Traditional Garment in a Loom Provided by VLDG	68
Photo A.2 Cardamom Plant in Pongwing, Oudomxay	69
Photo A.3 Rubber Plantation, Oudomxay	70
Photo A1.1 Traditional Arak House	83
Photo A1.2 The Tai Deng Believe in Traditional/Ethnic Religious Practices	85
Photo A1.3 Drying Yarn and Paddy (left); Traditional Tai Deng House (right)	85
Photo A1.4 Drying Coffee, the Main Cash Crop (left); VLDG-Supported Small Livestock (right)	86
Photo A1.5 Water Marks Left by Floodwater	87
Photo A1.6 Bee Orchid, an Important NTFP (left); Drying Fish (right)	88
Photo A1.7 Signage in a Production Forest Area	89
Photo A1.8 Dry Rattan in the Local Market (left); Resin and Other NTFPs (right), Oudomxay	90
Photo A1.9 Cardamom Plants, Oudomxay	91
Photo A1.10 Greenhouse Supported by SUFORD-SU (left); Cattle, an Important Source of Income, Oudomxay	92



Photo by Stephen Reich/Shutterstock

Acknowledgments

The authors would like to thank first all the individuals who took part in the interviews and focus group discussions in Lao PDR and in Mexico for their time, effort, and hospitality provided during the work.

In Lao PDR, the authors thank Bounpone Sengthong (Deputy Director General DOF, government of Lao), Lattana Thammavongsa (Deputy Director Production Division DOF), Esa Puustjärvi (Chief Technical Adviser, SUFORD-SU), Bouaphet Philakhet (National Livelihood Adviser, SUFORD-SU), and all the provincial, district, and village officials for their help during the fieldwork. Importantly, we acknowledge the support of Stephen Danyo (Senior Environmental Specialist, Environment GP), Manoly Sisavanh (Natural Resource Management Specialist), and Anita Soukhaseum (Program Assistant) in the World Bank country office for their support during the mission. Special thanks go to Vilayphone Phongchanta and Sonexay Sounantha, who performed the interviews in Lao PDR in March 2019 and later transcribed the qualitative data.

In Mexico, the team thanks the National Forestry Commission (CONAFOR) for providing data, insights into the forestry projects, and comments on ideas and drafts, with special thanks going to Placido Salomón Álvarez López, Francisco Javier Arrazattee García,

Luciana Ludlow Paz, Rafael Luna, Efrain Maheda, Constanza Mier y Teran Ruesga, Guillermo Muñoz Galindo, and Tania Panti for comments on the field guides and support in the implementation of the fieldwork.

Valuable inputs and support throughout the study were received from Katharina Siegmann (Environmental Specialist, Environment GP) and Graciela Reyes (Consultant, Environment GP). The team wants to thank SIMO, who performed the interviews in Mexico in May 2019 and later transcribed the qualitative data.

This study was commissioned by the Climate Investment Funds (CIF) Evaluation and Learning Initiative. Emilie Perge (Senior Economist, Poverty & Equity GP) and Manali Baruah (Consultant, Environment GP) wrote the main study and along with Anolay Vongsouthi (Consultant, Environment GP) prepared the Lao PDR case study summarized in Appendix A. Emilie Perge, Adriana Flores (Consultant, Poverty & Equity GP), Alejandro Lopez-Feldman (Consultant, Poverty & Equity GP), David Campoverde (Consultant, Poverty & Equity GP), and Jia Jun Lee (Consultant, Environment GP) all contributed to the Mexico case study summarized in Appendix B. Garo Batmanian (Lead Environment Specialist, Environment GP) provided guidance on the work. The authors of this study would like to thank Ines Angulo

(Forestry Specialist, Climate Investment Funds), and Eirini Pitta (Consultant, Climate Investment Funds) of the Climate Investment Funds (CIF) Administrative Unit for their support throughout the preparation of this study and for reviewing early drafts of the study. The team wants to thank Mark Austin (Program Leader, SEADR) and Sofia Ahlroth (Senior Economist, SENGL) for their valuable comments and to all the participants of the decision meeting during which the discussion helped the team improve the final report.

This publication was commissioned by CIF; however, the views expressed do not necessarily represent those of CIF or the World Bank. While reasonable efforts have been made to ensure that the contents of this publication are factually correct, the CIF and the World Bank do not take responsibility for the accuracy or completeness of its contents and shall not be liable for loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this publication.

Acronyms

B40	bottom 40 percent
CFA	Conservation Forest Area
CIF	Climate Investment Funds
CONAFOR	National Forestry Commission (Comisión Nacional Forestal)
CONEVAL	National Council of Social Development Policies Evaluation (Consejo Nacional de la Evaluación de la Política de Desarrollo Social)
ENBC	National questionnaire applied to CONAFOR beneficiaries
FGD	focus group discussion
FIP	Forest Investment Program
FOMACOP	Forest Management and Conservation Program
IFC	International Finance Corporation
INEGI	Mexican National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía)
Lao PDR	Lao People’s Democratic Republic
LENS	Lao Environment and Social
NTFP	non-timber forest product
PBCC	Forest and Climate Change Project (Proyecto Bosques y Cambio Climático)
PDO	project development objective
PEPY	Special Program for the Yucatán Peninsula (Programa Especial Península de Yucatán)
PES	payments for ecosystem services
PFA	production forest area
PIU	project implementation unit
PSFM	participatory sustainable forest management
REDD	Reducing emissions from deforestation, forest degradation and land use change
SFM	sustainable forest management
SSI	semi-structured interview
SUFORD	Sustainable Forestry for Rural Development
SUFORD-AF	Sustainable Forestry for Rural Development—Additional Finance
SUFORD-SU	Sustainable Forestry for Rural Development—Scaling Up
T60	top 60 percent
VLC	Village Livelihood Committee
VLDG	village livelihood development grant



Photo by Laszlo Mates/iStock

Executive Summary

“Our living is better, and we have money to spend daily. After receiving that fund, we could raise chicken and sell them.”

The Climate Investment Funds’ Forest Investment Program (FIP) aims to achieve the triple win of being good for forests, for development, and for climate, through the provision of funding to developing countries for readiness reforms and public and private investments. The objective of this report is to explain how forestry projects can contribute to improve household welfare using the findings from two case studies: the Special Program for the Yucatán Peninsula (Programa Especial Península de Yucatán, or PEPY) of the Forest and Climate Change Project (Proyecto Bosques y Cambio Climático, or PBCC) of the National Forestry Commission (Consejo Nacional de la Evaluación de la Política de Desarrollo Social, or CONAFOR) in Mexico,¹ and the Sustainable Forestry for Rural Development—Scaling Up Project (SUFORD-SU) in the Lao People’s Democratic Republic.²

The study uses a mixed-method approach to analyze changes to try to overcome the limitations from the lack of quantitative data at multiple periods. Quantitative data are used to the extent possible to describe the communities and households, but primary qualitative data was collected to provide greater detail on the processes and experiences the projects’ households have known, and their perceptions of welfare changes that could be related to the projects. The qualitative data do not intend to be representative of the whole group of beneficiaries nor to test for causality; rather, they allow one to address questions of changes through open-ended questions collected in focus group discussions, semi-structured interviews, and life stories.

Overall, while the project beneficiaries were different (households for SUFORD-SU and communities for PEPY), the projects shared similar objectives to support welfare (seen through employment, income, natural capital, empowerment) through new livelihood activities and sustainable forest management, which are here analyzed at the household level.

Forestry projects can achieve welfare improvements through multiple pathways.

The PRIME framework identifies five pathways:

1 P123760.
2 P130222.

(i) improving productivity; (ii) strengthening rights over forests and land; (iii) investing in institutions, infrastructure, and public services; (iv) increasing access to markets; and (v) developing forest ecosystem services for poverty reduction (Shyamsundar et al. 2018).

The analysis of the findings identifies that PEPY and SUFORD-SU **have contributed to household welfare through two main pathways:**

- **Forest ecosystem services for poverty reduction:**
 - **The provision of inputs has helped households diversify their activities to reduce pressures on forests while increasing cash benefits.** The projects have brought new livelihood activities to households, allowing them to obtain additional income and improve their living conditions. In addition, the projects created temporary employment in forest care, which further increases income-generating opportunities whose income could be reinvested in household and community activities.
 - **These livelihood activities have helped households increase nonmonetary benefits that are often fulfilled using forest resources.** The projects have enhanced beneficiaries' ability to access food, medicines, and water; to send their children to school; and to cope with shocks. The additional liquidity stream also has prevented some from resorting to slash-and-burn agriculture to get more income.
 - **The improved management and quality of forests has improved household welfare.** In the Mexico case study, forest care has led to a perceived reduction in the expansion of the agricultural frontier and to the implementation of traditional practices to

prevent forest degradation thanks to the adoption of the payments for ecosystem services (PES) scheme, hence providing these services to households. In the Lao PDR case study, forest care was mainly done through restoration activities, boundary demarcation, and creation of forest management plans.

- **The projects have improved welfare through enhanced community governance and provision of public goods and services.**

The SUFORD-SU project led to the creation of a revolving fund that has required the establishment of rules and regulations decided at the village level. PEPY has contributed to strengthening the regularity of and improving participation in the community assemblies. Stronger governance rules and community cohesion has led to an increase in the supply of public goods and services such as water catchment systems, ecotourism centers, and road infrastructure.

While there has been improvement through the aforementioned two pathways, the two case studies also highlight that additional pathways such as developing market access, improving labor productivity, and investing in institutions to change gender norms could have helped the projects improve welfare sustainably.

- **The underdevelopment of market access and the lack of technical assistance have limited households' ability to further increase their monetary benefits from the new livelihood activities.** The projects have provided limited access to markets where the new products could have been traded. In addition, the beneficiaries reported they would have liked more technical assistance to enhance their productivity and to create opportunities to reinvest.
- **A lack of understanding of the link between**



livelihood activities and forest care and management has hindered the halt of forest degradation. While the link between livelihood strategies and forest uses is quite clear to the project beneficiaries, households had a limited understanding on how their new income-generating activities could impact forest resources. In some cases, households' reliance on forest-degrading activities would not decrease as a result of newly adopted livelihood activities. This absence of connection between the two aspects of the programs increases the risk that the conservation of forest resources stops once payments stop.

- **Investing in institution has not changed gender norms.** In both Mexico and Lao PDR, the participation of women in public discussions and meetings increased, although the qualitative analysis has revealed that the choice of income-generating activities has often been guided by traditional roles. Unchanged gender norms prevent women

from adopting more profitable activities and being more empowered.

While this study shows the key role of forestry projects to household welfare, three key entry points could ameliorate the design and implementation of future forestry projects:

1. **Encourage the use of PRIME to design projects and harmonize the understanding of core concepts such as welfare and livelihoods among project implementers and project beneficiaries.** The projects have been successful in actioning some of the pathways, but the projects could have had more sustainable impacts if they had worked through the productivity and market access pathways. At the same time, since welfare can encompass many concepts, project result chains would benefit from clarifying which concepts of welfare a project intends to improve and linking them to the pathways for improvements.
2. **Develop strong instruments to monitor the**

impacts of the project and ensure timely data collection throughout the project cycle.

Data collection before the implementation of the project, at midterm, and at the project's end would help enhance the understanding of the results, and this can be made more accurate and trustworthy if data collection instruments (questionnaire, sampling design, implementation) follow best practices. Survey instruments (questionnaire and manuals) would benefit from using nationally harmonized questions to ensure comparability with nationally representative data. Using methodology such as the Forest-SWIFT would allow project teams to predict poverty using a small set of questions easily adaptable within a short monitoring and evaluation survey.³ In addition, designing representative samples of beneficiaries with the construction of sampling weights would allow one to make inferences for the overall population of beneficiaries.

3. **Approach rural livelihoods through a complex and multidimensional lens with a clear understanding of the social norms, intra- and inter-household dynamics, and locally defined needs and aspirations.**

Forestry projects would benefit from uncovering behavioral and structural barriers that prevent beneficiaries from reducing pressures on forests without project interventions and from nudging participants to adopt new activities while exploring the importance of social norms in these changes. Projects could dedicate

more resources to provide adequate trainings of project beneficiaries and to increase market access.

For both case studies, the analysis had to overcome some limitations:

- **Quantitative data.** The data sets are not representative of all project beneficiaries, nor are they comparable to the ones collected through nationally represented surveys. The survey instruments would have benefitted from using harmonized questions that have already been tested and can provide stronger evidence on the outcomes of interest.
- **Qualitative data.** The short period of fieldwork per site visited—a single visit ranging 1–4 days—did not leave much time to build trust with respondents or to uncover community dynamics. In addition, language barriers could have contributed to misinterpretations and biases: In both Lao PDR and Mexico, most of the respondents were from ethno-linguistic groups with limited understanding of the main administrative languages (Lao or Spanish).
- **Inability to measure attribution of perceived welfare changes to the projects.** Multiple interventions have been implemented over time at the same location, which makes it difficult to attribute welfare changes to the studied project; other interventions in the area may be contributing to the welfare changes.

³ For information on the Forest-SWIFT, see <https://www.profor.info/knowledge/forest-swift-methodology-high-frequency-forest-poverty-data-collection>.





Photo by Anton Ivanov/iStock

Introduction

Forests provide subsistence goods and services to 1.3 billion people, most of them living below the extreme poverty line.

Forests can contribute to poverty reduction if the benefits from sustainable management of timber and non-timber forest products and the provision of forest ecosystem services can be reaped by the poor. Forest resources—products and the land—contribute to households' livelihoods. Forest resources provide numerous goods that allow households to fulfill their consumption needs and to build their shelter (Byron and Arnold 1999; Vira, Wildburger, and Mansourian 2015). Using Poverty Environment Network (PEN) comparable household survey data on income and consumption products (Wunder, Angelsen, and Belcher 2014), Angelsen et al. (2014) estimated that around 20 percent of household income comes from forests through extraction, processing forest products, wage activities, and other income, with households in the lowest income quintiles having a higher share of forest income.

The Climate Investment Funds (CIF) Forest Investment Program (FIP) aims to achieve the triple win of being good for forests, for development, and for climate, through the provision of funding to developing countries

for readiness reforms and public and private investments, identified through national REDD+ readiness or equivalent strategies.⁴ Per the 2019 FIP Operations and Results Report, as of December 2018, 1,268,512 people had livelihood co-benefits in eight countries. However, there is little evidence that shows in detail how forestry projects funded by FIP have improved livelihoods.

To explore the contribution of FIP investments to welfare, the team selected two projects, the Forest and Climate Change' (Proyecto Bosques y Cambio Climático, or PBCC) in Mexico and the Sustainable Forestry for Rural Development—Scaling Up (SUFORD-SU) in the Lao People's Democratic Republic.

The projects had to meet four criteria: (1) the project development objectives (PDOs) and related indicators are closely related to welfare; (2) the project focuses on sustainable forest management to improve welfare; (3) the project is closed, which allows for ex post assessment; and (4) data from the project and additional sources are available.

The objective of this report is to explain through which pathways forestry projects can contribute to welfare. Each case study explored (a) the importance of forest products

⁴ The United Nations Framework Convention on Climate Change's Cancun Agreement explicitly named five REDD+ activities: (1) reduction of emissions from deforestation; (2) reduction of emissions from forest degradation; (3) conservation of forest carbon stocks; (4) sustainable management of forests; and (5) enhancement of forest carbon stocks. <https://thereddesk.org/markets-standards/design-features/scope>



to households' livelihoods; (b) households' and communities' participation in the project; and (c) channels of welfare changes for households and communities. Depending on the project design, welfare was analyzed at the community and household levels, looking at an assets index, access to services, and food security, as well as livelihood diversification, human capital, governance, and natural capital (forest quality). The dimensions linked to governance and women participation were also investigated. These case studies aimed to gain a better understanding of local participation and of the ways through which these projects have entered the communities. Identification of the pathways at play was done using the PRIME framework, which summarizes the role of forestry projects on welfare through five pathways: (i) improving productivity; (ii) strengthening rights over forests and land; (iii) doing investments in institutions, infrastructure, and public services; (iv) increasing access to markets; and (v) developing forest ecosystem services for poverty reduction (Shyamsundar et al. 2018).

The analysis relied on mixed methods using quantitative and qualitative data to answer the main research questions. In the Lao case study, quantitative data collected at the household level were available for a single period and had some information on households' participation in forest-related activities and in the SUFORD-SU project. These data did not allow the exploration of changes over time, but they were analyzed to describe households in the villages covered by the project. In the Mexico case study, the PBCC project was implemented at the *ejido* or

comunidad level,⁵ so the quantitative data came from the Encuesta Nacional de Beneficiarios (ENBC), collected by the National Forestry Commission (Comisión Nacional Forestal, or CONAFOR), and the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, or INEGI) for this level, while questions were asked to a single respondent about her own welfare changes. The data provide limited information about community and household welfare changes; in this case study, the quantitative data were used to select areas for the qualitative fieldwork. In both case studies, qualitative methods were used to overcome the limitations in the quantitative data and to highlight through which channels these projects could have contributed to household welfare. Qualitative methods provide granular information on how projects have been implemented, on perceptions and experiences of respondents in these projects, and on how and why these projects could have improved household welfare. However, qualitative methods are not meant to bring representative evidence nor to provide any quantitative findings. In addition, the two case studies cannot prove any attribution of these changes to the projects; they can only describe the processes and associations between these projects and household welfare.

The analysis of the case studies highlights that the projects have contributed to welfare through the development of ecosystem services for poverty reduction by the diversification of livelihood strategies and better forest care and management, and **through investments in local institutions** and public goods. At the same time, the analysis reveals that if projects had further developed market access and labor productivity as well as had clarified the link between livelihood strategies and forest conservation and contributed to changing gender roles, they could have fostered the sustainability of these impacts.

Section 2 of this report details the research context in which the case studies took place. Section 3 explains the research methods used, shedding light on their limitations. Section 4 discusses how the projects have contributed to household welfare, emphasizing the projects' strengths and weaknesses. Section 5 provides some key entry points for future forestry project design and implementation while acknowledging the limitations of the analysis. The detailed case studies can be found in Appendix A (Lao PDR) and Appendix B (Mexico).

5 In Mexico, *comunidades* (or "agrarian communities") are longstanding rural population centers that have been given formal ownership of their traditional or customary lands and are theoretically entirely composed of indigenous peoples. *Ejido* refers to a portion of land that has been titled to a rural population nucleus that was formed more recently or relocated from another area—most of them are non-indigenous *campesinos*. In many cases, rural inhabitants have both community lands and *ejido* lands, usually distinguishing individual and common pieces of land.

Literature Review on Links Between Forests and Welfare

Research has demonstrated that forest and poverty are highly correlated (Sunderlin et al. 2008), with households living within and near forests depending on forest products, services, and land for their livelihoods. The analysis of forest and poverty has an extensive literature composed of primary data analysis, such as the ones done with the PEN data at CIFOR (Angelsen et al. 2014; Wunder, Angelsen, and Belcher 2014) that confirm that across all their sites households receive more than 20 percent of their income from forest-related activities. A recent compilation of literature reports that five broad pathways can help launch the forest-dependent poor onto a sustainable path toward prosperity: (a) improving productivity of forest land and labor; (b) strengthening community, household, and women’s rights over forests and land; (c) doing regional complementary investments in institutions, infrastructure, and public services that facilitate forest resource use; (d) increasing access to markets for timber or non-timber forest products; and (e) developing mechanisms that enhance and enable the flow of benefits from forest ecosystem services to the poor (Shyamsundar et al. 2018). These five pathways—labeled the PRIME framework—identify economic development strategies with synergies reinforcing each other to reach the long-term desired outcomes of poverty reduction, and of healthy and productive forests (Shyamsundar et al. 2018; Cheng et al. 2019). The PRIME framework looks at welfare through

monetary and nonmonetary lenses such as income and consumption; employment; access to physical, natural, human, social, and financial capital; and empowerment. Ferraro and colleagues have also analyzed the effects of conserving natural resources on poverty using strong empirical methods such as regression discontinuities and matching (Andam et al. 2010; Ferraro and Hanauer 2014). These studies confirm that conserving natural resources can reduce poverty through some mechanisms (such as protected areas in Costa Rica and Thailand, tourism in Costa Rica), but not others (infrastructure).

While these studies are very instructive, they rarely reduce the evidence base supporting the use of investments in forest in the design national development plans. Strong and more systematic evidence on how investing in forests can help households to improve are missing (Bowler et al. 2012). The remoteness of forests prevents national household surveys from going there, or when such a survey is undertaken in these areas, it is not representative of the forest population and no inferences can be made to formulate tailored responses to forest-related issues. Consequently, there is a clear need to prove how successful forest investments such as the ones cofinanced by the Forest Investment Program can be to contribute to welfare improvements to promote the use of these programs as part of national development strategies.



Photo by Stellalevi/iStock



Description of the Two FIP-(co)funded Projects

The choice of the two projects was guided by four criteria: (a) the project development objectives and related indicators are closely related to welfare; (b) the projects focus on sustainable forest management to improve welfare; (c) the project is closed, allowing for ex post assessment; and (d) data from the project and additional sources are available. Detailed descriptions of the case studies can be found in the appendixes.

SUFORD-SU Project, Lao PDR

The Forest Investment Program (FIP) provided funding to the Sustainable Forestry for Rural Development—Scaling Up (SUFORD-SU—P130222) in Lao PDR, which builds on three previous projects: the pilot Forest Management and Conservation (FOMACOP, 1995–1999) program, Sustainable Forestry for Rural Development (SUFORD, 2004–2008), and SUFORD—Additional Financing (SUFORD-AF, 2009–2012). The SUFORD-SU objective is to execute REDD+ projects through participatory sustainable forest management (PSFM) in production forest areas (PFAs) and to pilot forest landscape management in four provinces: Bokeo, Luangnamtha, Oudomxay, and Xaiyabouly.

Effective in 2014, this project had planned activities in 41 PFAs in 12 provinces: 16 existing

PFAs and 25 new PFAs in the four northern provinces. Implemented by the Department of Forestry, under the Ministry of Agriculture and Forestry, the project has four components. The first component, “Strengthening and expanding PSFM in PFAs,” received the largest FIP contribution (US\$8.15 million out of US\$12.83 million). This component financed activities related to the drafting and implementation of forest management plans, and to the implementation of village livelihood development grant (VLDG) interventions. The second component, “Piloting forest landscape management,” consisted mostly of financing employment at the village level. On average, new participating villages received US\$8,000, and the villages redistributed the money to beneficiaries via a revolving fund. This activity targeted degraded areas to improve forest conditions and villagers would be temporarily hired to prune trees, clear forest lands, and so on. At the time of the study, there was no data on villagers employed in these forest conservation activities.

Most grants were allocated to domesticated non-timber forest products (NTFPs), cassava production, and livestock raising, but crafts and furniture making activities accounted for a greater share of the grant funds. At the time of the study, the VLDGs have been

disbursed to all 666 targeted villages, covering approximately 21,344 recipient households and 117,400 beneficiaries.⁶ Among all the offered activities (coffee, greenhouse, craft, rattan, insect raising, growing cotton, peanuts, craft furniture, and galangal and ginger, to name a few), cardamom and Job's tear were the two main activities selected by the communities.⁷ These two products, both important in traditional medicines, are largely exported to China (Douangsavanh and Bouahom 2006; Choocharoen et al. 2013). Numerous beneficiaries in central and southern villages have requested grants for cassava and for raising livestock; cassava can either be locally sold or exported, to be used by industries to produce starch, sweeteners, and ethanol (Aye and Howeler 2008; Phengsavanh et al. 2010). However, the largest amount spent went to craft and furniture making.⁸ Coffee, fodder, and bamboo VLDG activities also received large amounts of money, given that these activities require the purchase of inputs (fertilizer, barbwire, other materials).

Besides the VLDG, participation in forest management activities as part of the forest restoration work provided income through daily wages (LAK 50,000, or US\$6 a day) once or twice a year. Each village received a one-time payment of US\$2,000 for forest restoration activity. Based on their interest, ability, availability, and their need for cash income, adults in the villages decided to participate in the work, while village authorities rotated workers so that the benefits were shared among villagers.

PBCC, Yucatán Peninsula, Mexico

The Forest and Climate Change Project (PBCC—P123760), with funding from the Mexican government, the International Bank for Reconstruction and Development, and FIP-financed programmatic efforts, addressed issues of deforestation and forest degradation while considering key social and environmental safeguards. Approved in 2012 and closed in February 2018, the project was part of a national strategy to mitigate the effects of climate change. The project worked with rural communities (*ejidos* and indigenous *comunidades*)⁹ throughout the country. The project development objective is to support rural communities to sustainably manage their forests, build social organization, and generate additional income from forest products and services.

Implemented by the National Forestry Commission (CONAFOR), the project had three components, but FIP's largest contribution went to activities linked to the third component, "Innovation for REDD+ in early action areas" (US\$30.34 million out of US\$42 million). Resources from FIP were mainly disbursed in the *Special Program for the Yucatán Peninsula (PEPY)* and in the *Special Program for Coastal Watersheds in Jalisco*.¹⁰ The project encouraged stakeholders to align agricultural and forest policies and promoted the design and implementation of sustainable landscape management models by communities. The project also financed technical assistance

6 Implementation Status and Results Report, June 2019, <http://documents.worldbank.org/curated/en/733891561047416341/pdf/Dislosable-Version-of-the-ISR-LA-Scaling-Up-Participatory-Sustainable-Forest-Management-P130222-Sequence-No-12.pdf>.

7 Cardamom is a domesticated NTFP that is typically allowed to regenerate in secondary forests or fallow lands in hilly areas by pruning trees and other climbers, thus making it the dominant ground cover. The stands last for 20–40 years. It is usually harvested in October, providing farmers with cash to buy rice. Cardamom is one of the biggest agricultural export from Lao PDR. It is used in Chinese medicine. Job's tear is a type of millet used for food and in traditional medicine.

8 See tables and figures in Appendix A.

9 In the report, we refer to communities when talking about both *ejidos* and *comunidades*.

10 While the Jalisco program was part of the PBCC, it was omitted from the case study owing to time and budget restrictions, security concerns, and a desire to maintain a relatively homogeneous social and environmental context.



to a series of local development/technical agents to encourage and coordinate REDD+ activities with communities. Communities voluntarily answered the call from CONAFOR and submitted their proposals with the help of a technical adviser.

The registry of activities for PBCC in the 369 communities in the states of Campeche, Quintana Roo, and Yucatán in PEPY reveals that the main grant component went to support early-action areas and community forestry. Payments for ecosystem services were important in communities in Campeche.¹¹ The communities also received grants to support their efforts through technical assistance, reforestation projects, value chains, forest

development, and regional organization. Local procedures inside each participating community played a role in deciding the details of the proposed grant. In some communities, the use of the funding or its internal distribution was decided by the current board (Comisariado Ejidal); in other cases, the whole community participated in deciding on the activities and on how to distribute the grant. The grant was received by the community according to their submitted work program and was implemented according to CONAFOR's operational rules. The grant could support the development of a public good as well as individual activities from *ejidatarios* (members of the *ejidos*) as proposed during the application process.

11 See Annex B2.



Photo by FuGazi / iStock

Research Designs

Mixed Methods for the Lao PDR Case Study

The study used a mixed-method approach with quantitative and qualitative data from the project sites.¹² While the quantitative data analysis preceded and informed the qualitative study, results from both analyses were given the same weight in the interpretation of the findings (Cullen, Coryn, and Rugh 2011). Using a mixed-method design provides greater insights into the experiences and the perceptions of changes (Greene, Benjamin, and Goodyear 2001). The quantitative method consisted of analyzing household survey data collected by the project implementation unit and the qualitative method consisted of semi-structured interviews (SSIs) and focus group discussions (FGDs) with a purposively selected sample of villages.¹³ To our knowledge, there is no overlap between the respondents in the quantitative survey and the qualitative fieldwork.

The quantitative data originate from a 2016 household survey that provides information on household characteristics, welfare, and participation in the project. The survey of 1,249 households, representing approximately

7,500 people, took place from January to December 2016. Ethnically diverse, the surveyed populations live in 124 villages in 37 districts across nine provinces (four in the north of the country, two in the center, and three in the south). The data set contains information on household composition, access to basic services, income sources, asset ownership, and participation or nonparticipation in the SUFORD-SU project. Analyzing these data provides a detailed description of the survey respondents, but no inferences can be made on all beneficiaries. The data, limited to a single point in time, cannot be used to explain welfare changes over time.

The qualitative data adds information on welfare changes over time by exploring the perspective of the project participants on the village level development grant (VLDG) process, its current and expected benefits, and whether the VLDG affected their livelihoods. Besides an in-depth desk review, a qualitative fieldwork composed of FGDs as well as of SSIs of project participants and of key informants knowledgeable about the project interventions was conducted in March and April 2019 in seven villages representing different poverty levels,

¹² More information on the research methods used in this case study can be found in Appendix A.

¹³ Purposive sampling is defined as a sampling strategy where “members of a sample are chosen with a purpose to represent a location or type in relation to the criterion” (Ritchie, Lewis, and Elam 2003).



ethnic groups, and agro-ecological zones across three provinces. Overall, 54 households who received benefits through the VLDG activities were interviewed and 13 FGDs were conducted (six with only men, six with only women, and one with both men and women in attendance). The households who participated in the FGDs and SSIs were chosen in consultation with the SUFORD-SU team and with village, district, and provincial forestry officials upon arrival at the sites. They were selected for their knowledge about the VLDG interventions and involvement with the project (Palinkas et al. 2015).

The qualitative evidence offers in-depth views of project participants, but it is not representative of all households in the provinces or villages where the interviews and FGDs were conducted. However, the qualitative data can shed greater detail on the contextual factors, community-level dynamics, and attitudes and opinions regarding the implementation and results of the livelihood

grants and can help generate insights and explanations, all of which are difficult to capture through quantitative data.

Qualitative Methods for the Mexico Case Study

The study used quantitative and qualitative data collected from the project sites in the three states of the Yucatán Peninsula (Campeche, Yucatán, and Quintana Roo). The quantitative data analysis preceded and informed the qualitative study; results from the qualitative study give detailed information on changes in welfare resulting from the FIP-funded interventions.¹⁴

The quantitative approach consisted of analyzing the registry of beneficiaries (called here the FIP Database) built by the National Forestry Commission (CONAFOR) and containing information related to the type of projects funded, location, and the

¹⁴ Detailed information on the research methods can be found in the in-depth case study in Appendix B.

amount granted to the beneficiaries, and the Encuesta Nacional de Beneficiarios (ENBC), a survey on CONAFOR beneficiaries undertaken each year between 2011 and 2016. In addition, to these data sets, data from the 2010 population census collected by INEGI and 2010–2015 poverty information generated by the National Council of Social Development Policies Evaluation (CONEVAL, by its Spanish acronym) were used to better characterize the municipalities of the beneficiary communities. The information from the ENBC was designed to be representative of the program recipient (*ejido* or *comunidad*), but it was collected through the interview of a legal representative of the *núcleo agrario*.¹⁵ The latter responded to a basic questionnaire on their social conditions and welfare, as well as on the implementation of all interventions and perceived changes related to social capital and productive activities in the communities and organizations. However, it is important to note that the socioeconomic information was about the person being interviewed and not about the entire group or about a sample of the *comunidad/ ejido*, thus preventing an analysis of trends.

Because of these limitations, the analysis of welfare changes relies on qualitative data through FDGs, SSIs and life histories in five communities.¹⁶ The selection of communities was done through purposeful sampling, starting from the larger administrative division (state) down to the smaller divisions (localities¹⁷ and communities), using CONEVAL information on poverty reduction at the municipality level;

the FIP Database down to census data for each locality; and ENBC data on beneficiaries. In each of the five visited communities, two FDGs were conducted, one with men and one with women over the age of 18, to explore the relationship of community members with forestry activities, and their perception of the CONAFOR-funded program. Two life histories were taken in each community, with one or two verification interviews conducted to delve deeper into the private dimension of people's lives, and to provide information about events and customs to show what a person looks like (De Gaulejac, Rodriguez Marquez, and Taracena Ruiz 2005). The life histories addressed four main components: the individual speech, family history, social structures, and perceptions of change and welfare. Three SSIs per community were conducted with key social actors, mainly people who were or had been in positions of authority within the community, to uncover the dynamics of the communities, motivations for applying to the project, and the willingness of the community to collaborate in activities related to this project.

The qualitative research gathers in-depth information based on the observation of behaviors, discourses, and open answers for the subsequent interpretation of meanings. The diverse qualitative methods analyze the whole of the discourse among the subjects and their meanings, according to cultural, ideological, and sociological contexts. Qualitative research does not intend to be representative of all households in the communities where the fieldwork took place.

15 This is the *ejido* or *comunidad* formed legally through an administrative agricultural resolution, a jurisdictional resolution, and voluntary agreements

16 The plan was for two communities per state, but one of the communities, while in the databases, was not inhabited, and the team only had informal discussions with neighboring communities to understand the situation.

17 A locality is geographic term and represents the smallest subnational level recognized as a governmental entity. Subnational levels in Mexico are state, municipality, and locality. *Ejid*os and *comunidades* can be in a single locality or span across multiple localities.



Photo by Photo Beto/iStock

Contributions of FIP-(co)funded Projects to Household and Community Welfare

The analysis of the two case studies sheds light on the characteristics of the beneficiaries and on the pathways followed (or not) by the projects to improve household and community welfare. Framing the analysis with PRIME, the findings identify pathways through which the projects have been successful in improving welfare as well as the pathways the projects have not explored enough to ensure sustainability in project contribution to welfare improvements. Using qualitative research provides detailed information on changes, processes, experiences, and perceptions of these changes that are crucial in identifying these pathways in the absence of data built for impact evaluation.

Households rely heavily on agriculture for their livelihoods, clearing the land for cultivation, while diversifying their livelihood strategies to fulfill their basic needs. Confirming recent literature (Angelsen et al. 2014), households living in the project sites, and hence close to forestlands, are engaged in forest-related activities, but their reliance on forests decreases when they have outside wage opportunities. In the Lao PDR case study, participation in forest-related activities is the highest out of all activities: Nine out of 10 sampled households are engaged in extracting non-timber forest products (NTFPs) (bamboo shoots, firewood,

mushrooms, and wild vegetables), while only 64 percent report an income from this activity. Households in the bottom quintiles of the wealth distribution are more likely to extract forest resources and to sell them to generate their income. However, when wage opportunities are available, household participation in forest-related activities decreases. Forestry and wage activities seem to be substitutes. In the Lao PDR case study, more than two out of three households report an income from wage activities that contributes 38 percent of their households' total income (Table 1). Even if households combine farm, forest, and wage activities, farm and wage activities are the most important sources of income. As highlighted in the Mexico case study, households with work opportunities outside their communities would not perceive forests as important and not be as actively engaged in forest-related activities as households living in communities with fewer work opportunities.

In addition, households in the case studies receive public transfers. Besides the projects under scrutiny—the Special Program for the Yucatán Peninsula (PEPY) in Mexico and the Sustainable Forestry for Rural Development—Scaling Up (SUFORD-SU) in Lao PDR—households also receive support from

Table 1: Sources of Income and Share to Household Total Income

VARIABLES	HOUSEHOLDS WITH INCOME SOURCE (PERCENT)			CONTRIBUTION TO TOTAL INCOME (PERCENT)		
	Overall	B40	T60	Overall	B40	T60
Total income per capita	-					
Total income	-					
Total farm income	87.8	79.8	93.1	56.5	58.0	54.5
<i>cash cropping</i>	37.3	25.6	45.1	35.9	46.4	30.6
<i>livestock</i>	61.5	50.2	69.0	27.0	31.4	24.4
Total forest income	63.7	73	57.5	15.6	25.5	13.7
Wage	68.5	61.6	73.2	38.1	39.4	36.5
Other sources (relatives, small business, others)	45.2	45.6	45.0	29.9	21.6	32.1

Source: Original estimations using 2016 SUFORD-SU household survey data.

Note: Income measures are self-reported. Marketing of timber products activities relate to sawn wood and wood only. Shares are calculated for households participating in the activities and are greater than 100 percent over the sample.

their respective government or development partners. However, the qualitative research made it easier to associate welfare improvements to the projects. At the same time, this is not an evaluation of the projects, but an assessment of households' experiences and perceptions.

Pathways to Welfare Improvement

The respondents defined welfare through multiple dimensions, and forestry projects contribute to its improvements through the pillars labeled “ecosystem services for poverty reduction” and through “investing in institutions.” Welfare can be seen as the receiving of monetary benefits or nonmonetary benefits, the provision of public goods and services, the enhancement of governance, the amelioration of forest quality, and the increased capacity to cope with shocks. The projects are oriented toward diversifying household livelihoods to reduce pressures on forest resources and to enhance forest

ecosystem services via new activities away from forest resources or through increased incomes enhancing household access to goods from outside the forest. Well-functioning and managed forest ecosystem services could finally improve households across local, regional, and global communities, furthering their welfare (Shyamsundar et al. 2018). By their rules, the projects enhanced local economic governance in the communities and strengthened public institutions, which provided public goods contributing to welfare improvements.

PEPY and SUFORD-SU provided inputs to help households diversify livelihoods. Households report increases in monetary income through a livelihood diversification into activities such as livestock raising, beekeeping, handicrafts, agriculture, and agroforestry, among others, which require inputs not usually available or affordable for households. In Lao PDR, the village level development grants (VLDGs) helped project participants obtain additional income and improve their standards of living:

“Our living is better, and we have money to spend daily. After receiving that fund, we could raise chicken and sell them.”

In Mexico, some households reported using the money received to buy inputs for agricultural production: *“The truth is that the little money that comes to us we try to use for the field, because it comes during the sowing season and there, we pay for the work of what the machine sows and all that.”*

Livelihood diversification was accompanied by the creation of temporary employment directed toward forest care that enhances the quality of forest ecosystem services. In the SUFORD-SU project, village heads enrolled some villagers in the forest conservation schemes; villagers were paid daily to participate in these activities, which diversified their sources of income. In Mexico, PEPY created temporary jobs to clean up the boundaries or create firebreaks. While these activities are the responsibility of the *ejidatarios* with full land rights, the work has been at times carried out by other members of the locality, who are then remunerated through the payment of a normal working day: *“Because then, they gave us a job, that is to say, what it was about, that we clean the boundaries.”*

Livelihood diversification supported households in improving welfare through increases in nonmonetary benefits that are usually fulfilled by extracting forest products. Thanks to SUFORD-SU and PEPY, households reported an enhanced ability to meet basic needs such as improved access to food,

medicines, and water, and the ability to send children to school. In Lao PDR, the project helped households support their children’s education and cover medical and other family expenses, such as dowry, family functions, and rituals: *“For instance, if we need money to support our children to school, we sold chickens. I could say that it helped our family to be better off.”* Some households mentioned how they invested the money to meet basic needs, such as buying water pumps and improving their access to the water supply system, while others mentioned reduced slash-and-burn activities because the additional activities helped them diversify their incomes.

Similarly, livelihood diversification provided new ways for households to cope with shocks, potentially decreasing the use of forest resources to generate extra liquidity in times of needs. Easier access to additional liquidity allowed recipients in the Lao PDR case study to cope with shocks without having to deplete their income: *“I went to the plantation owner to borrow money for my wife’s medical expenses...He asked me to weigh my pig and gave me money in advance. I still have the pig but will be given to the plantation owner in few months...that’s why I want to raise animals because they can help us in time of emergency.”* Other households also borrowed low interest loans from the revolving funds to deal with these shocks.

These new livelihood strategies achieved the goal of increasing forest resource management and quality, which further benefited households and communities. In the Mexico case study, households mentioned that forest care activities had reduced the expansion of the agricultural frontier and led to the implementation of traditional practices to prevent forest degradation. The main

intervention in the visited communities was the adoption of a payments for ecosystem services (PES) scheme; this scheme established a reserve zone for forest conservation, disallowing any kind of practice that could damage the forest and its wildlife with restrictions on cutting and hunting as well as on burning in specific areas. In the Lao PDR case study, forest care was mainly done through restoration activities, boundary demarcation, and the creation of forest management plans. In addition, most of the VLDG participants expressed that the introduction of management rules through various project initiatives may have helped protect the forests that had deteriorated (number and type of trees, availability of NTFPs) over time:

“This area of the village was covered by the forest...there were many slash-and-burn activities, so the forest was cleared significantly...since the managing rules came, the forest destroying activities stopped.”

The projects were successful in investing in institutions enhancing economic governance mechanisms. The SUFORD-SU project led to the creation of revolving funds to disburse the amounts to villagers; setting up this fund required the establishment of rules and regulations decided at the village level. In addition, the creation of such a fund could potentially increase the financial literacy of participants. PEPY has contributed to strengthening the regularity of and improving participation in the assemblies that were

enacted by the Agrarian Law to provide to each *ejido* a forum in which to make their decisions. The conditions to participate in PEPY were to hold regular assemblies to decide on the work to be done and to ensure legitimacy of the work at level of the *ejido*.

The projects supported the development of public institutions that could supply public goods and services to improve household welfare.

Households in the Mexico case study reported that communities with high social cohesion and good communication with the technical adviser registered by CONAFOR to provided technical assistance have used the money for the provision of public goods such as water catchment systems and for building an ecotourism center that generates a new source of local income. The creation of these public goods is reported by respondents as a way to deliver benefits for the medium and long term. In the Lao PDR case study, funds gathered in the VLDG were used to build an access road to the village.

Missed Opportunities

The two case studies highlighted that while some pathways could have helped the projects achieve sustainable outcomes, these pathways were not fully developed.

These missed opportunities are linked to the design and implementation of the activities funded by the projects, the links between these activities and forest quality, and the lack of changes in gender norms. It appeared that the projects failed to improve market access and to sustainably enhance labor productivity. Furthermore, development of the link between the livelihood strategies and forest resources as well as investment in changing gender norms could have further improved welfare.

The projects had limited impacts on market access, reducing the sustainability of economic impacts. The households reported a lack of access to markets to trade products resulting from the new activities. The SUFORD-SU project encouraged the development of woven products but did not provide enough support to link households to developed market for handicrafts, such as the one in the World Heritage site of Luang Prabang in northern Lao PDR. In addition, access to good quality raw material was a challenge for poor households, who had to use cheap imported materials, which prevented them from competing with richer households who could afford traditional hand dyed and hand-made materials.

The insufficient provision of technical assistance to increase labor productivity could have helped households further develop their skills. While technical assistance was provided through the projects, alternative income-generating activities were required to make the livelihood schemes viable. In the SUFORD-SU project, beneficiaries reported struggling to get the requisite training and continued technical support in addition to the single training provided at inception of the VLDG. Very little improvement in human capital through technical assistance and learning of a new activity was observed that could ensure long-term adoption of the activities. Adopting a new livelihood activity without the required skills increases the riskiness of such an endeavor, leading to potential failure and cessation of the activity once the project ends.

Although the studies reveal the link between monetary and nonmonetary benefits and forest resources, households had little knowledge of this link, which could have hindered the role

of livelihood strategies to lift pressures on forest resources. In both Mexico and Lao PDR, households were not able to see how their new income-generating activities could have an impact on forest resources. While the PES scheme was an important activity in PEPY, there is a risk that conserving forest resources stop once payments stop. In the SUFORD-SU project, the forest conservation activities not funded by the VLDG were implemented in silos or at different periods than the livelihood activities. Households could not see the links between these two types of activities; households would not systematically abandon their forest-degrading activities as a result of newly adopted livelihood activities and keep doing the same activities. This lack of understanding of the role the new livelihood activities could have on forest conservation results from the absence of a clear communication strategy on the overall project goals and activities.

Enhancing the institutional pathway, the projects could have promoted a change in existing gender norms to ensure gender equality in the adoption of more profitable activities. In both case studies, the participation of women in public discussions and meetings increased, although the qualitative analysis revealed that traditional roles guided the choice of income-generating activities. In some communities in Mexico, it was noted that women could not participate in the meetings without men's permission.¹⁸ In Lao PDR, women's activities were mainly concentrated on weaving and handicrafts, although some women participated in the sale of agricultural products. Unchanged gender norms prevent women from adopting more profitable activities and being more empowered.

¹⁸ In Mexico, the participation of women in decision-making and governance in an *ejido* or community is closely linked to the cultural context as well as to the possession or ownership of land, which they can normally access by inheritance, either from the husband or father.

Discussion

This section reflects on the limitations of the analysis to achieve its original objective as well as the limitations of the adopted methodology, and then it provides some implications for the design and implementation of future projects in forest areas.

Entry Points to Improve Project Design and Implementation

This study highlights three key entry points to ameliorate the design and implementation of future forestry projects aimed at improving welfare while conserving forest.

1. **Encourage the use of PRIME to design projects and harmonize the understanding of core concepts such as welfare and livelihoods among project implementers and project beneficiaries.** The projects were successful in actioning some of the pathways (paying for forest-related services and providing safety nets) to contribute to welfare improvements. However, the projects could have made more sustainable impacts if they had worked through the productivity and market access pathways. At the same time, welfare being a large concept, project result chains would benefit from clarifying which concepts of welfare projects intend to improve and link them to the pathways

for improvements. This would require that projects with multiple components better communicate the links between these activities. Conceptual links between activities to improve welfare, such as additional income-generating activities, and how they contribute to forest conservation need to be communicated to participants before the implementation of project activities to sustainably change behaviors.

2. **Develop strong instruments to monitor the impacts of the project and ensure timely data collection throughout the project cycle.** While inferring causal relationships from nonexperimental data remains a challenge, data collection before the implementation of the project, at midterm, and the project's end would enhance the understanding of the results at the project level. Measuring impacts of the project would be even more accurate and believable if data collection instruments (questionnaire, sampling design, implementation) were designed following best practices. The questionnaire would benefit from using nationally harmonized questions: Besides being more cost-efficient, this would ensure the use of questions that have already been field-tested and approved, as well as comparability with nationally representative surveys. If poverty measured



Photo by Dmitry Chulov/iStock

through consumption or income, which requires a long set of questions, is to be measured, methodologies such as the Forest-SWIFT exist that allow one to predict poverty using a small set of questions, which are easily adaptable within a short monitoring and evaluation survey. In addition, designing representative samples of beneficiaries with the construction of sampling weights would allow one to make inferences for the overall population of beneficiaries. Working with the national statistical office to design the survey instruments is a good practice to make sure that the project data are also relevant for the national development strategy.

3. **Approach rural livelihoods through a complex and multidimensional lens with a clear understanding of the social norms, intra- and inter-household dynamics, and locally defined needs and aspirations.**

To ensure that additional income-generating options for forest-dependent communities contribute sustainably to forest conservation, one needs to uncover behavioral and structural barriers that prevent beneficiaries from reducing pressures on forests without project interventions. As shown above, project beneficiaries acknowledge the importance of forest for their livelihoods but at the same time adopt degrading activities. Behavioral analysis can help projects understand how to nudge participants to adopt new activities while exploring the importance of social norms in these changes (World Bank 2018). In addition, the adoption of new activities goes hand in hand with adequate trainings of project beneficiaries and the enhancement of market access.

Limitations of the Analysis

The objective of the study changed over time to reflect limitations in the available data.

Initially, the objective was to measure the impacts of FIP financing on welfare. However, the lack of robust and detailed data for baseline and end line limited the achievement of this objective, just as it has in other studies (Bowler et al. 2012). As one can observe from the analysis in this report, the quantitative data were not collected at times coinciding with project baseline, midterm, and project end. For instance, the quantitative data collected for the SUFORD-SU project are from 2016, but the project was effective as early as 2014.

None of the data sets collected by the project implementation unit is representative of all project beneficiaries.

In Mexico, the ENBC data were collected through the survey of a community representative, with questions directed to community investments to the project, with limited data on welfare at the community level. In Lao PDR, data were collected at the individual level, but they are not representative. In both cases, the quantitative data were from a single point in time with no mention of past changes and they cannot provide information on welfare changes over time.

The survey instruments would have benefited from using harmonized questions with a nationally representative survey on household living conditions and poverty.

In the Lao PDR case study, self-reported answers on income for a 12-month period have to be taken with caution since the respondents engaged in farm-based or small business activities have limited recollection of their total income over a 12-month period. In addition, poverty is measured using consumption in Lao PDR; having a short module (Forest-SWIFT) to

predict poverty, as developed by the Survey of Wellbeing via Instant and Frequent Tracking (SWIFT) team in the Poverty Global Practice of the World Bank Group,¹⁹ would improve the measurement of poverty throughout the project with a very limited set of questions.

The qualitative data used in the analysis, to try to overcome the limitations of the quantitative data and present perceptions of welfare change, also present limitations as a result of the short time frame of the fieldwork and some biases potentially created by language barriers and the presence of officials.

The collection of primary qualitative data has been challenging for a number of reasons: The data were only collected over a single period and in a single visit, and the analysis of perceived welfare changes was limited to perceptions and recall questions without the opportunity to follow up at a later stage on how these perceptions might have materialized. In addition, in both Lao PDR and Mexico, language was a barrier: Although the study was undertaken by Laotian and Mexican researchers, most of the respondents were from ethno-linguistic groups with limited understanding of the main administrative languages. Leaders from the communities who were able to speak both languages were used as translators, but this approach might have created some biases in the responses or in their translations to the team. Linked to this

last point, it is worth mentioning that in the Lao PDR fieldwork, the presence of project and government staff during the qualitative interviewing and group discussions might have also caused some biases in the responses. Some respondents appeared uneasy to express what they wanted to say about the project in front of these staff, while others responded as if rehearsed. While the support of project and government staff was key in implementing the research, the undertaking of the interviews suffered from their presence.

This analysis cannot measure any attribution of perceived welfare changes to the projects.

Attribution of welfare impacts to both projects remains a challenge since there were multiple interventions implemented over time at the same locations within a complex socio-environmental setting. For example, in the SUFORD-SU villages in Lao PDR, interventions on education, health, and infrastructure were also implemented during the project period. Other initiatives have also been implemented at the same project sites at different times. Consequently, reported changes cannot be solely explained by the forest-funded interventions alone and one must acknowledge that the welfare changes respondents associate to the projects might come from other initiatives and processes.

19 <http://documents.worldbank.org/curated/en/591711545170814297/pdf/97499-WP-P149557-OUO-9-Box391480B-ACS.pdf>



Photo by Maria SaMu / iStock

Conclusion

Links between forest and poverty are known but suffer from a lack of measurement. Recent studies have shown the importance of forest-related activities for household income, documenting different channels through which forest activities could contribute to welfare improvements (Angelsen et al. 2014; Shyamsundar et al. 2018). To ensure that these channels come into play, FIP has been funding projects to achieve the triple win of being good for forests, for development, and for the climate. While successes on improving forest conditions have been documented, little is known on impacts on development as seen through beneficiaries' welfare.

This study fills that gap: With the findings from two case studies—the Sustainable Forestry for Rural Development—Scaling Up (SUFORD-SU) project in Lao PDR and the Forest and Climate Change Project (PBCC), specifically the Special Program for the Yucatán Peninsula (PEPY), in Mexico—it assesses how forestry projects can contribute to welfare. Using mixed methods, the study shows that these two forestry projects improved welfare through investing in forest ecosystem services thanks to the diversification of livelihood strategies and better forest resources, and through investing in institutions and the provision of public goods. The diversification of livelihood strategies provided new employment opportunities and income streams while also allowing beneficiaries to have coping mechanisms when facing unexpected events. At the same time, based on the

qualitative information, the projects improved the living conditions of households through the enhancement of forest quality, the provision of public goods and services, and the development of local governance. However, the analysis reveals that developing additional pathways could have fostered these improvements. Limited technical assistance and access to markets as well as the lack of changes in gender roles are the two main issues preventing sustainability of the welfare gains.

While acknowledging some limitations owing to data and methodological designs, the study highlights three key entry points that could help future forestry projects that focus on welfare improvements to achieve sustainable results: (1) harmonization of concepts and clear communication of the different project components with beneficiaries; (2) development of strong data collection instruments to measure impacts from projects; and (3) approach of rural livelihoods through a multidimensional lens to understand behaviors.

Well-designed, -implemented, and -monitored forestry projects are key for improving the welfare of many. At the same time, households being rational and cognizant of the importance of forests for their welfare, one can wonder why they are not adopting more sustainable livelihood strategies. Working with multisector teams to uncover these barriers would help better design projects, ensure better implementation, and enhance the likelihood of sustainable welfare gains.

References

- Andam, K., P. Ferraro, K. Sims, A. Healy, and M. Holland. 2010. "Protected Areas Reduced Poverty in Costa Rica and Thailand." *PNAS* 107 (22): 9996–10001.
- Angelsen, A., P. Jagger, R. Babigumira, B. Belcher, N. Hogarth, S. Bauch, J. Borner, C. Smith-Hall, and S. Wunder. 2014. "Environmental Income and Rural Livelihoods: A Global-Comparative Analysis." *World Development* 64 (December): S12–28.
- Aye, T., and R. Howeler. 2008. *Cassava in Laos: Enhancing Sustainable Production and Utilization Through Farmer Participatory Research*. Centro Internacional de Agricultura Tropical.
- Bowler, D., L. Buyung-Ali, J. Healey, J. Jones, T. Knight, and A. Pullin. 2012. "Does Community Forest Management Provide Global Environmental Benefits and Improve Local Welfare?" *Frontiers in Ecology and the Environment* 10 (1): 29–36.
- Byron, N., and M. Arnold. 1999. "What Futures for the People of the Tropical Forests?" *World Development* 27 (5): 789–805.
- Cheng, S., K. MacLeod, S. Ahlroth, S. Onder, E. Perge, P. Shyamsudar, P. Rana, et al. 2019. "A Systematic Map of Evidence on the Contribution of Forests to Poverty Alleviation." *Environmental Evidence* 8: article 3. doi:<https://doi.org/10.1186/s13750-019-0148-4>.
- Choocharoen, C., A. Schneider, A. Neef, and P. Georgiadis. 2013. "Income Options for the Poorest of the Poor: The Case of Cardamom in Northern Laos." *Small-scale Forestry* 12 (2): 193–213. doi:10.1007/s11842-012-9207-1
- Cullen, A., C. Coryn, and J. Rugh. 2011. "The Politics and Consequences of Including Stakeholders in International Development Evaluation." *American Journal of Evaluation* 32 (3): 345–361.
- De Gaulejac, V., S. Rodriguez Marquez, and E. Taracena Ruiz. 2005. *Historia de vida y sociologia clinica*. Queretaro: Universidad Autonoma de Queretaro.
- Douangsavanh, L., and B. Bouahom. 2006. *Pathways Out of Poverty Through Maize and Job's Tear in Lao People's Democratic Republic*. United Nations Centre for Alleviation of Poverty Through Secondary Crops' Development in Asia and the Pacific (CAPSA).
- Ferraro, P., and M. Hanauer. 2014. "Quantifying Causal Mechanisms to Determine How Protected Areas Affect Poverty Through Changes in Ecosystem Services and Infrastructure." *PNAS* 111 (11): 4332–4337.

- Greene, J., L. Benjamin, and L. Goodyear. 2001. "The Merits of Mixing Methods in Evaluation." *Evaluation* 7 (1): 25–44.
- Palinkas, L., S. Horwitz, C. Green, J. Wisdom, N. Duan, and K. Hoagwood. 2015. "Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research." *Administrative Policy Mental Health* 42 (5): 533–544.
- Phengsavanh, P., B. Ogle, W. Stür, B. Frankow-Lindberg, and J. Lindberg. 2010. "Feeding and Performance of Pigs in Smallholder Production Systems in Northern Lao PDR." *Tropical Animal Health and Production* 42 (8): 1627–1633. doi:10.1007/s11250-010-9612-4.
- Ritchie, J., J. Lewis, and G. Elam. 2003. *Designing and Selecting Samples*. London: Sage.
- Shyamsundar, P., S. Ahlroth, P. Kristjanson, and S. Onder. 2018. *Understanding Forests' Contribution to Poverty Alleviation: A Framework for Interventions in Forested Areas*. Washington, DC: World Bank.
- Sunderlin, W., S. Dewi, A. Puntodewo, D. Muller, A. Angelsen, and M. Epprecht. 2008. "Why Forests Are Important for Global Poverty Reduction: A Spatial Explanation." *Ecology and Society* 13 (2): article 24.
- Vira, B., C. Wildburger, and S. Mansourian. 2015. *Forests, Trees and Landscapes for Food Security and Nutrition. A Global Assessment Report*. Vienna: International Union of Forest Research Organizations.
- World Bank. 2018. *Closing the Gender Gap in Natural Resources Management Programs in Mexico*. Washington, DC: World Bank. <http://documents1.worldbank.org/curated/en/927551552882513940/pdf/Closing-the-Gender-Gap-in-Natural-Resource-Management-Programs-in-Mexico.pdf>.
- Wunder, S., A. Angelsen, and B. Belcher. 2014. "Forests, Livelihoods and Conservation: Broadening the Empirical Base." *World Development* 64 (December): S1–11.



Photo by Somrek Withayanant/Shutterstock

Appendix A.

An Assessment of the FIP Contribution to the SUFORD-SU Project in Lao PDR

Introduction

The objective of this study is to examine the channels through which the Sustainable Forestry for Rural Development—Scaling Up (SUFORD-SU) project (partially financed by the Forest Investment Program, or FIP) could have contributed to household welfare improvement in the Lao People’s Democratic Republic. Financed by a Climate Investment Funds Evaluation and Learning grant, this study defines household welfare by looking at an asset index, access to services, food security, as well as livelihood diversification, human capital, governance, and natural capital (forest quality). The study considers three aspects in the analysis: (1) the importance of forest products to household livelihoods; (2) household participation in the SUFORD-SU project; and (3) welfare changes for these households. Thanks to this analysis, the study sheds more light on the channels through which forest investments can impact household welfare so that future forestry projects aiming to improve livelihoods can achieve measurable improvements.

Limitations in the available quantitative data encouraged the collection of qualitative data. The only quantitative data available to the study were data collected at the household level by the project implementation unit (PIU) in 2016.

These data, collected at a single point in time and in a limited time frame, do not provide any evidence on welfare changes. To fill this gap, the team collected qualitative data in March 2019 in selected locations in Lao PDR. The use of a mixed-method approach, using both quantitative and qualitative research techniques, methods, and concepts, offers a practical alternative to deal with data issues associated with monomethod approaches (Greene, Benjamin, and Goodyear 2001). The quantitative survey data used in this study provided information on households’ characteristics, welfare status, and participation in the project, while the qualitative data provided the details and description of how the project activities played out in the local context and how those processes influenced the welfare status.

Overall, the study shows that the SUFORD-SU project has been successful in improving household welfare through the diversification of their income sources that help households fulfill their basic needs, send their children to secondary school, and face unexpected expenses. However, the study highlights that weaknesses in the project targeting, design, and implementation cast doubts on the long-term positive impacts of the project.

Section 2 below provides background information on forests and World Bank forestry projects

in Lao PDR, with a focus on the SUFORD-SU project. Section 3 describes the methodology and data used in the analysis. Section 4 provides the main findings from the quantitative and qualitative data analysis. A short discussion and conclusion follow in section 5.

Background Information on Forest and Forestry Projects in Lao PDR

Forestry Context in Lao PDR

Lao PDR has the highest proportion of natural forest cover among mainland Southeast Asia countries.

The most dominant forest type is mixed deciduous followed by evergreen and dry dipterocarp. Most of the country's forest resources are in state forest areas, of which there are three categories: (i) production forest area (PFA), managed primarily for the production of wood, fiber, fuel, and non-timber forest products (NTFPs); (ii) conservation forest area (CFA), managed primarily for biodiversity conservation; and (iii) protection forest area (PtFA), primarily for soil, water, and natural disaster protection.

Owing to its natural capital, Lao PDR economic growth has averaged around 8 percent a year since 2000,

with timber and NTFPs valued at US\$10,740 per capita (World Bank 2019). The forest sector is currently being reformed, aiming to expand forest cover from 58 percent to 70 percent and to achieve financially and environmentally sustainable, resilient, and inclusive economic growth, especially through credible private sector investors (World Bank 2019).

Lao PDR forests are inhabited by about 73 percent of the rural Lao population.

A significant part of the population depends on

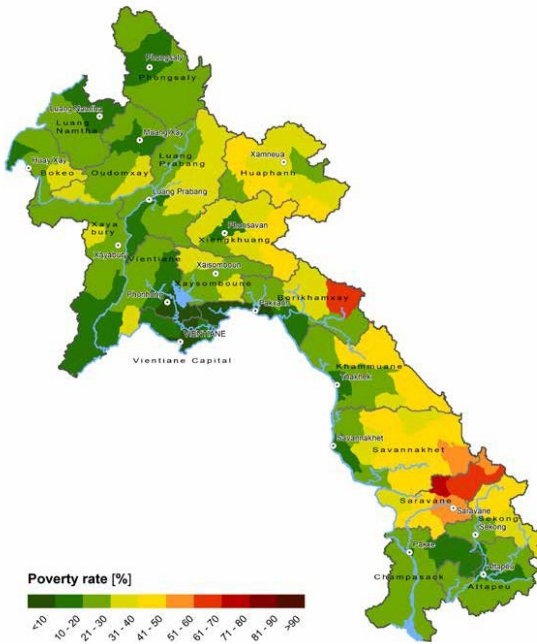
natural resources for their livelihoods. The forestry sector provides a variety of jobs in rural areas in the primary sector, such as nurseries, tree planting, harvesting, log extraction, trading, transportation, and processing. Forests are also an important source of energy, with fuelwood accounting for approximately 80 percent of total energy consumption in the country. NTFPs are recognized as an important natural resource for improving livelihoods as they constitute a source of food, income, medicine, and other subsistence items for those located within and close to forest areas. Therefore, sustainable forest use, forest protection and reforestation, with strong involvement of the local community, are crucial strategies for the government of Lao PDR in forest management and poverty alleviation (Tong 2009).

Poverty in Lao PDR declined between 2002/03 and 2012/13.

Using a national poverty line and a consumption aggregate, Lao PDR saw poverty decline by 10.3 percentage points, with 23.2 percent of the population having their consumption expenditures below a national poverty line in 2012/13, compared with 33.5 percent in 2002/03 (Pimhidzai et al. 2014).²⁰ While poverty declined across the country, poverty reduction was the fastest in the north. The poorest districts are currently mostly located in the south (map A.1); however, there is no clear correlation between poverty and forest cover loss (map A.2). To some extent, it seems that poverty remains high in districts with little forest cover loss, while poverty is lower in areas with rapid forest cover loss (Vientiane district).

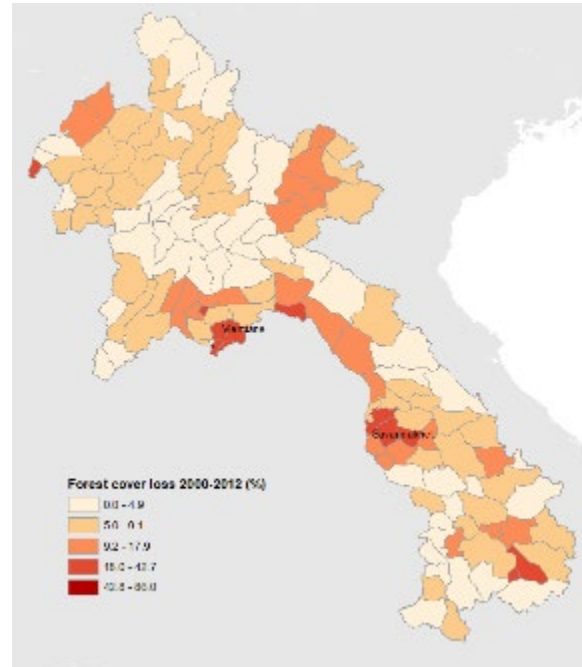
²⁰ Lao Expenditure and Consumption Survey in 2012/13. The national poverty line was equal to LAK 203,613.6 a month in 2012 (about US\$2.86 a day in PPP 2005).

Map A.1 Poverty Headcounts (District Level), 2012/13



Source: Coulombe et al. 2016.

Map A.2 Forest Cover Loss (District Level), 2000–2012



Source: Original estimations using Hansen et al. 2013.

Earlier World Bank Forestry Projects in Lao PDR

Forestry projects in Lao PDR traditionally focus on restoring forest cover and protecting the ecosystem services provided by forests.

Projects such as Promoting REDD+ through Governance, Forest Landscapes and Livelihoods in Northern Lao PDR (P125082)²¹ aim to provide funding mechanisms (Readiness Fund and Carbon Fund) to support the reduction of emissions from deforestation and forest degradation, the conservation of forest carbon stocks, the sustainable management of forests, and the enhancement of forest carbon stocks in developing countries (activities

commonly referred to as REDD+). The Second Lao Environment and Social Project (LENS2) (formerly the Protected Area and Wildlife Project) (P128393),²² running from 2014 to 2021, aims to (i) provide support to forested upper watersheds of rivers important to hydropower, agriculture irrigation, and flood prevention; (ii) create wildlife and protected area enforcement standards; (iii) support capacity building for national, provincial, and district institutions that implement environmental and social impact legislation; and (iv) build the capacity of the Environment Protection Fund. Additional Financing (AF) of US\$15 million (P152066) approved in 2015 has been directed to scale up

21 This project is part of the Forest Carbon Partnership Facility (FCPF); the emission reductions program document was accepted in June 2018 and the country is now developing the emission reductions payment agreement.

22 The project goal is to strengthen selected environmental protection management systems, specifically for protected areas conservation, enforcement of wildlife laws, and environmental assessment management. Funds are provided through the Environment Protection Fund, a financially autonomous Lao organization established in 2005.

the LENS2 activities as well as to strengthen university environment and social curriculum. LENS2 covers seven provinces and 11 protected areas comprising 1.29 million hectares—including the two largest protected areas in the region and an estimated 190 communities located in and around the CFAs. The total number of beneficiaries is estimated at around 150,000 people, with 36,000 people receiving training and direct livelihood support from conservation grants. The first LENS project, which ran 2005–2013, funded more than 150 subprojects, produced tangible results at a local level, and benefited more than 16,000 people.

Projects financed by FIP set out strategic options to reduce emissions from deforestation and forest degradation (REDD+) through forest protection and sustainable forestry. While administered through the World Bank, the CIF and related investments from FIP are channeled through multilateral development banks such as the World Bank, Asian Development Bank, and the International Finance Corporation (IFC). The FIP Investment Plan is aligned with Lao PDR's Forestry Strategy to attain a 70 percent forest cover in the country by 2020 and is composed of multiple projects, including the Protecting Forests for Sustainable Ecosystem Services Project channeled through the Asian Development Bank, the Smallholder Forestry Project through IFC, and the SUFORD-SU project through the World Bank.

The Protecting Forests for Sustainable Ecosystem Services Project aims to address key drivers of deforestation and forest degradation, which include forest clearance by local communities for rotational agriculture and agricultural expansion by small and medium entrepreneurs for growing

commercial crops (for example, coffee). Approved in 2016, this project is an additional financing to an existing project—the Greater Mekong Subregion Biodiversity Conservation Corridors Project—to scale up sustainable forest management activities of the Biodiversity Conservation Corridors Project. This project focuses on strengthening REDD+ readiness and implementation capacity in two southern provinces, Xekong and Attapeu (World Bank 2016).

Since 2013, the Smallholder Forestry Project finances investments in the development and direct management of forests outside state forest areas by farmers and private forestry companies. Implemented by IFC, the US\$3 million grant aims to develop successful outgrower schemes that are commercially viable and environmentally sustainable in partnership with private sector forestry companies as a means to contribute to a net reduction of greenhouse gas emissions and improve the livelihoods and incomes of the participating farmers. These investments include industrial tree plantations and smallholder woodlots, following a systematic program of allocating such areas to appropriate local forest management entities. The program has the potential of reaching 15,000 farmers engaged in the sustainable management of an estimated 15,000 hectares of land.²³ The 2013 progress report indicates that Lao farmers are not organized to capture the expected benefits from participating in the outgrower scheme for the following reasons: (a) limited success in company-community partnerships in the forestry sector, (b) limited government capacity in land transfer to rural communities, and (c) limited community organizational capacity as well as poor technical and business skills of

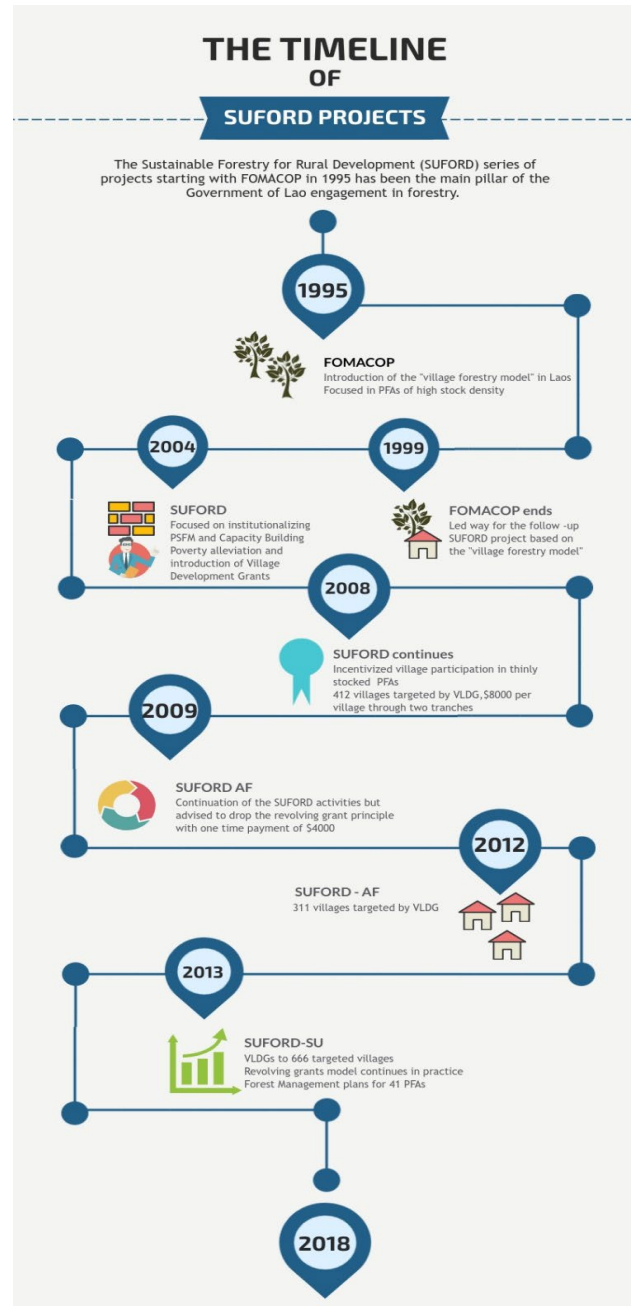
23 FIP Program Approval Request: Lao PDR, <http://pubdocs.worldbank.org/en/417381531832254028/1948-PFIPLA005A-Lao-Cover-Note.pdf>.

farmers to produce agricultural and forestry commodities (CIF 2013).

Sustainable Forestry for Rural Development—Scaling Up

The SUFORD-SU project has been the main pillar of the government of Lao engagement in forestry. Implemented by the Department of Forestry under the Ministry of Agriculture and Forestry, the SUFORD-SU, approved in 2013, is the first FIP project implemented in Lao PDR and has received US\$12.83 million from FIP (out of a total US\$39.39 million allocated to Lao PDR). This project is scaling up a participatory sustainable forest management (PSFM) approach in the PFAs. The project is built on three previous projects: the pilot Forest Management and Conservation (FOMACOP, 1995–1999) program, Sustainable Forestry for Rural Development (SUFORD, 2004–2008), and SUFORD—Additional Financing (SUFORD-AF, 2009–2012) (Figure A.1). These three projects piloted and then progressively expanded the PSFM of national PFAs. SUFORD-SU scales up the PSFM activities in 13 provinces, covering 41 of the country’s 51 PFAs.

Figure A.1 Timeline of SUFORD Projects in Lao PDR



The SUFORD-SU project works on improving the livelihoods of villagers while also strengthening forest policies. One component to improve households' livelihoods consists of expanding PSFM in PFAs through village livelihood development grants (VLDGs) and forest restoration grants to villages. The project is also working on policy issues and strengthening forest law enforcement and monitoring throughout the country.

Most of the project villages are located outside PFAs (see Table A.1). Under the SUFORD-SU, forest management plans have been prepared for 1.1 million hectares in 25 PFAs, adding to the 1.2 million hectares in 16 PFAs already covered by forest management plans. The VLDGs have been disbursed to all 666 of the targeted villages, covering approximately 21,344 recipient households and 117,400 beneficiaries.²⁴

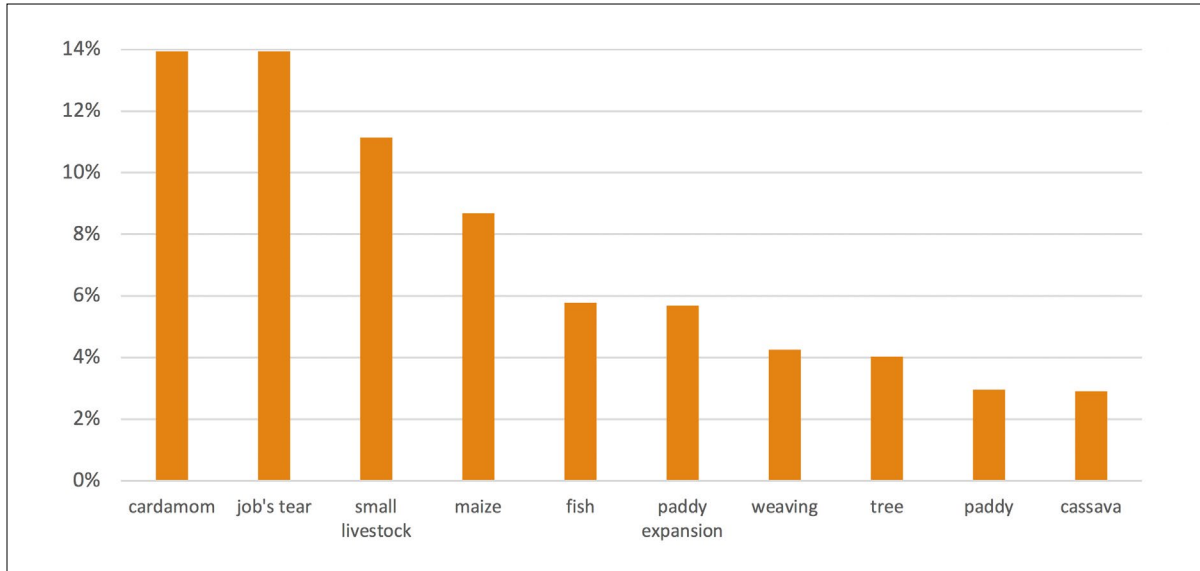
Table A.1 SUFORD-SU Villages in Protected Forest Areas (%)

PROVINCE	IN-BETWEEN	INSIDE	OUTSIDE
Northern			
Bokeo		20.8	79.2
Luangnamtha			100
Oudomxay	1.4	11.3	87.3
Sayaboury		5.9	94.1
Central			
Vientiane Province			100
Borikhamxay		1.6	98.4
Southern			
Champasak			100
Attapeu		4.6	95.4
Overall	0.4	7.9	91.7

Source: Original calculation using 2019 SUFORD-SU registry data.

Note: The percent share is calculated out of the provincial sample, while the percent on overall total is based on the total sample.

²⁴ Implementation Status and Results Report, June 2019, <http://documents.worldbank.org/curated/en/733891561047416341/pdf/Dislosable-Version-of-the-ISR-LA-Scaling-Up-Participatory-Sustainable-Forest-Management-P130222-Sequence-No-12.pdf>.

Figure A.2 Main VLDG Activities Across All Provinces

Source: Original calculation using 2019 SUFORD-SU registry data.

Domesticated NTFPs is the main activity implemented across all provinces in the VLDG.

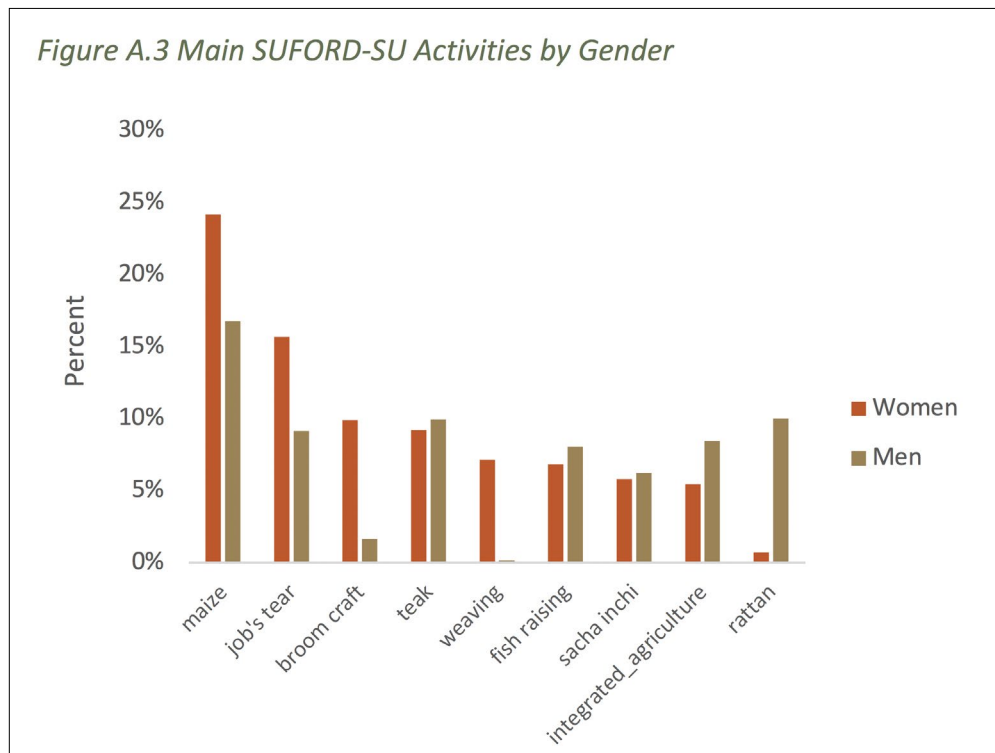
Many activities are offered to improve local livelihoods, such as coffee, greenhouse, craft, rattan, insect raising, cotton, peanuts, craft furniture, and galangal and ginger. The registry of beneficiaries provided by SUFORD-SU indicates that cardamom and Job's tear are the two main activities selected by the communities (both 14 percent out of the total sample),²⁵ followed by small livestock (11.14 percent), maize (8.7 percent), fish raising (5.8 percent), and expansion of paddy fields (5.7 percent) (Figure A.2).

Women's participation is mostly observed in growing commercial crops, such as maize (24 percent). Job's tear (16 percent) and craft made of broom grass (10 percent) are the other two VLDG activities where women are seen to be

involved in (Figure A.3). Men are mainly engaged in maize cultivation (17 percent), followed by growing rattan (10 percent), teak (10 percent), and job's tear (10 percent). This information must be taken with caution, however, as the gender information is displayed for only 12 percent of the sample.

Selection of VLDG activities differs by regions. Job's tear is observed as the main VLDG-supported activity in two of the four northern provinces, while grants for growing cassava and raising small livestock are mostly allocated in the central and southern part of the country (Table A.2). Job's tear represents a good prospect for export because in countries like Taiwan and China the processed product is used in traditional medicine. Job's tear grows well in upland areas with very low soil

²⁵ Cardamom is a domesticated NTFP that is typically allowed to regenerate in secondary forests or fallow lands in hilly areas by pruning trees and other climbers, thus making it the dominant ground cover. The stands last for 20–40 years. It is usually harvested in October providing farmers with cash to buy rice. Cardamom is one of Lao PDR's biggest agricultural exports. It is used in Chinese medicine. Job's tear is a type of millet used for food and in traditional medicine.

Figure A.3 Main SUFORD-SU Activities by Gender

Source: Original calculation using 2019 SUFORD-SU registry data.
 Note: This information is available for only 12 percent of the sample (n=2,498).

fertility and irrigation; the expenditures for its cultivation are also more affordable. It is often substituted for rice during periods of food shortage (Douangsavanh and Bouahom 2006). Like Job's tear, cardamom is an important component of traditional Chinese medicine and it represents the second biggest agroforestry export product of Lao PDR after coffee. The demand for cardamom is annually quite high and is hardly met by the local producers (Choocharoen et al. 2013). Cassava has become an important crop, both for home consumption and for export: Households are using cassava

to fulfill their food needs and to feed small livestock, and industries are using it to produce starch, sweeteners, and ethanol (Aye and Howeler 2008; Phengsavanh et al. 2010). Small livestock (pig and goat raising) also ranks as one of the top activities because families raising pigs and goats can reap the benefits in a short amount of time (1–2 years) and can sell their livestock within a short time to cope with family difficulties or needs. Small livestock are also used for various ceremonial practices.

Table A.2 Main VLDG Activities by Province

PROVINCES	VLDG					
	1ST ACTIVITY	SHARE	2ND ACTIVITY	SHARE	3RD ACTIVITY	SHARE
Northern						
Bokeo	Job's tear	15.8%	Maize	13.2%	Teak	9.0%
Luangnamtha	Trees	27.1%	Cardamom	26.5%	Tea	24.6%
Oudomxay	Cardamom	38.5%	Maize	15.9%	Fish	8.0%
Sayaboury	Job's tear	41.3%	Small livestock	12.6%	Maize	8.3%
Central						
Vientiane	Paddy expansion	29.2%	Weaving	15.0%	Job's tear	14.06%
Borikhamxay	Cassava	37.4%	Weaving	19.1%	Paddy expansion	9.4%
Southern						
Champasak	Cassava	32.6%	Small livestock	21.7%	Rice	17.7%
Xekong	Small livestock	53.7%	Poultry	8.6%	Fish	6.0%
Attapeu	Small livestock	24.4%	Paddy expansion	13.7%	Banana	11.9%

Source: Original calculation using 2019 SUFORD-SU registry data.
 Note: The percent share is calculated out of the provincial sample.

The largest VLDGs were approved for craft and furniture-making activities, although these activities had a smaller number of beneficiaries compared with other livelihoods activities. Coffee, fodder, and bamboo shoots are the other top VLDG activities that were allocated large amounts of money, since the

required inputs (fertilizer, barbwire, other materials) represent a significant share of the total grant. Raising small livestock is the main activity in the project villages (observed in 195 villages), followed by Job's tear (in 165 villages) and fish raising (in 130 villages) (Table A.3).

Table A.3 Average Amount of Approved Grants by Main VLDG Activity

VLDG ACTIVITY	NUMBER OF VILLAGE(S)	AVERAGE NUMBER OF BENEFICIARIES PER VILLAGE	AVERAGE AMOUNT OF APPROVED GRANTS (LAK)	INPUTS
Craft furniture	1	3	5,200,000	Materials
Coffee	6	8	4,957,570	Equipment and fertilizer
Fodder	16	8	4,157,160	Seeds and tree seedlings
Bamboo shoot	2	13	4,021,576	Seeds and barbwire
Greenhouse	4	5	3,784,669	Materials
Weaving	82	11	3,646,727	Materials
Paddy expansion	83	14	3,128,954	Materials and money in cash
Job's tear	165	18	2,688,270	Seeds and materials
Small livestock	195	12	2,594,970	Piglets, feed, and vaccines
Fish raising	130	9	1,863,519	Fingerlings and feed
Fruit tree	57	11	1,800,557	Seeds, fencing, and fertilizer
Average grant approved per beneficiary (All VLDGs)			1,927,985	

Source: Original calculation using 2019 SUFORD-SU registry data.

Note: The average grant approved per beneficiary is based all the VLDGs activities.

Box A.1 The Revolving Fund in Villages Receiving the VLDG

Each project village in SUFORD-SU received US\$8,000 for village livelihood development grant. However, the amount varied in earlier projects (World Bank 2013). In most SUFORD-SU villages, the grant was disbursed through a revolving fund at the village level. This financing involved lending money to households as micro-credits or in-kind to a value that is comparable across households. In-kind loans consisted of providing inputs such as livestock animals, seedlings of cash crops, and so on.

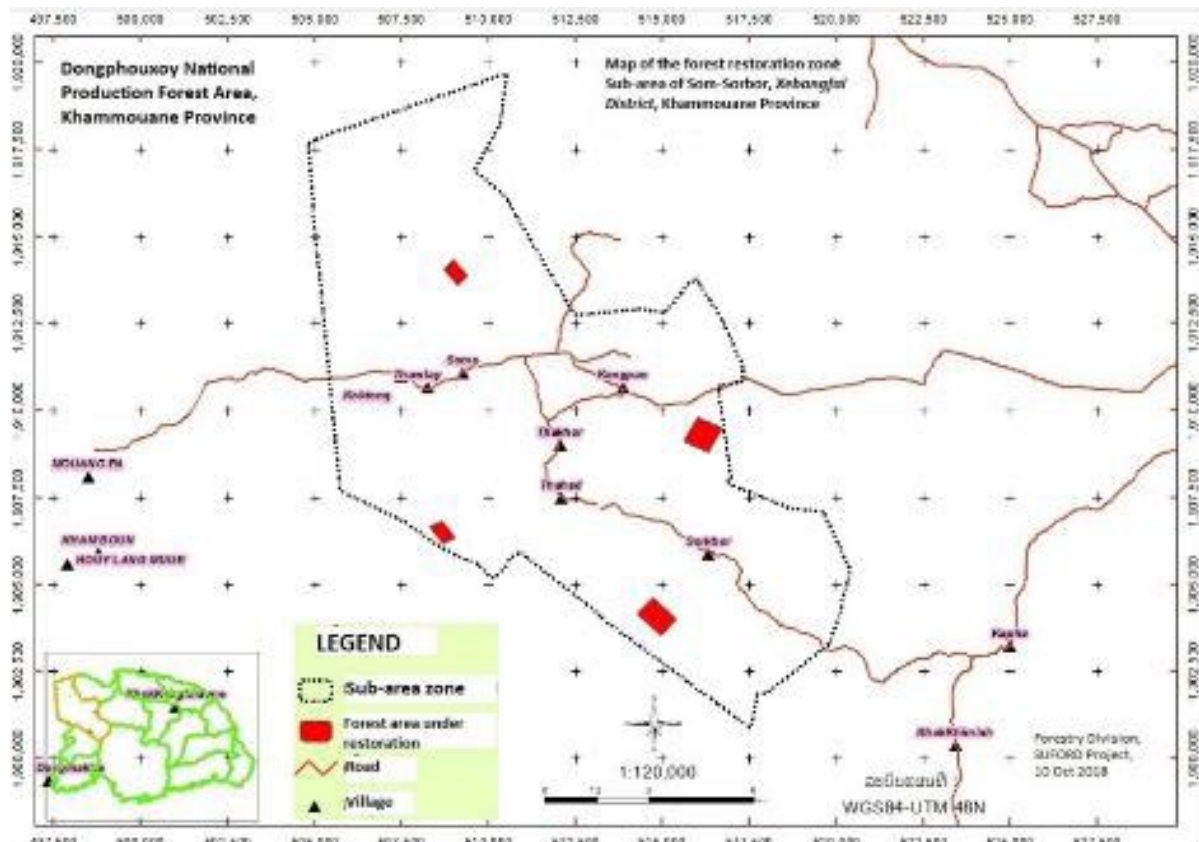
In-cash repayment has been used to replenish existing village funds or to set up a new revolving fund. In-kind repayment has involved distributing inputs—for example, livestock animals or seeds for crops—to other families who were interested and needed additional income.

The repayment period from the time of receiving the credit depended on the livelihood activity, for instance, the term was 1.5 years for pigs and 3 years for cardamom. The rules for repayment, and enforcement of these rules, also varied from village to village.

Additional income comes from participating in PSFM activities. Additionally, participation in forest management activities as part of the forest restoration work provides income through daily wages (LAK 50,000, or US\$6 a day) once or twice a year. The restoration work lasts for about a week to 10 days, employing 10–15 workers. Each village receives a one-time payment of US\$2,000 for forest restoration activities. Based on their interest, ability, availability, and their need for cash income, workers for PSFM activities self-select following an announcement made by village authorities.²⁶ However, village authorities rotate workers so that benefits are shared among villagers.

Workers typically help in forest inventory, preharvest inventory, baseline and tree marking, and harvesting, as well as in developing and implementing forest management plans, and in preparing harvest plans. Workers also receive formal training in how to use all survey and harvesting equipment. PSFM activities also include (a) the demarcation of land use zones resulting into the creation of maps (Map A.3), (b) awareness generation regarding the prohibition of slashing and cutting, and (c) rules and regulation associated with different forest categories. The restoration target is set at 25 hectares of forest per village.

Map A.3 Restoration Sites Near Kangpea Village, Khammouane District



Source: SUFOR-SU project document.

²⁶ Only those who are 18 years and above can participate.

Methodology and Data

The study uses a mixed-method approach, using both quantitative and qualitative data collected from the project implementation sites. While the quantitative data analysis preceded and informed the qualitative study, results from both analyses are given the same weight in the interpretation of the findings (Cullen, Coryn, and Rugh 2011). Using a mixed-method design provides greater insights into the experiences and the perceptions of changes (Greene, Benjamin, and Goodyear 2001). The quantitative method consisted of analyzing household survey data collected by the project implementation unit (PIU) and the qualitative method consisted of semi-structured interviews (SSIs) and focus group discussions (FGDs) with a purposefully selected sample of villages from the project. To our knowledge, there is no overlap between the respondents in the quantitative survey and the qualitative fieldwork.

Quantitative Data

A rich household survey data set from 2016 provides information on household characteristics, welfare, and participation in the project. The data was provided by the PIU. The household survey took place from January to December 2016. The sample size comprised 1,249 households, representing a population of approximately 7,500 people. The surveyed population is ethnically diverse, with more than 26 groups recorded. Nine of Lao PDR's 18 provinces were selected for the baseline (four in the north of the country, two in the center, and three in the south), totaling 37 districts and 124 villages. An average of 10 households per village was used for the surveys. Table A.4 summarizes the location of the baseline survey area and the distribution of the population covered by the study. The data set contains information on household composition, access to basic services, income sources, asset ownership, and participation or nonparticipation in the SUFORD-SU project.

Table A.4 Distribution of the Surveyed Population in SUFORD-SU, 2016

PROVINCES	NUMBER DISTRICTS (% OF TOTAL)	NUMBER VILLAGES (% OF TOTAL)	POPULATION (% OF HOUSEHOLDS)	MAIN ETHNIC GROUPS RECORDED
Northern				
Bokeo	4 (10.8)	14 (11.3)	140 (11.2)	Khamu, Ialou, Lu
Luangnamtha	3 (8.1)	9 (7.3)	91 (7.28)	Khamu, Akha
Oudomxay	7 (18.9)	21 (16.1)	209 (16.72)	Khamu, Lu, Hmong
Sayaboury	6 (16.2)	28 (22.6)	279 (22.4)	Lao, Khamu, Lu
Central				
Vientiane	6 (16.2)	20 (16.1)	200 (16)	Lao, Khamu, Hmong
Borikhamxay	4 (10.8)	10 (8.1)	100 (8)	Lao, Khamu
Southern				
Champasak	1 (2.7)	2 (1.6)	20 (1.6)	Lao
Xekong	3 (8.1)	18 (14.5)	180 (14.4)	Tai Deng, Klieng, Katu
Attapeu	3 (8.1)	3 (2.4)	30 (2.4)	Alak, Cheng

Source: Original estimations using 2016 SUFORD-SU household survey data.

The quantitative data present two main limitations. First, the data are not representative of all households in the provinces or villages where the survey was undertaken. The findings are not weighted and are only respective to the surveyed population. In the following analysis, all mentions to the population refer to the surveyed population and are not generalizable to the entire population in Lao PDR or in the provinces. Second, the data are only from a single point in time with no mention of past changes; they cannot provide information on welfare changes over time.

Qualitative Data

The qualitative data help overcome the second limitation by providing information on welfare changes over time. The objective of the qualitative component of this study is to understand the perspective of the project participants on the village level development grant (VLDG) process, its current and expected benefits, and whether the VLDG affected their livelihoods. The qualitative data consisted of (a) a desk review of project documents and existing literature, (b) semi-structured interviews (SSIs) of project participants and of key informants knowledgeable about the project interventions, and (c) FGDs.

The selection of the provinces and the villages was done in consultation with the SUFORD-SU project team and the World Bank team in the Lao country office. Several factors were considered during the selection of village sites: poverty level in the provinces, ethnic composition in the villages, when the VLDGs were received, presence of highland and lowland agriculture, and geographical diversity.

The team selected villages with different poverty levels, as mentioned in the SUFORD-SU VLDG Assessment from 2017. The team also selected villages with different ethnic groups and across different agro-ecological zones to have diverse experiences from a wide range of participants. The team used information from the 2016 PIU data to create a list of VLDG interventions in the selected villages and to uncover other village characteristics. The team made an attempt to match the village names suggested by the SUFORD team with the villages covered by the household survey data set from 2016; however, this was not always possible because of mismatching names, which often happens when Lao and other ethnic names are translated to English, and the lack of publicly available data sets and location information.

Selected villages were in the northern, central, and southern parts of the country, with households coming from different ethnic groups. Because of time and resource constraints, household interviews and FGDs were conducted in three provinces between March and April 2019. Fifty-four households in seven villages were covered during the fieldwork. Twelve FGDs were conducted with men and women separately, and one FGD per village was conducted with men and women together (Table A.5 and Table A.18 for further details). For general characteristics of the villages covered by the qualitative field study, see Box A.2 and Annex A1.

Households who participated in the VLDG activities were purposively chosen to identify and select information-rich cases.²⁷ Household selection for the qualitative interviews was done in consultation with the SUFORD-SU team

27 Purposive sampling is defined as a sampling strategy where “members of a sample are chosen with a purpose to represent a location or type in relation to the criterion” (Ritchie, Lewis, and Elam 2003); see also Palinkas et al. (2015).

Table A.5 Distribution of Interviewed Households and FGDs in the Qualitative Study, 2019

VILLAGE	DISTRICT	PROVINCE	ETHNIC GROUPS	INTERVIEWS (#)	FGD (#)
Kangpea	Xebangfai	Khammouane	Lao Loum	14	2
Nakhong	Xaybouathong		Phou Thai	6	2
Dakseng	Dakcheung	Xekong	Tai Deng	6	2
Kasangkang	Lamam		Arak	13	2
Na Trang	Xay	Oudomxay	Lu, Khmu	7	1
Poungwing	Xay		Khamu, Hmong, Lu	8	2
Phonehome (Poungluang)	Xay		Khamu	0	2
Total				54	13

Source: Qualitative study, April 2019.

and village, district and provincial forestry officials upon arrival to the sites. Households were selected for their knowledge about the VLDG interventions and involvement with the project.²⁸ The qualitative evidence offers in depth views of project participants but is not representative of all households in the provinces or villages where the interviews and FGDs were conducted. However, qualitative data can bring greater details about the contextual factors, community-level dynamics, and attitudes and opinions regarding the implementation and results of the VLDGs and can help generate insights and explanations, all of which are difficult to capture through quantitative data.

Gender-balanced teams were composed to conduct the SSIs and FGDs. Three local researchers were hired and trained in qualitative interviewing techniques, although finding social science researchers who could speak Lao was a challenge. In the end, two two-person teams consisting of a male and female researcher conducted the household interviews. FGDs were facilitated by the same group of researchers. Additional informational interviews

were conducted with government officials at the provincial level in a group setting.

Guides with open-ended questions were created and translated for the FGDs and SSIs before the teams went into the field.

The questions explored themes related to (a) income, assets, and expenditure; (b) shocks and impacts; (c) exposure to the intervention and knowledge and perceptions about the VLDG; (d) forests and forestry use; (e) access and rights; and (f) training and capacity building. The FGDs focused on general information about the village, primary agricultural and income-generating activities, other development projects in the village, and on the SUFORD-SU project and its VLDG component.

Each team was always accompanied by government representatives. The SUFORD-SU team was a great asset to introduce the research team to the villages and organize the meetings ahead of the team's arrival. However, a village representative was present during all the interviews, which could have influenced how an interviewee responded to questions related to value judgement of the VLDG activities.

28 Because the 2016 data are anonymized, the team made no attempt to interview households who might have participated in the survey.

Once translated from Lao to English, the qualitative data were analyzed and interpreted using qualitative data analysis protocols. Data analysis consisted of standard qualitative processes of transcribing and translating interviews from recordings into typed text; coding the data as per the analytical criteria using NVivo, a qualitative data analysis software, to organize the codes into meaningful categories; and conducting thematic analysis to arrive at the findings about welfare improvements. Identifier components in quotes and corresponding locations of interviews and group discussions have been avoided to protect the identity of the respondents.

Each team took many steps to maintain ethics in the qualitative field study. Ethical issues in qualitative research studies are often subtle and include anonymity, confidentiality, informed consent, and potential impact on the participants and vice versa. All participants were informed about the general purpose of the study, the process of data collection, and about the confidentiality of the information they shared through the SSIs and FGDs. Participants signed an informed consent regarding participation in this study and to record the SSIs and FGDs, but the team relied on observation notes and field dairies when digital recording was not permitted. The data have been securely stored, and personal data and biographical details have been replaced with pseudonyms.

Box A.2 General Description of the Surveyed Villages

Agriculture is the mainstay of all seven villages surveyed for the qualitative study, located in three provinces (Oudomxay, Khammouane, and Xekong). Paddy rice is the main crop, followed by other agricultural crops. Preferences for other crops varied slightly between the provinces. Villages in the north grew especially rubber and cardamom, garlic, peanuts, galangal, and green peas; rice, cassava, Japanese cucumbers, sweet corn, chilies were grown in Khammouane, in central Lao PDR; and coffee, sweet corn, cassava, sweet potato, cucumber, and pumpkin were pursued in Xekong in the south.

The ethnic groups found in the villages are Khamu, Lu, and Hmong in the north; Lao Loum and Phou Thai in Khammouane; and Tai Deng and Arak in Xekong.

Village populations ranged from 300 to 800 people. Migrants families were present in two out of three villages in the north, none in the central villages, and

one village in the south. The proximity of the villages to roads in the north and south could be a reason for new families settling in these villages.

Most villages collected non-timber forest products (NTFPs) such as bamboo shoots, mushrooms, wild greens, small animals (squirrels, birds), and medicinal and ornamental flowers mainly for consumption, but they also sold excess for extra cash income. In Xekong, villagers mentioned the NTFPs Lingzhi and snakehead mushrooms, rosewood seedlings, and orchids as a major source of cash income.

Forest fires, droughts, and floods are common natural hazards in these villages. Access to all-weather roads, public services, and markets, and a lack of agricultural land, drinking water, and water for irrigation were some of the challenges identified in these villages.

Source: Qualitative study, April 2019.

Note: For a detailed profile of each village covered during the qualitative study, see Annex A1.

As in all research, the qualitative study has some limitations.

The qualitative interviewing and FGDs were time-consuming and labor-intensive because the team had to transcribe and code all the materials recorded; the data collection, transcription, and analysis took longer than expected as the interviewees were very knowledgeable on the project. In addition, typical of qualitative studies, the interviewed households are not and do not represent the whole population of households receiving support from VLDGs. This study did not intend to test causal links or to generalize findings, but to capture views and experiences of interviewed VLDG households on welfare changes and improvements.

Findings

In this section, we summarize the findings from analyzing the quantitative and qualitative data.

Livelihoods and Welfare

Households have different levels of welfare.

Because of the lack of strong consumption data to construct a poverty measure comparable to official data, welfare is assessed using an asset index composed of durable goods, access to basic services, and land and livestock ownership (see Box A.3). This is the most rigorous way of comparing welfare in the absence of strong poverty measures (Sahn and Stifel 2000). Based on this asset index and as shown in Table A.6, the poorest provinces are Xekong, Bokeo, and Luangnamtha, with more than half, one-third, and one-fourth of the households in the bottom 20 percent, respectively. On the contrary, in Borikhamxay and Champasak, 40 and 45 percent of households, respectively, are in the top 20 percent. In the rest of the analysis, we classify households as having their asset index in the bottom 40 percent (B40) or in the top 60 percent (T60) of the asset distribution.

Table A.6 Welfare Quintiles in SUFORD-SU Provinces, 2016 (% of Households)

PROVINCES	BOTTOM 20%	20%–40%	40%–60%	60%–80%	TOP 20%
Northern					
Bokeo	34.3	23.6	10.7	17.1	14.3
Luangnamtha	27.5	37.4	23.1	8.8	3.3
Oudomxay	21.1	27.3	22.5	16.3	12.9
Sayaboury	7.9	15.1	16.9	29.4	30.8
Central					
Vientiane	2.0	11.5	26.5	31.0	29.0
Borikhamxay	1.0	13.0	22.0	24.0	40.0
Southern					
Champasak	0.0	0.0	25.0	30.0	45.0
Xekong	52.8	20.0	20.0	5.6	1.7
Attapeu	36.7	40.0	13.3	6.7	3.3

Source: Original estimations using 2016 SUFORD-SU household survey data.

Box A.3 Measuring Welfare Using an Asset Index

Welfare is proxied through an asset measure to encompass the multidimensionality of welfare. Income fluctuates substantially, introducing a bias in poverty estimation (Dercon and Krishnan 2000). Poverty in Lao PDR is officially measured using a consumption aggregate that requires a lengthy household survey with detailed questions on items consumed through purchases or home-production. A consumption aggregate is less volatile than income because households tend to smooth consumption to fulfill basic needs (Dercon and Krishnan 2000). When there are no questions on consumption, welfare can be proxied through an asset index. Such an index allows one to assess poverty based on changes in asset ownership (Sahn and Stifel 2000).

Similar to the model defined by Sahn and Stifel (2000), factor analysis was used to establish the weights for each selected asset. The weights are the standardized first principal component of the variance-covariance matrix of the observed household assets. The rotated first factor was kept as the underlying factor to compute the index.

In the analysis, 18 common assets were selected and converted into dummy variables. Most assets were classified as durables, while only one variable related to household characteristics was included (housing type). The sum of the weighted assets was afterward carried for each household to construct the wealth asset index (WAI).

Household composition is on average the same for households in the B40 and in the T60. On average, household size comes to six members for the whole sample, of which approximately half are women. One disabled person is observed in every 10 households (Table A.7).

B40 households are more likely to suffer rice shortages. Households with enough rice for home consumption throughout the year stand at 68.9 percent of the whole sample, with a significant difference observed between the B40 households (52.1 percent) and the T60 (80.1 percent). A food shortage experienced for a period of 1–3 months is more encountered in the B40 households (24.1 percent) than in the T60 households (10.2 percent). Purchasing

food at the market or within the neighborhood is the main coping mechanism practiced by the B40 population (14.9 percent) and the T60 population (9.2 percent) during a period of rice shortage, with bartering food items or simply reducing their daily food portion being the alternatives.

Access to electricity is unequal; the B40 use more alternative sources of energy than do the T60. Most households are connected to the electricity grid (77 percent); few use alternative sources of energy such as generators, pico-hydropower, or solar panels. Information on access and availability of water supply was not collected during the baseline survey.

Table A.7 Overall Characteristics of Surveyed Population in SUFORD-SU, 2016

VARIABLES	OVERALL	BOTTOM 40	TOP 60
Household (HH) composition			
Household size	6.1	6.1	6.0
Number of female members	3.0	3.1	2.9
Number of members with disabilities	0.1	0.1	0.08
Food security (percent)			
HH having rice sufficiency throughout the year	68.9	52.1	80.1
HH experiencing rice shortage for 1–3 months	15.8	24.1	10.2
HH experiencing rice shortage for 4–6 months	6.2	10.8	3.2
HH that purchased food during food shortage	11.5	14.9	9.2
HH that bartered food during food shortage	4.4	7.0	2.6
HH that ate less food during food shortage	4.7	5.8	3.9
Access to electricity (percent)			
Electricity grid	77.2	53.4	93.1
Generators	2.8	4.6	1.6
Alternative sources of energy	11.3	17.4	7.2
Asset ownership (percent)			
Televisions	68.5	21.4	100.0
Satellite dish	64.2	14.2	97.6
DVD player	31.9	6.2	49.0
Rice husker	6.3	1.6	9.5
Car	11.6	5.4	15.8
Plowing vehicle	5.5	2	7.9
Hand tractor	38.2	11.8	55.8
Tractor	5.7	2.6	7.7
Motorbike	74.2	45.8	93.2
Bicycle	28.2	11.2	39.5
Mobile phone	87.8	72.4	98.0
Land and livestock (percent)			
Land ownership	97.4	97	97.7
Land size (greater than median)	49.3	36.2	58.1
Big livestock	52.5	45.6	57.1

Source: Original estimations using 2016 SUFORD-SU household survey data.

While asset ownership is on average high, B40 households are less likely to own such assets.

Most of the surveyed households own a land parcel for crop cultivation (97.4 percent), followed by a mobile phone (87.8 percent), a motorbike (74.2 percent), and a television (68.5 percent). The substantial difference in asset ownership between the poorest and the richest is seen for satellite dishes, televisions, motorbikes, and hand tractors. Moreover, the T60 tend to have larger land parcels and raise big livestock (cows and buffalos) than do the B40.

Agriculture and forest-related activities are the main activities for households.

Participation in forest-related activities is high, with nine out of ten households engaged in NTFP extractions (Table A.8). In addition, four out of ten households are involved in timber extraction activities (39.4 percent). Households surveyed are also engaged in crop cultivation (98.2 percent) and livestock raising (80.5 percent). In comparison, few households are engaged in hunting (20.5 percent) and in crafting (16.4 percent).

B40 households are more likely to sell forest-related products than are the T60, while the latter are more likely to sell agricultural products.

Six out of 10 households participate in the market of forest products. Just a bit more than half of the households sell non-timber forest products (NTFPs) and about 29 percent sell timber products, although during the qualitative fieldwork, households were very reluctant to talk about the sale of timber. Households rarely engage in the markets of both timber products and NTFPs. Participation in the agricultural market is more important, with 73.7 percent of households selling crops, while 61.5 percent of households sell livestock. All households producing crafts or hunting are selling these items. However, it has been reported that finding a market for woven products was a challenge for poorer households, and lack of knowledge about design and trends was another issue. Well-connected, better-off households found it easier to sell and received custom-made orders.

Table A.8 Distribution of Forest and Farm Activities for All Households (%)

	PARTICIPATION			MARKETING		
	LAO	BOTTOM 40	TOP 60	LAO	BOTTOM 40	TOP 60
Forest-related activities	92.5	92	92.9	63.7	73	57.5
Timber-related activities and products	39.4	34	43.1	29.1	27.6	30.0
NTFPs (domesticated and wild)	92.6	91	93.7	56.9	64.6	51.8
Craft	16.4	18.2	15.2	16.4	18.2	15.2
Hunting	20.5	24.4	17.9	20.5	24.4	17.9
Agriculture (crop and cash crops)	98.2	98	98.4	73.7	64.4	80.0
Livestock	80.5	79.4	81.2	61.5	50.2	69.0

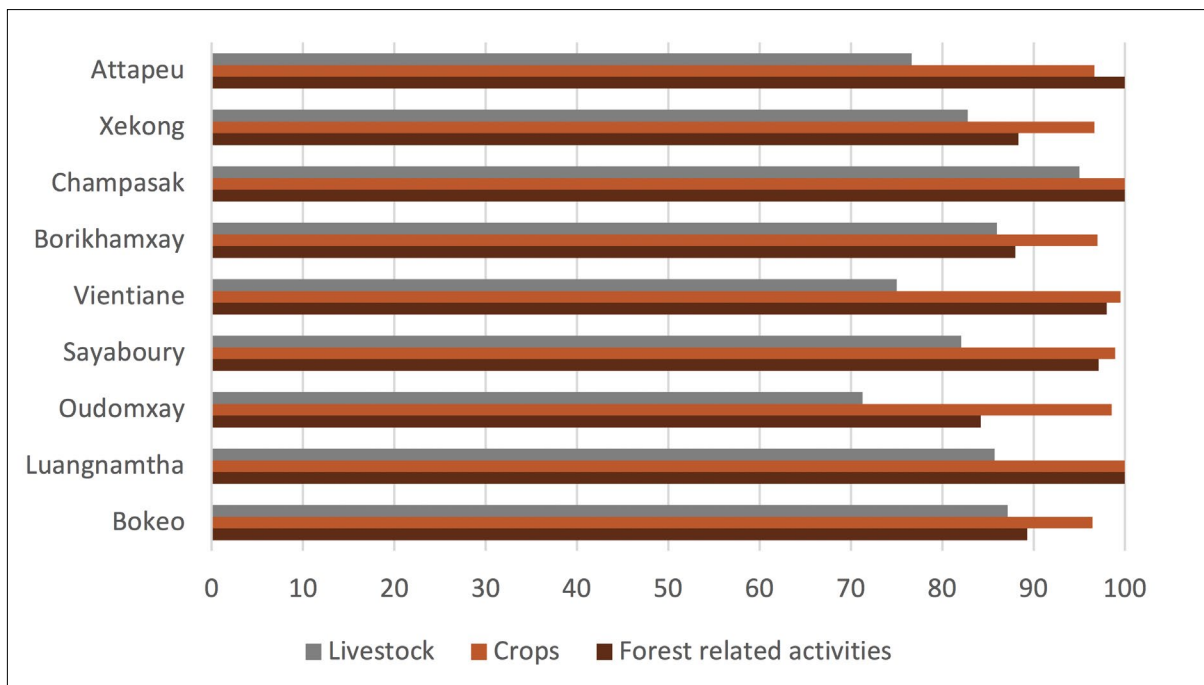
Source: Original estimations using 2016 SUFORD-SU household survey data.

Note: Marketing of timber products activities relate to sawn wood and wood only. NTFPs = non-timber forest products

Participation in forest-related and agricultural activities is high in all provinces. All households in Luangnamtha, Champasak, and Attapeu participate in forest-related activities (Figure A.4). In the other provinces, participation

in forest-related activities is between 84 percent and 99 percent. In Bokeo, Oudomxay, Borikhamxay, and Xekong, participation in agricultural activities is much higher than participation in forest activities.

Figure A.4 Distribution of Farm Activities by Province (%)



Source: Original estimations using 2016 SUFORD-SU household survey data.

Agriculture and wage are the main sources of income followed by forest income. Nine out of 10 households report income from farm activities, which is the most important source of income as households are engaged in cash-cropping and livestock raising (Table A.9). About 6 out of 10 households receive income from forest-related activities, providing on average 15.6 percent of the household income. In addition, about 7 out of 10 households have income from jobs outside the farm, representing 38.1 percent of a household's total income, while other sources of income contribute up to about 30 percent of total income. This mainly corresponds to temporary jobs but also more permanent ones such as schoolteachers or village heads.

Households in the bottom quintiles depend greatly on forest and farm income for their

livelihoods compared with richer households.

Forest income accounts for 25.5 percent of the total income for B40 households and only 13.7 percent for the T60 households (Table A.9). At the same time, in absolute terms, richer households have more income from forest (LAK 4.1 million) than poorer households (LAK 2.8 million). These results are consistent with findings in the literature, with contribution of forest income to total income decreasing with wealth in relative terms but increasing in absolute terms. Farm activities contribute to 58 and 54.5 percent of B40 and T60 income, respectively; however, in absolute terms, T60 households' annual income from farm and wage activities is on average three times higher than B40 households' income from these two sources. This could be explained by the higher land holding size and cattle ownership that is observed for the richer households.

Table A.9 Sources of Income and Share to Household Total Income

VARIABLES	HOUSEHOLDS WITH INCOME SOURCE (PERCENT)			INCOME VALUES (MILLION LAK/YEAR)			CONTRIBUTION TO TOTAL INCOME (%)		
	OVERALL	B40	T60	OVERALL	B40	T60	OVERALL	B40	T60
Total income per capita	-			3.8	2.0	5.2			
Total income	-			22.3	10.8	29.9			
Total farm income	87.8	79.8	93.1	12.6	6.3	16.3	56.5	58.0	54.5
<i>cash cropping</i>	37.3	25.6	45.1	8.0	5.0	9.1	35.9	46.4	30.6
<i>livestock</i>	61.5	50.2	69.0	6.0	3.4	7.3	27.0	31.4	24.4
Total forest income	63.7	73	57.5	3.5	2.8	4.1	15.6	25.5	13.7
Wage	68.5	61.6	73.2	8.5	4.3	10.9	38.1	39.4	36.5
Other sources (relatives, small business, others)	45.2	45.6	45.0	6.7	2.3	9.6	29.9	21.6	32.1

Source: Original estimations using 2016 SUFORD-SU household survey data.

Note: income measures are self-reported. Marketing of timber products activities relate to sawn wood and wood only. Shares are calculated for households participating in the activities and are greater than 100 percent over the sample.

More B40 households participate in upland agriculture with little participation in cash activities. As shown in Table A.10, upland cultivation (60.8 percent), poultry (78.2 percent), and pig raising (67 percent) are the main activities conducted for food consumption for the B40 households. The poorest households also tend to be less involved in cash crop cultivation (rubber, tea, maize, and coffee),

Table A.10 Participation in Forest and Non-forest-Related Activities by Welfare Status (% of Households)

	B40	T60
Forest-related activities		
Sawn wood	18	15.1
Forest inventory	13.4	13.5
Logging	11.6	11.1
Wage labor	15.2	11.6
Sell wood	15.8	18.4
Sell charcoal	11	12.8
NTFP collected in forest	64.6	51.8
Forest-based handicraft	18.2	15.2
Wildlife	24.4	17.9
Herbal medicines	13.2	12.7
Eco-tourism	10.6	11.6
Other forest activities	15.2	14.2
Crop cultivation		
Upland	60.8	25.1
Rain-fed agriculture	28.6	47.1
Staple crops	32.8	46.3
Cash crops	27.2	44.8
Livestock raising		
Cattle	45.2	56.6
Pig	67	60.6
Goat	13.6	13.1
Fishponds	14.4	20.8
Poultry	78.2	88.4

Source: Original calculation using 2016 SUFORD-SU household survey data.

cattle and goat raising, and fishponds than in production for home consumption that requires fewer inputs and is less productive.

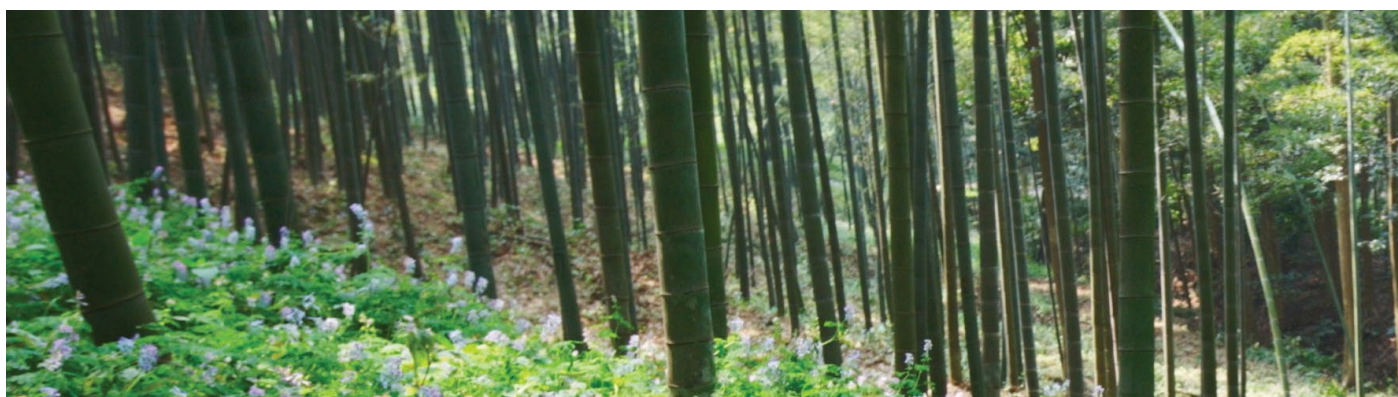
Both B40 and T60 households rely on a variety of NTFPs for their livelihoods. For B40 households, NTFP collection constitutes the most important forest-related activity (64.6 percent), followed by wild animals (24.4 percent) and sawn wood (18 percent) (Table A.10). For the T60 households, NTFP collection also constitutes the most important forest-related activity (51.8 percent).

Most of the surveyed population have diversified livelihood strategies. Income is generated principally from four different sources: forest-related activities coupled with agriculture, livestock, and wage (Table A.11). This is the main combination of activities to make a living for all households (26.7 percent), which is also true for the poorest and richest families (respectively, 22 and 29.8 percent). Most of the combined livelihood strategies incorporate forest-related activities, highlighting again the significant contribution of forests to livelihoods.

Table A.11 Combination of Livelihood Activities by Welfare Status (% of Households)

COMBINATION OF LIVELIHOOD ACTIVITIES	OVERALL	B40	T60
Forest-related, farming, and non-farming activities			
Forest + agriculture + livestock + wage	26.7	22.0	29.8
Forest + agriculture + livestock + wage + other	23.8	21.8	25.1
Forest + agriculture + livestock + other	10.4	11.8	9.5
Forest + agriculture + wage	7.9	7.6	8.1
Forest + agriculture + wage + other	5.0	6.2	4.1
Forest + agriculture + other	2.1	1.8	2.3
Forest + livestock + other	0.2	0.2	0.3
Forest + livestock + wage	0.2	0.2	0.3
Forest + livestock + wage + other	0.2	0.0	0.3
Forest-related and farming activities			
Forest + agriculture + livestock	13.1	16.2	11.1
Forest + agriculture	2.1	3.0	1.5
Forest + livestock	0.1	0.0	0.1
Forest-related and non-farming activities			
Forest + wage	0.6	1.2	0.1
Forest + wage + other	0.2	0.0	0.4
Farming and non-farming activities			
Agriculture + livestock + wage	1.8	1.8	1.9
Agriculture + livestock + other	1.7	2.8	0.9
Agriculture + wage	0.7	0.2	1.1
Agriculture + other	0.2	0.4	0.1
Agriculture + wage + other	0.2	0.0	0.4
Livestock + wage + other	0.1	0.2	0.0
Farming activities only			
Agriculture + livestock	2.2	2.4	2.0
Agriculture	0.3	0.0	0.5
Others			
Wage + other	0.1	0.0	0.1
None	0.1	0.2	0.0

Source: Original calculation using 2016 SUFORD-SU household survey data.



Households extract a wide range of NTFPs.

Households harvested 17 NTFPs (Table A1.1 in Annex A1). The most important NTFPs collected are bamboo shoots (75.2 percent), mushrooms (41.3 percent), and wild vegetables (40.3 percent) (Table A.12). The main products sold are resin/tree bark (62.2 percent), broom grass (58.9 percent), and sugar palm (58 percent). Wild vegetables and bamboo shoots are mainly for home consumption.

Poorer households collect more NTFPs than richer households—except for bamboo shoots

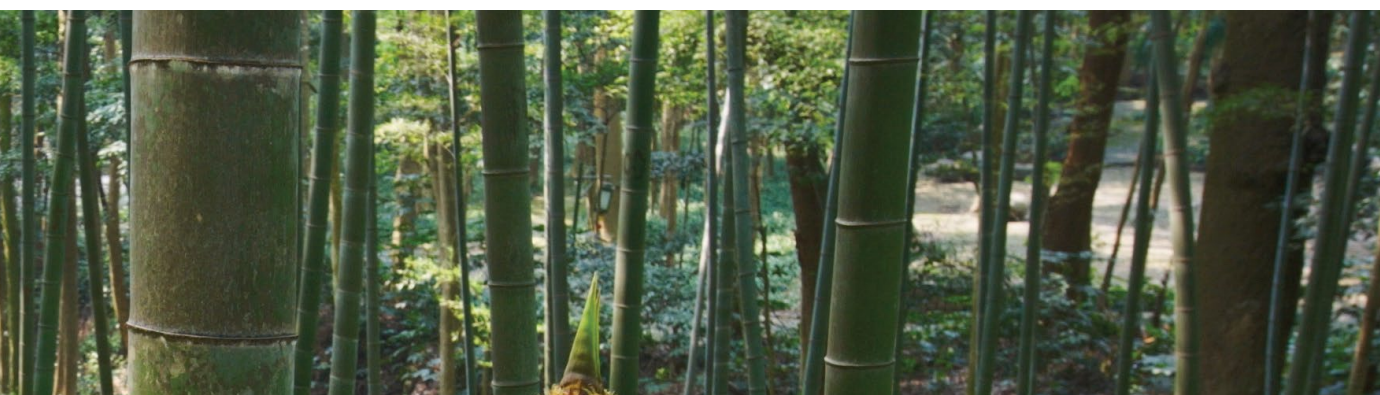
and sugar palm. Households mainly use products like bamboo shoots, mushrooms, wild vegetables, and rattan for home consumption, with the remainder being sold. In contrast, products like broom grass, resin and tree bark, sugar palm, and cardamom, which in relative terms are less likely to be harvested than other products, are more often sold. While poor households sell more of some products (cardamom, sugar palm, mushrooms), this is not true for the other products in Table A.12.

Table A.12 Main NTFPs for Home Consumption and for Sale (% of Households)

	HOUSEHOLDS COLLECTING NTFPS			- OF WHICH FOR SALE		
	LAO	B40	T60	LAO	B40	T60
Bamboo shoots	75.2	66.1	81.2	18.0	17.7	18.2
Mushrooms	41.3	46.1	38.2	25.8	29.8	22.7
Wild vegetables	40.3	40.4	40.1	14.3	17.8	11.9
Rattan	22	27.9	18.1	29.4	24.2	34.7
Broom grass	19.6	23.4	17.2	58.9	55.8	61.7
Resin and tree bark	14	21.8	8.8	62.2	57.7	69.5
Sugar palm	12.4	11.0	13.3	58.0	59.2	57.3
Cardamom	9	11.5	7.3	58.0	60.8	55.1

Source: Original calculation using 2016 SUFORD-SU household survey data.

Note: Sample restricted to household extracting NTFPs (N=1,115), bottom 40 extracting NTFPs (N=445), and top 60 extracting NTFPs (N=670). The remainder is used for home consumption. NTFP = non-timber forest product.



NTFP extractions differ among provinces.

Extraction of bamboo shoots is mainly practiced by households based in Vientiane Province (91 percent), while mushrooms are mainly sought in Xekong (60.6 percent) (Table A1.2 in Annex A1). Rattan, which is for sale, is mainly collected in Bokeo (46.4 percent), while the extraction of cardamom is most observed in Luangnamtha (49.5 percent).

The quantity of NTFPs collected varies with welfare status. Households collect multiple types of NTFPs, with 64.6 percent of households collecting two or three types (Table A.13). The poorest households tend to diversify more their extractions of NTFPs, with more than one out of five poor households collecting four or more NTFP types. Richer households are more likely

to collect two or three types and only 7 percent of households collect four types or more.

Households in the research sites have diversified livelihood strategies and uses of forest products. Richer households depend less on forest products than poorer households (Table 1 of main report). Poorer households have less diversified livelihood strategies than richer households (Table A.11); they depend more on forest activities for their livelihoods and collect a wider range of NTFPs (Table A.13). The lack of household members' characteristics, such as age, gender, educational attainment, and individual activity, is a key constraint in analyzing what characteristics and factors could explain differences in participation and revenues when controlling for these factors.

Table A.13 Total Number of NTFPs Collected by Welfare Quintiles

WELFARE QUINTILE	NONE	1 TYPE	2 TYPES	3 TYPES	4 TYPES	5 TYPES
Bottom 20%	15.2	6.8	27.2	28.4	18.4	4
20%–40%	4.8	14	28.4	29.6	18.8	4.4
40%–60%	10.5	12.1	33.9	31.1	10.1	2.4
60%–80%	10.1	14.9	32.7	31.9	8.9	1.6
Top 20%	9.1	17.3	36.2	30.3	6.3	0.8
Total	10.7	15.7	35.5	29.1	8.0	1.0

Source: Original calculation using 2016 SUFORD-SU household survey data.

Participation and Interventions

The grants provided by the SUFORD-SU were directed to individuals within villages living near production forest areas (PFAs). As explained above, the SUFORD-SU project financed livelihood activities that households living near PFAs were interested in implementing. However, not all households living near PFAs are participating in the VLDG activities. The PIU has nevertheless collected information on these households, which is extremely useful because it allows for comparisons between households participating in the VLDG scheme (receiving the grant) and those not participating in the VLDG scheme (not receiving the grant).

Participation in the VLDG activity does not significantly differ by the welfare status. The data in Table A.14 are somehow balanced, with 52.7 percent of the households having received the VLDG and 47.3 percent not. Most of the poorest and richest households benefited from

the grant, with respectively 51.6 and 53.4 percent of them having the opportunity to implement the activity.

Households receiving VLDGs appear to be better-off. On average, households engaged in VLDG activities own significantly more land and are less likely to experience rice shortages compared with households not participating in these interventions (Table A.15). Additionally, households participating in the VLDG interventions have more plowing vehicles than households not participating in the VLDG interventions.

Households who benefited from the VLDG were slightly more dependent on forest and farm than non-VLDG households. Seven out of ten households who received the VLDG generated an income from forest-related activities, compared with less than six out of ten of those who did not participate (Table A.16). VLDG beneficiaries also had a higher share of their income from farming than non-VLDG beneficiaries.

Table A.14 Participation and Nonparticipation in VLDG Interventions by Welfare Status (% of Households)

	OVERALL	B40	T60
Participation in VLDG	52.7	51.6	53.4
No participation in VLDG	47.3	48.4	46.6

Source: Original calculation using 2016 SUFORD-SU household survey data.

Table A.15 Characteristics of Participating/Nonparticipating Households in VLDG Interventions

	PARTICIPATING HOUSEHOLDS	NONPARTICIPATING HOUSEHOLDS	DIFFERENCE
Household size	6.4	5.7	0.6***
Land size (ha)	4.8	4.3	0.5**
HH connected to grid	77.7	76.6	1.0
HH with enough rice for consumption	72.6	64.7	7.9**
B40 households	39.2	40.9	-1.7
Access to electricity (percent)			
Electricity grid	77.7	76.6	1.0
Generators	2.3	3.4	-1.1
Alternative sources of energy	12.2	10.3	1.8
Asset ownership (percent)			
Televisions	68.8	68.2	0.7
Satellite dish	64.9	63.5	1.4
DVD player	31.9	31.8	0.1
Rice husker	6.5	6.1	0.4
Car	10.9	12.4	-1.4
Plowing vehicle	6.8	4.1	2.8**
Hand tractor	38.6	37.7	0.9
Tractor	4.4	7.1	-2.7**
Motorbike	75.8	72.4	3.4
Bicycle	27.7	28.8	-1.1
Mobile phone	89.4	86.0	3.4
Land and livestock (percent)			
Land ownership	97.6	97.3	0.3
Land size (greater than median)	53.0	45.2	7.9
Big livestock	54.1	50.8	3.3

Source: Original calculation using 2016 SUFORD-SU household survey data.

Note: HH = household; VLDG = village livelihood development grant.

Table A.16 Sources of Income for Participating/Nonparticipating Households

VARIABLES	HOUSEHOLDS WITH INCOME SOURCE (%)			INCOME VALUES (MILLION LAK/YEAR)			CONTRIBUTION TO TOTAL INCOME (%)		
	OVERALL	VLDG	NOT VLDG	OVERALL	VLDG	NOT VLDG	OVERALL	VLDG	NOT VLDG
Total income per capita	-	-	-	3.8	3.4	4.1	-	-	-
Total income	-	-	-	22.3	21.4	23.2	-	-	-
Total farm income	87.8	89.2	86.1	12.6	12.9	12.3	56.5	60.3	53.0
cash cropping	37.3	38.8	35.7	8.0	7.3	8.9	35.9	34.1	38.2
livestock	61.5	63.2	59.6	6.0	6.3	5.7	27.0	29.6	24.4
Total forest income	63.7	69.3	57.5	3.5	3.5	3.5	15.6	16.3	15.0
Wage	68.5	69.0	68.0	8.5	7.5	9.6	38.1	35.3	41.3
Other sources (relatives, small business, others)	45.2	44.4	46.2	6.7	4.9	8.5	29.9	23.1	36.8

Source: Original calculation using 2016 SUFORD-SU household survey data.
Note: VLDG = village livelihood development grant.

A wide range of VLDG activities were offered to households. The most important activities financed by the VLDG were NTFPs; small livestock such as pigs, goats, and poultry; and cash crops; followed by expansion of paddy fields and fish farming (Table A.17). Most beneficiaries preferred to engage in NTFPs.²⁹

There is a lack of consensus on the process of VLDG distribution and livelihood activity selection. Government officials and village leaders during the group discussions noted that the income-generating activities were shortlisted by the villagers and finalized in consultation with the district and provincial authorities. On the other hand, individual respondents expressed that they were provided a list of activities by the village and

district authorities and they had to choose from those activities, as this representative quote exemplifies:

“They [the authorities] gave us the list. If we want to use money to do other things, they did not allow.”

Villagers received grants from village authorities in cash or in kind. The village authorities received the funds from the government. Participants were then granted a credit or equivalent amount in kind after an assessment of their readiness, capability, and

²⁹ For activities implemented by participants in villages covered by the qualitative study, see Table A.18.

Table A.17 Type of VLDG Activities Implemented by Beneficiaries (%)

	OVERALL	B40	T60
NTFPs (cardamom, Job's tear, broom grass)	28.6	32.2	26.3
Small livestock (goat and pig raising)	16.3	22.5	12.3
Cash crops (maize, tea, cassava)	15.0	13.6	16.0
Paddy expansion	7.3	7.0	7.5
Fish	6.8	6.6	7.0
Paddy cultivation	6.1	1.9	8.8
Tree (teak and vernicia)	4.6	6.2	3.5
Weaving	4.6	0.8	7.0
Fruit crop (banana, pineapple)	2.6	1.9	3.0
Fodder	2.4	2.7	2.3
Fruit tree (lemon, orange)	2.4	1.9	2.8
Home garden	2.3	0.8	3.3
Poultry	2.0	4.3	0.5
Greenhouse	1.2	0.4	1.8
Integrated farming	0.9	1.2	0.8
Cow raising	0.6	0.4	0.8
Frog	0.5	0.0	0.8
Irrigation	0.2	0.4	0.0
Vegetables	0.2	0.0	0.3

Source: Original calculation using 2016 SUFORD-SU household survey data.

availability of labor and skills. Cultural and traditional practices were also considered when providing income-generating activities. For instance, Lao Lu women are skilled weavers, and villages with Lao Lu population chose weaving as a VLDG activity.

Welfare Improvements

The SUFORD-SU project design targeted welfare improvements through two components: (a) the VLDGs financed by the project and

disbursed to selected villages as one-time payments; and (b) income through share of timber harvest revenues as part of participatory sustainable forest management activities in the PFAs. However, the logging ban initiated in 2015, in response to declining forest cover in the country and as part of forest governance reforms, has meant that the only benefits received by villagers have been the VLDGs and restoration work. Further explanation on the villages' choice of converting the VLDGs to revolving grants is provided in Box A.4.

Box A.4 Why Revolving Funds Instead of Grants?

Although the donor mandate was a one-time grant through the village livelihood development grants (VLDGs), all seven study villages had converted the grant money into a revolving fund. The villages disbursed the grant money to participating households as micro-loans (cash and in-kind).

Two main explanations were provided by the project participants:

- a. The Lao government supported the idea of redistributing the funds in the villages to ensure that everybody benefits. This is part of the government's vision to establish a village development fund in each village throughout the country. The rationale is to provide easier access to financial services at the village level to implement various development and livelihood activities.
- b. They were adopting the practices and applying the experience from revolving funds initiated by other development interventions. For instance, villages in Khammouane province cited the experience of

revolving funds implemented by the Nam Theun 2 hydropower project to mitigate the impacts of the project on local livelihoods. Villages in Oudomxay had the experience of running rice banks supported by the United Nations Office on Drugs and Crime (UNODC) and borrowed some of those rules to the revolving fund.

“That fund is the revolving fund. The same as forest zoning, to ensure the long-term use without ending. Even though the amount of the money is small, but it needs to be used in the long term and everyone in the village must benefit from that money. That’s what they (officials) said...It is the same as the forest...for this fund, like it or not, it is the revolving fund which needs to be kept circulating within the village, and the project or the government won’t take it back...It is the assistance, free money, but it needs to be kept circulating in the village, not to be used up. That’s it.”

—Villager elder, male and VLDG recipient, March 2018

Source: Qualitative data, April 2019.

Agriculture is the mainstay of the interviewed households who participated in VLDGs, although they had some additional sources of income through labor, remittances, and temporary work. During the qualitative interviews, all respondents reported rice cultivation as their main source of income (Table A1.3 in Annex A1). Besides agriculture, weaving, and handicrafts making, selling NTFPs and temporary paid work in road construction, farm labor, charcoal making, and in rubber plantations provided important sources of

income. Women’s contribution to household income came through participation in weaving and handicrafts such as basket weaving, raising poultry, or the collection and selling of NTFPs, but they also participated in household agricultural activities.

VLDGs helped project participants improve their livelihoods, although the outcomes were not always sustainable. Many project participants who received support from the SUFORD projects expressed that the grant



Photo by Urf/iStock

helped them in terms of additional income and improved their standards of living: *“Our living is better, and we have money to spend daily. After receiving that fund, we could raise chicken and sell them....For instance, if we need money to support our children to school, we sold chickens. I could say that it helped our family to be better off.”* Some mentioned reduced slash-and-burn activities because these additional activities helped them diversify their incomes (Table A.18). For others, who were unable to continue with the livelihood activities, they were not so sure about the project’s impact on their lives.

Authorities, on the other hand, were conservative about assessing the impact of the livelihood grant stating lack of relevant data and monitoring: *“We monitored the reimbursement process but did not monitor the improvement of the livelihood of individual families. Therefore, it is hard to tell whether the living conditions of the villagers have improved...70% of the funds are still functional,... we stopped monitoring SUFORD-AF as the*

project ended and the offices lacked the fund to support the monitoring processes.”

Additional income helped meet basic needs and improve the quality of life.

Interviewed respondents perceived that the additional income from VLDG activities helped them support their children’s education and cover medical and other family expenses, such as dowry, family functions, and rituals. Households mentioned how they invested the money to meet the basic needs, such as buying water pumps and improving their access to the water supply system. *“Before we needed to carry water from other places. Some days, we didn’t have water to drink at home. Sometimes, we didn’t take a bath for two or three days. Now, the water is just here. I just recently bought a water pump. Those are the changes and improvement.”* People sold small livestock such as pig and goats and used them for consumption in times of need. In one village, additional revenue from the revolving fund was invested in small-scale infrastructure to build an access road to the village.

Table A.18 Perceptions on Welfare Impacts of VLDGs

VILLAGE (YEAR ESTABLISHED)	YEAR OF RECEIVING VLDG & SUPPORTED LIVELIHOOD ACTIVITIES (NO. OF FAMILIES)	PERCEPTIONS ON WELFARE IMPACTS OF VLDGS
Na Trang (1954) in Xay district, Oudomxay Province (Northern)	2018 —Tranche one (US\$8,000) provided to 58 families for raising pigs (10) and cardamom plantation (48) <i>Repayment not started</i>	Additional incomes were not generated for most activities Helped cope with shocks
Poungwing (1977) in Xay district, Oudomxay Province (Northern)	2018 —Tranche one (US\$8,000) to 40 families for cardamom plantation (29), greenhouse (7), and weaving (4) <i>Repayment not started</i>	Additional incomes were not generated for most activities Greenhouses reduced slash-and-burn activities Women used the handlooms for making clothes for their own use and to sell to friends and relatives
Phonehome (Poungluang) (1990) in Xay district, Oudomxay Province (Northern)	2018 —Tranche one (US\$8,000) to 65 families for cardamom plantation (41), greenhouse (5), and for raising chickens (11) and pigs (8) <i>Repayment not started</i>	Additional incomes were not generated for most activities Helped cope with shocks Greenhouses reduced slash-and-burn activities
Kangpea (1801) in Xebangfai district, Khammouane* (Central)	2005 —Tranche one (US\$3,000) to 13 families for raising goats (12) and chickens (1) 2006 —Tranche two (US\$5,000) to 22 families for cows (15), fishponds (2), expanding paddy fields (4), and grocery shop (1) <i>Money in circulation, repayment issues</i>	Income from selling livestock Use for own consumption Expanded paddy fields Helped cope with shocks

<p>Nakhong (1903) in Xaybouathong district, Khammouane* Province (Central)</p>	<p>2005—Tranche one (US\$3,000) to 17 families for raising cows and goats</p> <p>2007—Tranche two (US\$ 5000) to 27 families for raising cows and goats</p> <p><i>Revolving fund operational</i> in May 2019 during qualitative study</p>	<p>Additional income</p> <p>Income-generating activities are still pursued by participants</p> <p>Helped cope with shocks</p> <p>Contributed to the village reserve funds that provide low interest microloans to the needy</p> <p>Interest from revolving fund partly helped build an access road to the village</p>
<p>Dakseng (1983) in Dakcheung district, Xekong Province (Southern)</p>	<p>2017—Tranche one (US\$8,000) to 21 families for raising pigs</p> <p><i>In-kind</i> payments started April 2019</p>	<p>Additional income</p> <p>Ability to use livestock for religious rituals and in cultural practices</p> <p>Revolving fund working well</p>
<p>Kasangkang (1975) in Lamam district, Xekong Province, (Southern)</p>	<p>2009—Tranche one (US\$4,000) for bong tree/gum tree seedlings (163 families)</p> <p>Unable to repay (earlier SUFORD project)</p> <p>2017—Tranche two (US\$4,000) to 14 families for raising goats (9) and weaving (5)</p>	<p>No income from the trees because most of the plants didn't survive</p> <p>Income from selling livestock</p> <p>Most livestock were lost to diseases, theft, road kill, and poor animal management</p> <p>Women used the handlooms for making clothes for their own use</p>

Source: Focus group discussions and qualitative interviews, April 2019.

* SUFORD project, not SUFORD-SU project.

VLGDs strengthened project participants' ability to cope with shocks.

Because of their access to additional income generating activities, many participating households were better placed to cope with shocks (Table A.18), including a fall in income as a result of decreased agricultural yields, decreased demand for cash crops, sickness or death in the family, and food shortages. Some households sold their livestock or used them as collaterals for cash advances: *"I went to the plantation owner to borrow money for my wife's medical expenses...He asked me to weight my pig and gave me money in advance. I still have the pig*

but will be given to the plantation owner in few months...that's why I want to raise animals because they can help us in time of emergency."

Other households also borrowed low-interest loans from the revolving funds to deal with these shocks.

However, the grants appear not to have been disbursed to the poorest.

The dominant narrative was that poor families were prioritized for the first round of disbursement. Villagers identified poor families on the basis of their access to rice; house size and type; ownership of paddy land, cows, or buffaloes, availability of labor at the household level, and more.

However, across the villages people expressed that poor families were risk-averse and did not want to participate, so medium and well-to-do families participated in the VLDG-supported activities. Observations made during fieldwork also indicate that most of the fund recipients were not the poorest families.³⁰

If the VLDG activities do not work, household welfare can decrease because participants are expected to pay back their grants through the revolving fund. Participants who lost their VLDG-supported livelihoods expressed concerns about paying back the money, but they felt bound by responsibility so that other families could also benefit from the revolving grant. For those cases, there was a negative impact on their welfare, especially where village agreements required them to pay the money back eventually and in some cases with interest. Inability to pay back may also be associated with negative social perceptions about work ethics, such as lack of motivation and accountability, and personal issues such as drug addiction and alcoholism.

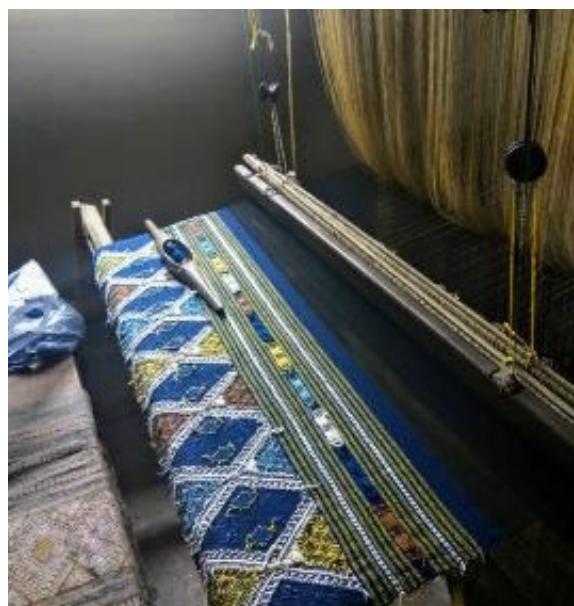
However, in most cases of failure, households do not pay back, which prevents the fund from distributing more money. For instance, in a village in southern Lao PDR, the village heads decided that the participating families do not have to pay back. *“When we had a meeting with the district, we already told them that we were not able to pay back for Yang Bong because we, all the families, planted already but they didn’t survive, and the villagers were not happy...the families have agreed not to pay because all the Yang*

*Bong died.”*³¹ In other cases, villagers believed they do not have to return the money (as per the original project plan) if their activity failed, and a few explained the grant as a *“gift from rich countries.”* Many believed it is the government’s responsibility to cover losses associated with failure of the activities.

Benefits from VLDGs are delayed in time.

The time to generate financial benefits from the alternative income-generating activities varies with the type of activity. While the participants who received pigs could sell piglets in a timely manner, households who received cardamom or coffee had to wait longer to harvest and sell their produce. Participants who received support in the past two years found it challenging (in Oudomxay and Xekong) to assess whether the VLDG money contributed

Photo A.1 “Sinh,” a Traditional Garment in a Loom Provided by VLDG



30 Interviews were conducted in participants’ houses, sometimes outside or inside the house, where it was possible to observe whether the household had assets such as a hand tractor, motorbike, concrete house, salaried job, the availability of rice, and more. In all the seven villages, families or relatives of the village chief participated in the VLDG.

31 The Yang Bong was distributed during an earlier phase of SUFORD. The bark of the Yang Bong, or bong tree (*Nothaphoebe umbelliflora*), contains gum, used as glue and in aromatic oils and incense sticks in Southeast Asia. The tree is almost endangered in Lao PDR.

Photo A.2 Cardamom Plant in Pongwing, Oudomxay



to improving their lives: *“We will continue the implementation, but we are not sure which one will prove the good results. This is just the beginning stage, so we are just following what we need to do. We have done all what were expected to do. That’s it.”*

Addressing capacity and skill gaps can help the new and alternative income-generating activities succeed. As part of the grant, at least one training was provided at inception to ensure that beneficiaries received the required skills and capacity to make livelihood schemes viable. However, it appears that beneficiaries struggled to find the requisite training or continued technical support to make the VLDG activities sustainable. Lack of timely and appropriate veterinary care led many participants to discontinue the activities related to livestock animals.

Lack of access to markets for crafts-based income-generating activities limit sustainability. Finding a market for woven products is a challenge for poorer households, who mostly use handicraft activities for their own consumption. Respondents also expressed lack of knowledge about design and trends. Access to quality raw materials was another issue, with poorer households using cheaper imported raw materials instead of traditional hand-dyed and hand-made materials. Another issue identified by grant recipients was household work that did not leave enough time for women to weave. A handicrafts market is well developed around the World Heritage site of Luang Prabang in northern Lao PDR. Better-off households were well connected and found it easier to sell products and often received custom-made orders from friends or relatives. Participants suggested that the government help them market these products.

Rapid changes in agricultural practices affects welfare. Government policies³² have resulted in significant changes from growing staple food to commercial crops in the SUFORD-SU villages. In the past decade, the government has been actively promoting investments in corn, sugarcane, rubber, and other industrial tree plantations, and coffee and tea plantations for export. Among newer crops, rubber was prominent in Oudomxay Province in the north, while cassava and Japanese cucumbers were frequently mentioned by respondents in Khammouane and Xekong Provinces. Overall, all villages observed crop diversification in the past few years accompanied by a decrease in availability of land for agriculture because of the growing population, expansion of industrial crops (such as rubber, coffee, and eucalyptus), infrastructure development, and

large-scale commercial agriculture businesses on land formerly used for rice cultivation. Large areas of Lao PDR are also contaminated with unexploded ordnance, preventing access to agricultural land.³³ Although policy encourages these changes for poverty alleviation, how these changes fit into traditional Lao farming systems will influence production and income. Factors such as existence of markets, traders, and commercial risks will also influence changes in welfare and income.

Photo A.3 Rubber Plantation, Oudomxay



Credit: Manali Baruah, March 2019

Other development programs limit the attribution of the effects to the SUFORD-SU program. In all seven villages where qualitative data was collected, at least a few other interventions on education, health, and infrastructure were implemented during the past five years. These changes in agriculture and infrastructure development created a high demand for land and put pressure on forest lands. All these changes in the broader policy context and activities on site have contributed

to changes in welfare, and project participants found it difficult to attribute these changes in living conditions and welfare to a single intervention alone.

Project participants had little knowledge of the overall SUFORD-SU project. All the project participants interviewed did not know that the VLDGs and the forest restoration activities were part of the same project, although the village leaders were generally aware.³⁴ People were hired for restoration activities (boundary demarcation, establishing plots, measuring trees, and so on) on a rotational basis, and those individuals who were hired may or may not have overlapped with households receiving the VLDG grants. The time gap³⁵ in the distribution of VLDG and restoration grants could explain the lack of knowledge of the overall project. Government officials and project staff attributed this lack of understanding to the remote location of the villages, challenges in regular monitoring, diverse ethnic groups and languages, and low literacy levels, which create barriers for effective communication and better understanding of project objectives. However, enhancing the understanding of the participants about grant payments, forest restoration, and overall rationale of the project could help address lack of awareness and clarify how livelihood diversification and decreased reliance on forests can lead to improved forest conditions.

The impact of VLDG on sustainable forest management is difficult to isolate. While it is challenging to determine whether VLDG

33 In 2011–12, AusAID invested around A\$9 million in rural development priorities and has achieved significant results, including the clearance of unexploded ordnance from 2,938 hectares (Source: AusAID). During the Second Indochina war (1964–1975), more than 2 million tons of bombs were dropped on Lao PDR, making it one of the most heavily bombed countries in the world (Source: UNDP, “Unexploded Ordnance,” Lao PDR, UNDP, <http://www.la.undp.org/content/laopdr/en/home/crisis-response.html>).

34 However, this could be a result of extensive preparation for the interviews and the field mission.

35 Project documents and reports have recognized that the disbursement of funds of VLDGs and forest restoration grants was slow; the VLDGs were delivered to the village level sometimes two years after planning owing to capacity challenges in financial management.

activities of the SUFORD-SU contributed to sustainable forest management, most of the VLDG participants expressed that the introduction of management rules through various project initiatives may have helped protect the forests that had deteriorated (number and type of trees, availability of NTFPs) over time:

“This area of the village was covered by the forest...there were many slash and burn activities, so the forest was cleared significantly...since the managing rules came, the forest destroying activities stopped.”

Other participants expressed that the SUFORD-SU has had no effect on the forest because they have been already protecting the forest areas supervised by the village, district, and provincial authorities. Also, VLDG-supported activities such as paddy expansion, small irrigation, establishing greenhouses and agroforestry may have helped prevent the clearing of new land for agriculture.

Villages have lower level of involvement in forest management. The participatory processes of sustainable forest management are symbolic in nature and decision-making regarding forest management and use remain highly centralized in Lao PDR. Forest protection and conservation was (mostly) due to fear of authority and punishment, rather than behavior change, or finding suitable sustainable alternatives: *“there are rules that we need to follow. We can no longer do as we want...if there were no management rules, the forest would probably disappear.”* In that

sense, people have less rights and access than before in what they can do. Few participants questioned the establishment of restoration plots, which for them meant less area to use. Also, while the project focused on PSFM in PFAs with provisions for sharing benefits for villages to access a portion of the timber wealth, the ban on logging introduced in 2015 may have also disincentivized people to engage in sustainable forest management activities.

Women participate in the VLDG along with their husbands. The livelihood grants were disbursed at the household level, and most project participants stated that there was equal participation at the household level: *“we made the decisions within our family—husband and wife discussed with each other.”* However, during FGDs and other interactions, women’s participation in meetings in the presence of men was minimal. Women respondents in general were also less aware of the overall project objectives; however, this differed by village and ethnic group.

Lessons Learned

As explained above, the SUFORD-SU project has been successful in improving household welfare:

- **Diversifying income-generating activities:** Cash and in-kind grants allowed the selected beneficiaries to undertake commercial activities that are aligned to the market demand, such as coffee, maize, and cassava; valuable NTFPs, including cardamom and Job’s tear; small livestock such as pig and goats; and paddy field expansion to get higher rice yield. Technical training provided by the District Agriculture and Forestry Office (DAFO) combined with the traditional know-how of the community permitted the sale of agricultural surpluses and animal husbandry

to local traders. This additional income is mostly spent to fulfill the basic needs of the households, such as food, housing, and medical expenses. This revenue is also invested in human capital and small-scale infrastructure; some interviewed families noted that they were able to send their children to secondary schools, while others managed to construct a private water supply system. Other benefits include food security and the ability to cope with shocks, such as sickness or death in the family, and/or loss of crops or livestock.

- **Providing additional income through forest restoration activities:** Most of the households were engaged in delineating zones for forest restoration, establishing sample plots, clearing weeds, and setting up sign boards. This activity was remunerated daily and the rotative system of participation allowed in principle for every household with extra labor to get the opportunity to earn some extra revenue. This small but not negligible amount was used for household daily expenses.
- **Creating a revolving fund brings benefits to a wider range of people in the communities:** Participation in the VLDG-supported activities and management of the fund enhances social cohesion and financial security, promotes sharing of good practices, and increases knowledge about micro-fund management, savings, and financial management.
- **Generating awareness about the links between forest protection and livelihood:** This was, however, limited to village authorities and within their network.

The SUFORD-SU has missed opportunities as well though, casting doubts on the long-term positive impacts of the project. More specifically, three barriers were identified:

▪ Targeting

- The revolving fund decreases the poor's participation in the program at the beginning: This study revealed that poor households were reluctant to participate in the VLDG because they were afraid of not being able to pay it back, expressing a lack of trust in their own ability as well as in the new activity. As a consequence, the poor could have reduced access to forest products since to receive a VLDG, a village must agree to improve forest management and conservation by restricting use without receiving compensation through additional income-generating activities. Self-selection into revolving funds could lead to a decrease in the welfare of poor households.

▪ Design of VLDG

- Maladapted choice of the livelihood options offered to households, because VLDG interventions are top-down: Although the VLDG can be offered for a wide range of activities, villages authorities choose which activities households could do. Households do not choose activities considering their skills and availability of labor, although they are the ones being affected if the activity does not succeed. In addition, livelihoods are simplified and not considered in their entirety, with limited links provided between the producers and traders to sustain income for the VLDG participants and make VLDGs more sustainable.
- The creation of single-produce markets at the local level limits local trade. Because villagers are encouraged to adopt the same activity, the possibilities to trade the end products in their village are limited. It was reported that access to other markets was hard because of road access and distances.

While some villagers use middlemen to reach these outside markets, the middlemen might capture more benefits from this trade than villagers. In addition, it was not clear whether villagers have all rights to sell their produce.

- Limited technical assistance offered to households with new livelihood options and to institutions offering the livelihood strategies is a key weakness of the VLDG design. More specifically, little improvement on human capital through technical assistance and learning of a new activity was observed. Technical capacities both at the village level and institutional level are limited.

▪ **Implementation of the VLDG**

- The VLDG requires a participatory approach, but this is not practiced. The highly centralized nature of government policies means weaker support for issues concerning forest communities' rights to forest and land and opportunities for sustainable income generation.
- The use of revolving funds requires high technical capacity as well as strong enforcement of payments, otherwise these funds could not work effectively, which could degrade social cohesion, negatively affect perceptions about honor and status in the community, and increase risks and inequalities.
- Irregular monitoring of the VLGD activities by the district staff owing to limited budget, capacity, and resources is another key weakness. The lack of monitoring resulted in cases where villagers with livelihoods that were not adapted to the context of the village did not receive timely advice and training to ensure success of these activities.
- Project participants do not understand the links between VLDG and forest conservation programs owing to the timing of activities and the lack of a clear explanation on links, which leads to no clear improvements of natural capital through the VLDG.

Discussion and Conclusion

The willingness to participate in additional livelihood activities supported by village livelihood development grants (VLDGs) is determined, among others, by the prospect of earning additional income, the presence of ready market for the products, and recognition that there is technical support available for these activities. Activities supported by VLDGs will be sustainable only when these three conditions are met. The VLDGs were designed to provide one-time grants to participating villages to finance income-generating activities at the household level. However, in practice, the VLDGs were implemented as revolving funds, disbursing microloans, thus making the VLDG more challenging to track, manage, and monitor over time. Revolving funds require local organizational and technical capacity and skills, with external enabling factors such as a well-developed local economy and the presence of insurance and collaborative networks to reach widely and work effectively and sustainably. External factors, such as markets and government policies, are highly influential at the community level and will change not only livelihood choices but even the types of driver of forest loss and fragmentation, thus affecting welfare outcomes. The 2015 logging ban has also disincentivized many to participate in

sustainable forest management activities. Attention could be paid to the needs of the poor and groups most vulnerable to resource access restrictions: Poor households have less capacity to adapt and deal with risks and uncertainty associated with new income-generating activities.

Baseline and end-line surveys for indicators on forest management and poverty reduction are required to more accurately measure and attribute how these interventions impacted welfare or sustainable forest management. The quantitative data used here only gives a snapshot of the situation and cannot be used to measure changes and attribution.

In addition, the qualitative fieldwork was too short; one day in each village is not enough to establish rapport with project participants, gain their trust, and expect them to express opinions and offer value judgments about the project results. The presence of government authorities during the fieldwork could have also affected their responses. Language was another challenge. The team had three local researchers who did not speak the local languages of some villages.

Finally, there might be diversified coping strategies in play that were not conclusively captured through this study. Households rely on kinship networks, sell assets, work as temporary wage laborers, withdraw savings, take loans, or participate in government welfare schemes to face stressful weather or idiosyncratic shocks. Detailed data collected through ethnographic methods would be required to understand these strategies and how they affect welfare.

Two main implications come from this work:

1. Forest investment projects would benefit from regular assessments of community participation and of the decision-making process, and from feedback on the results of the project activities. Better monitoring and evaluation frameworks with data collected at the baseline, midterm, and end of the project with well-defined indicators would help measure poverty and welfare as well as the impacts from the projects on these indicators. Working with existing questionnaires from the statistic office and with a short module to measure poverty in the project (Forest-SWIFT)³⁶ would also reinforce the accuracy of the results. Surveys are useful if conducted on all beneficiaries or on a representative sample of beneficiaries. A random selection of respondents from the survey do not ensure that the results are generalizable to all the beneficiaries.
2. Projects would benefit from having a multidimensional definition of welfare, not only through income or new activities. Approaching livelihoods through a complex and multidimensional process requires a thorough understanding of the social context, intra- and interhousehold dynamics, and locally defined needs and aspirations. However, this would bring additional and more sustainable benefits to recipients of the projects.

36 "Forest-SWIFT Methodology for High-Frequency Forest-Poverty Data Collection," PROFOR, World Bank, last updated June 9, 2020, <https://www.profor.info/knowledge/forest-swift-methodology-high-frequency-forest-poverty-data-collection>.



References

- Aye, T., and R. Howeler. 2008. *Cassava in Laos: Enhancing Sustainable Production and Utilization Through Farmer Participatory Research*. Centro Internacional de Agricultura Tropical.
- Choocharoen, C., A. Schneider, A. Neef, and P. Georgiadis. 2013. "Income Options for the Poorest of the Poor: The Case of Cardamom in Northern Laos." *Small-scale Forestry* 12 (2): 193–213. doi:10.1007/s11842-012-9207-1
- CIF (Climate Investment Funds). 2013. "Progress Updates From FIP Pilots: Lao PDR." Meeting of FIP Pilot Countries, Yogyakarta, Indonesia, September 24–26. https://www.climateinvestmentfunds.org/sites/cif_enc/files/meeting-documents/lao_pdr_-_meeting_of_fip_pilot_countries_progress_update_-_sept_2013_1.pdf.
- Coulombe, H., M. Epprecht, O. Pimhidzai, and V. Sisoulath. 2016. *Where Are the Poor?* Vientiane: Lao Statistics Bureau, Ministry of Planning and Investment.
- Cullen, A., C. Coryn, and J. Rugh. 2011. "The Politics and Consequences of Including Stakeholders in International Development Evaluation." *American Journal of Evaluation* 32 (3): 345–361.
- Dercon, S., and P. Krishnan. 2000. "Vulnerability, Seasonality and Poverty in Ethiopia." *Journal of Development Studies* 36 (6): 25–53. doi:10.1080/00220380008422653.
- Douangsavanh, L., and B. Bouahom. 2006. *Pathways Out of Poverty Through Maize and Job's Tear in Lao People's Democratic Republic*. United Nations Centre for Alleviation of Poverty Through Secondary Crops' Development in Asia and the Pacific (CAPSA).
- Greene, J., L. Benjamin, and L. Goodyear. 2001. "The Merits of Mixing Methods in Evaluation." *Evaluation* 7 (1): 25–44.
- Hansen, M.C., P. V. Potapov, R. Moore, M. Hancher, S.A. Turubanova, A. Tyukavina, D. Thau, et al. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." *SCIENCE* 342: 850–53. Data available on-line from: <http://earthenginepartners.appspot.com/science-2013-global-forest>.
- Palinkas, L., S. Horwitz, C. Green, J. Wisdom, N. Duan, and K. Hoagwood. 2015. "Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research." *Administrative Policy Mental Health* 42 (5): 533–544.

- Phengsavanh, P., B. Ogle, W. Stür, B. Frankow-Lindberg, and J. Lindberg. 2010. "Feeding and Performance of Pigs in Smallholder Production Systems in Northern Lao PDR." *Tropical Animal Health and Production* 42 (8): 1627–1633. doi: 10.1007/s11250-010-9612-4.
- Pimhidzai, O., N. Fenton, P. Souksavath, and V. Sisoulath. 2014. *Poverty Profile in Lao PDR*. Vientiane: Lao Statistics Bureau, Ministry of Planning and Investment.
- Ritchie, J., J. Lewis, and G. Elam. 2003. *Designing and Selecting Samples*. London: Sage.
- Sahn, D. E., and D. C. Stifel. 2000. "Poverty Comparisons Over Time and Across Countries in Africa." *World Development* 28 (12): 2123–2155.
- Tong, P. S. 2009. *Lao People's Democratic Republic Forestry Outlook Study*. Bangkok: Food and Agriculture Organization.
- World Bank. 2013. *Project Appraisal Document on a Proposed IDA Grant in the Amount of SDR 12.7 Million (USD 19.00 Million Equivalent) and Strategic Climate Fund–Forest Investment Program Grant in the Amount of USD 12.83 Million to the Lao People's Democratic Republic for a Scaling-Up Participatory Sustainable Forest Management Project*. Washington, DC: World Bank.
- World Bank. 2016. "Cover Page for Project/ Program Approval Report, Protecting Forests for Sustainable Ecosystem Services, Lao PDR." Revised April 8, 2016, Washington, DC, World Bank. https://www.climateinvestmentfunds.org/sites/cif_enc/files/meeting-documents/fip-lao_pdr-004a-ADB-protecting_forests_for_sustainable_ecosystem_services-cover_note.pdf.
- World Bank. 2019. *Partnerships and Opportunities for a New Green Forest Economy in Lao PDR: Sustaining Forest Landscapes and Livelihoods*. Washington, DC: World Bank.



Photo by Roberto Michel/Shutterstock

Annex A1.

VLDG Village Profiles

Table A1.1 NTFPs Collected by the Surveyed Population, 2016

	NON-TIMBER FOREST PRODUCT (NTFP)	NUMBER OF HOUSEHOLDS (HH) COLLECTING NTFPS	PERCENT OF HH COLLECTING NTFPS	NUMBER OF HH NOT COLLECTING NTFPS	PERCENT OF HH NOT COLLECTING NTFPS
1	Bamboo shoots	838	75.2%	277	24.8%
2	Mushrooms	461	41.3%	654	58.7%
3	Wild vegetables	449	40.3%	666	59.7%
4	Rattan	245	22.0%	870	78.0%
5	Broom grass	219	19.6%	896	80.4%
6	Resin and tree bark	156	14.0%	959	86.0%
7	Sugar palm	138	12.4%	977	87.6%
8	Cardamom	100	9.0%	1,015	91.0%
9	Wild plant	67	6.0%	1,048	94.0%
10	Other	64	5.7%	1,051	94.3%
11	Porsa	35	3.1%	1,080	96.9%
12	Banana flower	31	2.8%	1,084	97.2%
13	Fish and aquatic products	19	1.7%	1,096	98.3%
14	Fuelwood	19	1.7%	1,096	98.3%
15	Galangal and ginger	17	1.5%	1,098	98.5%
16	Wild animal	13	1.2%	1,102	98.8%
17	Malva nuts and other nuts	8	0.7%	1,107	99.3%

Source: Original estimations using 2016 SUFORD-SU household survey data.

Note: Other type of NTFPs include sour lychee, sweet potato, turpentine, Job's tear, taro, wild fruit, and insects.

Table A1.2 Share of Households Extracting Main Types of NTFPs by Province (%)

PROVINCES	BAMBOO SHOOTS	MUSHROOMS	WILD VEGETABLES	RATTAN	BROOM GRASS	RESIN AND TREE BARK	SUGAR PALM	CARDAMOM
Northern								
Bokeo	32.1	2.9	20.7	46.4	34.3	26.4	30	2.9
Luangnamtha	53.9	53.9	26.4	37.4	22	38.5	19.8	49.5
Oudomxay	45.0	28.7	16.3	19.1	26.8	20.1	2.4	20.6
Sayaboury	83.2	37.3	29.4	16.5	25.8	8.2	14	0
Central								
Vientiane	91.0	44	66	4.5	10.5	1.5	12	0
Borikhamxay	68	16	20	2	2	13	10	3
Southern								
Champasak	70	70	50	0	0	0	0	0
Xekong	73.9	60.6	55	21.7	0	1.1	0	0.6
Attapeu	70.0	56.7	63.3	33.33	0	3.3	0	13.3

Source: Original estimations using 2016 SUFORD-SU household survey data.

Note: Sample restricted to household extracting NTFPs (N=1,115). NTFP = non-timber forest product.

Table A1.3 Restoration Activities in SUFORD-Supported Villages

PROVINCE	DISTRICT	VILLAGE	START OF RESTORATION ACTIVITIES	PRODUCTION FOREST AREAS NEARBY	MAIN RESTORATION ACTIVITIES
Oudomxay (Northern)	Xay	Na Trang Village	2018	Nam Phak	Establishing restoration plots
	Xay	Poungwing Village	2018	Nam Phak	Establishing restoration plots
	Xay	Phonehome (Poungluang) Village	2018	Nam Phak	Establishing restoration plots
Khammouane (Central)	Xebangfai	Kangpea Village	Later part of 2018 as part of SUFORD SU and continued;	Dongphouxoy and Nakathing	Establishing restoration plots
	Xaybouathong	Nakhong Village	January 2019 as part of SUFORD SU- no restoration activities undertaken before	Dongphouxoy and Nakathing	4 restoration plots established
Xekong (Southern)	Dakcheung	Dakseng Village	2018	Xiengluang	Establishing restoration plots
	Lamam	Kasangkang Village	2018	Houaypen	Establishing restoration plots

Table A1.4 Main Agricultural Crops and Income-Generating Activities in SUFORD-Supported Villages

VILLAGE (YEAR ESTABLISHED)	MAIN AGRICULTURAL CROPS	INCOME-GENERATING ACTIVITIES
Na Trang Village (1954) in Xay district, Oudomxay Province (Northern)	Rice, cash crops (garlic, shallots, beans, peanuts, maize)	Rice Livestock: Cattle NTFP collection and sales
Poungwing Village (1977) in Xay district, Oudomxay Province (Northern)	Rice, cardamom, galangal, sweet corn	Rice Livestock: Cattle Cash crops: Job's tear, corn NTFP collection and sales
Phonehome (Poungluang) Village (1990) in Xay district, Oudomxay Province (Northern)	Rice, rubber, galangal, ginger, small livestock	Rice Rubber Cash crops: Cardamom, peanuts, ginger, galangal Livestock Wage labor
Kangpea Village (1801) in Xebangfai district, Khammouane*(Central)	Rice, cassava, Japanese cucumbers, sweet corn, chilies	Rice plantation Small animal raising NTFP collection and sales Weaving Working in rubber plantation
Nakhong Village (1903) in Xaybouathong district, Khammouane* Province (Central)	Rice, chilies, beans, sweet corn, cucumbers	Rice, Off season plantation Livestock: Cattle, pigs, goats
Dakseng Village (1983) in Dakcheung district, Xekong Province (Southern)	Rice, chilies, sweet corn, cassava, sweet potatoes, cucumbers, pumpkins	Cash crops: Coffee Vegetables (phuk kard or brassica, pumpkins, cucumbers) Livestock raising (pigs, cattle, buffaloes) NTFP collection and sales
Kasangkang Village (1975) in Lamam district, Xekong Province, (Southern)	Rice, chilies, sweet corn, cassava, sweet potatoes, cucumbers, pumpkins	Rice (upland and paddy) Livestock raising: Pigs Poultry: ducks, chickens Grocery shops Handicrafts: Making baskets for sticky rice and fish, weaving (fabric and arak patterns) NTFP collection and sales



Kasangkang Village

Kasangkang, in Lamam district of Xekong Province, northeast of Xekong City, was established in 1975 with approximately 163 families living in 82 housing units. There are three migrant families in the village. People belonging to the Arak ethnic group live in the village.

The village was electrified around five years ago and has drinking water (gravity-fed water and bore well). It is well connected with an all-weather road.

Forest area: Haou Phan Production Forest Area. Restoration activities undertaken both during AF and SU phases of SUFORD. Village authorities are the only ones knowledgeable about restoration activities.

Main agricultural crops: Rice, chilies, sweet corn, cassava, sweet potatoes, cucumbers, pumpkins

Main income-generating activities:

- Rice (upland and paddy)
- Animal raising: Pigs, ducks, chickens (poultry)
- Grocery shops
- Handicrafts: making baskets for sticky rice and fish, weaving (fabric and arak patterns)
- Non-timber forest products (NTFPs) (mushrooms, squirrels, orchids, rattans, shoots)

Some families plant high-value tree species like teak and rosewood. Other income sources include working in timber hauling sale, barter, and labor.

Rice production has decreased over time. The village faces at least three months of rice shortage since there is not enough land for cultivation and no irrigation. Soil quality is poor and it doesn't retain moisture. People depend on NTFPs, including timber, for house construction. Vietnamese vendors often buy the NTFPs.

Photo A1.1 Traditional Arak House

Credit: Manali Baruah, March 2019

The VLDG process

The livelihood activities were selected in consultation with the villagers and provincial and district officials. The villagers proposed weaving, goats, irrigation, and fishponds for the VLDG activities. However, the budget (US\$4,000) was enough only for weaving and goats. The grant was distributed to 14 families; nine families choose goat raising and five weaving. A few other families applied for weaving but were not selected; however, women discussants did not know the reason. All families who applied for goats received them.

The Village Livelihood Committee (VLC) has with three members but is not functional.

The five families participating in the weaving activity received LAK 1 million each and the nine

families raising goats received LAK 2,700,000 each. The villagers also considered raising cows and buffaloes, but the fund was limited. The district also advised not to buy big animals because they were expensive. The village set the term for goat raising at three years, and for weaving, at two years; the district and province were not involved in setting the term for returning the loan.

The village had received the first tranche of US\$4,000 for planting Yang Bong trees (an economically and culturally significant but now endangered species) during SUFORD-AF. About 80 tree seedlings per family were distributed covering a total of 163 households. The bong tree-based activity didn't survive because of tree mortality. Villagers reported that they received the seedlings during the dry season. No land assessment for suitability of tree

species was conducted. Authorities asked them either to participate in bong plantation or to leave it. Villagers mentioned that authorities may have been motivated by similar bong tree-based projects undertaken in nearby areas.

Some households wanted chickens instead of the bong trees.

Other observations

- Main challenges: Medical expenses, frequent diseases, malaria, and road accidents
- Smoking tobacco very prevalent, with women and children as young as 9–10 years smoking
- Livestock diseases, theft, roadkill, animals disappear, poor animal management (dogs bite goats; livestock eat cassava)
- Poorest didn't take risk, leaving the middle-class households to receive the grants
- Breakdown of joint families to individual households to access government and project assistance—"family book"
- Low education levels
- Other development projects: TABI, CARE, JICA, Agricultural Promotion Bank
- 15 households also received compensation from hydropower company

Dakseng Village

Dakseng, in Dakcheung district of Xekong Province, was established in 1983. It has approximately 80 families living in 50 housing units. There are no migrant families. People belong to the Tai Deng ethnic group. This group believes in traditional/ethnic religious practices. Livestock (cows, pigs) is often offered as sacrifice to atone for wrongdoing.

Pigs along with cash is often offered as bride price (LAK 8 million).

Forest area: Forest restoration plots have been established at two sites along with sampling plots. The work started in January and February 2019. Focus group discussants expressed that pressure on forests could increase in the future because of scarcity of land. The villagers reported having only 5 hectares of cultivable land, with only 1.5 hectares under paddy cultivation; many people gave up cultivation because of poor yield. Village practices slash-and-burn agriculture. Most families do not have enough rice for the year; relatives help them or they consume other crops such as corn.

Main agricultural crops: Rice, chilies, sweet corn, cassava, sweet potatoes, cucumbers, pumpkins

Main income-generating activities:

- Coffee
- Vegetables (*phuk kard* or brassica, pumpkins, cucumbers)
- Animal raising (chicken, pigs, cows, buffaloes)
- NTFPs (bamboo shoot)

Coffee is the main source of income. *Catimore* is the species grown and there is no diversity in coffee species. They sell both red and white beans. The machine (*eiw*, "to extract") was provided by Care International. They sell to Lao and Vietnamese vendors and Care International. The village also has a coffee growers' group. Coffee is good quality around the houses, with low production in the fields. They also practice agroforestry with fruit trees (jackfruit, oranges) planted in the coffee plantations.

Photo A1.2 The Tai Deng Believe in Traditional/ Ethnic Religious Practices



Credit: Manali Baruah, March 2019

Participants identified five main activities of the SUFORD-SU project: (1) Putting up the sign boards in the forest areas, (2) putting up the sign boards in the forest restoration areas, (3) establishing plots, (4) clearing climbers and weeds, and (5) pig raising.

The VLDG process

The village chief announced the project to the villagers, telling them that the SUFORD-SU would support the village and asking them to suggest the activities that they wanted to do. Each family wanted to participate and get the grant, but the money was not enough, so the poorest families were chosen first, to which everyone agreed. The poverty level was defined as limited labor in family, few people in family; the families were observed over a period of time for to assess their welfare (clothes, house condition food they were eating and availability) and their level of motivation for the uptake of livelihood activity.

The majority of the families chose pig raising because they were familiar with the activity. Pig raising was also suitable for the weather.

Photo A1.3 Drying Yarn and Paddy (left); Traditional Tai Deng House (right)



Credits: Manali Baruah, March 2019

Opinions differed on whether they could choose one VLDG or multiple VLDG activities. The villagers also proposed fishponds and growing cassava; however, they stuck to pigs because that's what they know.

A two-member revolving fund committee was established by the district authorities, but the villagers elected the members. The first task of the committee is to keep records on the pig raisers, which are prepared monthly; for example, how many newborn pigs, sold or lost. The second responsibility is to oversee the giving of pigs to the next round of households. The term is set at two years. The initial amount received was LAK 2,920,000, directly given to the family. They bought pigs by themselves from nearby villages such as Nachack, Natiem, Xiengluang, accompanied by two committee members; officials from the district also oversaw the process.

Participants decided to raise four pigs; based on their experience, that was an internal insurance (death, accident, loss). After two years with one family, the four pigs will be given to another family for two years. Any pigs born during those

two years belong solely to the family raising the four pigs regardless of the number of pigs born; they can sell, eat, or give them away if they want. The “original” four pigs of the first participants to receive pigs circulate within the village until every family has pigs. The poorest ones will get them first. After that, the village’s medium-income families will receive the pigs. The fund committee also monitors the pig raising (pen cleaning, feeding) and informs grantees about vaccination times. If a person does not have pigs to be given to other families, she must repay by cash equivalent to the initial amount in installments or altogether depending on the situation.

The committee maintains record on families who received grants and on who should receive what and when; the second round will be given in October 2019 (the pigs are given away when they are “three hands big”). The revolving fund was working well, and discussants did not offer any ways to improve it; the simple system seems to have been working for them.

Photo A.4 Drying Coffee, the Main Cash Crop (left); VLDG-Supported Small Livestock (right)



Credits: Manali Baruah, March 2019

Other observations

- Collection of NTFP for consumption and selling is common: Bee flowers (orchid) are collected and grown for selling; rattan leaves are also sold but rattan is becoming less available; expensive mushrooms are collected to be sold. No market to sell products.
- Many other organizations working in the village.
- Villagers buy timber for house construction from another village; growing rosewood and teak is unsuccessful because of local soil/ temperature conditions.
- Two types of tree bark grow naturally in the area, which is very profitable.
- Off-farm employment is less than LAK 20,000 a day; harvesting crops is slightly higher at LAK 30,000 a day; villagers go to nearby villages to exchange labor.

Kangpea/Kaengpae Village

Kangpea, in Xebangfai district of Khammouane Province, was established in 1801. It has approximately 119 families living in 115 housing units. There are no migrant families. People belong to the Lao Loum ethnic group. Flooding is a major issue in the village, for which the village receives a lot of assistance from the government. However, people did not perceive it as a major challenge (during interviews). The government invested in irrigation because of the flooding, and rice grown through irrigation now helps the villagers to cope. Villagers also received flood concessions money from the Nam Theun 2 hydropower project because the dam affected the availability of fish in the river and submerged some of their land.

Photo A1.5 Water Marks Left by Floodwater

Credit: Manali Baruah, March 2019

Forest area: Dongphouxoy and Nakathing. Very few households rely on forest or forest products. Villagers are aware about the restoration activities of the SUFORD, but the links between livelihoods and forest conservation are not clear to them.

Main agricultural crops: Rice, cassava, Japanese cucumbers, sweet corn, chilies

Main income-generating activities:

- Rice plantation
- Animal raising
- NTFP collection and sales

- Weaving
- Rubber plantation

The VLDG process

People had limited knowledge of the SUFORD project since a long time had passed. Per the focus group discussions (FGDs), a list of livelihood activities was given to them by the authorities and they had to choose. The village received the VLDG in two tranches. The first tranche (US\$3,000), given in 2005, supported 13 families, with 12 families choosing goat raising and one family, chickens. The second tranche (US\$5,000) was given in 2007 to 22 families to raise cows (15), establish fishponds (2), expand paddy fields (4), and set up a grocery shop (1). Repayment of the revolving fund has been an issue.

People who chose to raise goats, chicken, and cows received cash; for paddy expansion and fishponds, the district authorities hired companies to do the task.

The village head called a village meeting and asked who wanted to participate in the project. There was no formal application, and all applicants received the grant. These same responses were received during the discussion with women; however, the women also asked for a fair process for livelihood distribution grants.

The FGD with men revealed that there were no functional VLC; however, the women's group contradicted. There was no committee managing the funds. Village authorities said the poorest received the grants.

Photo A1.6 Bee Orchid, an Important NTFP (left); Drying Fish (right)



Credits: Manali Baruah, March 2019

Other observations

- The village is not extremely poor. All the villagers own land and they could clear land a lot for farming; they don't have any more unoccupied land.
- The village has received lot of assistance from projects, private companies, the government, from Chinese companies for cassava, and for growing Japanese cucumber.

Nakhong Village

Nakhong, in Xaybouathong district of Khammouane Province, was established in 1903. It has approximately 74 families. There are no migrant families. People belong to the Phou Thai ethnic group. Droughts, floods, and typhoons cause major damage to agriculture. There is no irrigation and water supply in the village. It has no access to the market and there is no health clinic in the village.

Forest area: Dongphouxoy and Nakathing.

People collect NTFPs (bamboo, rats, resin, mushrooms) mainly for consumption and some are sold within the village become of its remote location. Few families participated in the restoration activities that started in January 2019; however, the links between livelihoods and forest conservation were not clear to the participants.

Main agricultural crops: Rice, chilies, beans, sweet corn, cucumbers

Main income-generating activities:

- Rice
- Off-season plantation
- Cattle, pigs, goats

The VLDG process

The village received the VLDG in two tranches. The first tranche (US\$3,000), given in 2005, supported 17 families for goat and cow raising. The second tranche (US\$5,000), given in 2007, supported 27 families for the same activities.

Respondents selected these livelihoods because other options were not suitable given village conditions (soil, market, irrigation).

Two village savings/reserve funds provide loans for the needy. Original livelihoods have been continued by many participants. There is a strong incentive for the fund management committee since they receive 1 percent. Interest from both funds was used to build the access road to the village.

Other observations

- Villagers received the questions in advance; teams noticed Lao versions during the interviews.

Na Trang Village

Na Trang, in Xay district of Oudomxay Province, was established in 1903. It has approximately 218 families living in 183 households. People belong to the Lu and Khamu ethnic groups. Most households have been long-term residents of the village; there are a few short-term residents, but they still have been residents for more than five years.

Forest Area: Nam Phak. Restoration plots have been established, with sign boards put in place, the boundaries of the forest areas mapped and set, and the climbing plants cleared and cut. There were also awareness-generating activities on the prohibition of slashing and cutting in the areas, so all the villagers are aware whether they can or cannot enter and do any activities in the forest areas.

Therefore, most people are aware of what they can do, and which forests they can go to, but they have no knowledge of classification types. People sell NTFPs such as broom grass, cardamom, and tree bark. Forest vegetables are

Photo A1.7 Signage in a Production Forest Area



Credit: Emilie Perge, March 2019
collected mostly for consumption.

Main agricultural crops: Rice, cash crops (garlic, shallots, beans, peanuts, maize)

Main income-generating activities:

- Rice
- Cattle
- Selling NTFPs (tree bark, broom grass, cardamom)

People also work in road construction and in rubber plantations. There are plantations with investments from Chinese companies. The company usually plant the rubber and the villagers take care of the rubber plantation (contract farming) and share the profit 50/50 with the company.

Other sources of income are selling cardamom (only few families) and producing honey for sales.

To deal with shocks, people usually borrow rice from relatives and ask help of others to dig small canals to water the paddy fields. People also work on construction sites during cash shortages. Otherwise, they also borrow money from friends and relatives or from the rubber company.

Photo A1.8 Dry Rattan Shoots in the Local Market (left); Resin and Other NTFPs (right), Oudomxay



Credits: Emilie Perge, March 2019

The VLDG process

The provincial Forestry Office came to survey the Nam Phak forest area, which is close to the village. The decision then was made to include Na Trang village as part of the project. Because of the need to protect the forest area, locals upstream were relocated.

A VLC was established in 2015. A coordinator from the Agricultural and Forestry Office came to the village and the village chief called for a meeting with all the villagers. The officials from the district level worked with the village authority to identify suitable persons for the VLC. Three members were selected and an agreement with all the villagers was reached. Each committee member has a different responsibility; the deputy head is responsible for accountancy, for example, while others monitor the progress of each activity and report any issues to the village authority or the district.

The village choose pig raising and cardamom

as the main VLDG activities because they each required an initial lower investment, and therefore a larger number of households would be able to receive the fund. Cattle raising required a larger amount of money, so fewer villagers could join. Initially, different people in the village wanted to do different activities, such as poultry, fishponds, and greenhouses, but the fund was limited.

Ten households chose the pig raising activity and 49 households picked cardamom plantation. The initial target was for the poorest families in the village to do the activities. However, some of these families lacked the courage to take the risk because they were afraid that the pigs or cardamom might die, and they would not have the ability to repay the loans. Therefore, quite a few families with medium to high income levels were selected and participated in the activities. FGD participants expressed that the fund will be circulating, and if the poor families could see

how the first group of families are doing, they may be willing to join the next round.

The distribution process varied slightly between the two activities. For pigs, the village authority and the VLC went to the District Office to receive a check and then they withdrew the cash. Participating families were then given the money to buy the pigs themselves.

For cardamom, the seedlings were bought from a company (10,715 seedlings, at LAK 3,500 each). The seedlings were then distributed to the participating families. This cardamom was a new species to the villagers and its price was high compared with the general species of cardamom they were used to growing (a general cardamom seedling was about LAK 1,000 each). The participating families chose this species, believing it would provide high yield and fetch a good price.

The repayment period was not approaching at the time of the field study. For pigs, the term was set at 1.5 years from the time of receiving the VLDG; there are nine months to go before participating families need to repay. For cardamom, there were some discussions on how to repay, but it was not agreed on yet. Some people were willing to give seedlings to the next family as the repayment, while others were willing to repay by cash.

Photo A1.9 Cardamom Plants, Oudomxay



Credit: Emilie Perge, March 2019

Other observations

- Opinion about forest change was a bit ambivalent and was influenced by the opinion of the village head.
- There is a sacred forest in the village.
- No real penalty for not being able to pay back.

Poungwing/Poeng Wing Village

Poungwing, in Xay district of Oudomxay Province, was established in 1977. It has approximately 125 families living in 112 dwellings. People belong to the Lu, Hmong and Khamu ethnic groups. Approximately 80–90 families from Nambak in Luang Prabang have moved to the village in the last five years.

Forest Area: Nam Phak forest area.

Main agricultural crops: Rice, cardamom, galangal, sweet corn

Main income-generating activities:

- Rice
- Cattle
- Job's tear corn
- NTFP (broom grass)

Broom grass grows naturally, and the villagers preserve it in their own land for additional income.

The VLDG process

The village received the VLDG in 2018. The fund was distributed to 40 families: 29 for cardamom plantation, 7 for greenhouses, and 4 for weaving.

The villagers selected these activities so the fund would be enough to support the suitable activities. The greenhouses only required a small area and the villagers wouldn't need to work too hard; the participating families probably

Photo A1.10 Greenhouse Supported by SUFORD-SU (left); Cattle, an Important Source of Income, Oudomxay



Credits: Emilie Perge, March 2019

would not need to do a lot of slash-and-burn activities, nor would they have to go up the hill to plant crops because the greenhouses are close by the village. The weaving activity was selected because it is not too hard, and women can work from home. Other work would probably be difficult and require significant amount of money to start and needed to be carried out outside the house. The cardamom planting activity was chosen because the market price of cardamom was good.

Phonehome Village

Phonehome, in Xay district of Oudomxay Province, was established in 1990. It has approximately 120 households. People belong to the Khamu ethnic group. Approximately 40–50 families are from the nearby areas.

NTFPs, especially broom grass and tree bark, help people earn extra income. Apart from that, people sell groceries and work in construction sites.

Main agricultural crops: Rice, rubber, galangal, ginger, small livestock

Main income-generating activities:

- Paddy
- Rubber
- Cardamom, peanuts, ginger, galangal
- Livestock
- Wage labor

The VLDG process

This village first had a project by the German Agro Action, then SUFORD came in 2015–2016. Per the FGD, the villagers relied on the directions from the upper levels, especially the Agricultural Office. They disseminated and explained about SUFORD-SU and its objectives of protecting the forest and developing the livelihood of the villagers. The village decided to join the project for the potential benefits.

The village received the VLDG in 2018. The fund was distributed to 65 families: 41 families chose

cardamom plantation; 5, greenhouses; 11, raising chickens; and 8, raising pigs.

The village has a three-member VLC for coordination between the villagers and upper levels, especially relevant offices such as the Agricultural Office. The members were nominated based on certain criteria such as trustworthiness and responsible proactiveness. They also had to be literate because the job required reading and writing. For example, the committee is responsible for the withdrawal of money or the receipt of money from the Agricultural Office, and they distribute the money to all the participating villagers for each activity. Each activity type also has a group leader who works with the VLC to monitor the progress of activities.

The VLDG transfer process varied a little by each activity.

For cardamom, the Singta company propagated the cardamom. The villagers demanded this new species of cardamom and therefore got the seedlings from that company. However, that didn't mean that each household received cash and bought them. The company collected the information from each family and how much each family would get, LAK 200,000 or 300,000. They then calculated how many seedlings a family would receive and brought the seedlings. After that, the company collected the money from the Agricultural Office.



Annex B.

An Assessment of the FIP Contribution to the PBCC in Mexico

Introduction

This case study explains how the Forest and Climate Change Project (Proyecto Bosques y Cambio Climático, or PBCC) was implemented by the National Forestry Commission (Comisión Nacional Forestal, or CONAFOR) in Mexico, looking at the third component of this project, which received most of the Forest Investment Program's (FIP) contribution to the PBCC. To get a more comprehensive understanding of the ways through which forest investments could impact welfare in Mexico, this study analyzes the relationship between FIP-supported interventions, welfare, and forest conservation. The FIP-funded activities were directed toward two programs linked to innovations in early-action areas identified in the states of the Yucatán Peninsula and in the state of Jalisco: the Special Program for the Yucatán Peninsula (Programa Especial Península de Yucatán, or PEPY) and the Special Program for Coastal Watersheds in Jalisco (Programa Especial para Cuencas Costeras de Jalisco).

This case study focuses on PEPY to explore the contribution the PBCC has made to welfare at

the community and household levels, looking at an assets index, access to services, income as well as livelihood diversification, governance, and natural capital (forest quality). In addition, the study identifies the changes that have been generated by PEPY interventions in governance at the community level and in women participation. Gaining a better understanding of local participation and of the diverse ways through which PEPY enters each community is also part of the objective of this research.

Although PEPY was allocated at the *ejido* and *comunidad* levels,³⁷ this study intends to describe the impacts from PEPY on communities as well as on household/individual welfare. This requires information at these levels to disentangle the multiple factors involved in balancing forest conservation and local well-being. Unfortunately, the Encuesta Nacional de Beneficiarios (ENBC) data collected by CONAFOR and the National Institute of Statistics and Geography (INEGI, by its Spanish acronym) only reflect information at the community level. Therefore, this study also collected qualitative information from five localities in the Yucatán Peninsula to gain a more detailed understanding of the way in which PEPY

³⁷ In Mexico, *comunidades* (or "agrarian communities") are long-standing rural population centers that have been given formal ownership of their traditional or customary lands and are theoretically entirely composed of indigenous peoples. *Ejido* refers to a portion of land that has been titled to a rural population nucleus that was formed more recently or relocated from another area—most of them are non-indigenous campesinos. In many cases, rural inhabitants have both community lands and ejido lands, usually distinguishing individual and common pieces of land (Box B.1).

benefits are perceived by inhabitants of *ejidos*.³⁸ Information was elicited through semi-structured interviews, focus group discussions, and life history interviews. The choice to focus on the Yucatán Peninsula rather than Jalisco was guided by time and budget restrictions, security, and to maintain a relatively homogeneous social and environmental context.

The study shows that the diverse local contexts in which PEPY arrived and was implemented influenced the decision for participating in the forestry project and the way in which people recognize the benefits from these investments. Overall, PEPY had multiple benefits for the communities through an increase in women's participation in the decision-making process of the work program. When seen through an improved environmental resources and monetary lens, welfare improved: PEPY restrained deforestation by both reducing the agricultural frontier and implementing practices that prevent the deterioration of forest areas, while temporary jobs were created and monetary income increased.

Section 2 provides an overview of the PBCC in Mexico. Section 3 summarizes the methodology and data used in the analysis. Section 4 describes the localities, using to the extent possible the quantitative information, and provides the main findings presented in three parts: description of participation in PEPY, benefits from these programs, and strengths and weaknesses from these programs. Section 5 discusses these findings before concluding.

Forest and Climate Change Project

The Forest and Climate Change Project (Proyecto Bosques y Cambio Climático, or PBCC), funded by the Mexican government, the International

Bank for Reconstruction and Development, and the Forest Investment Program (FIP), financed efforts to support the sustainable management of forests, reduce emissions from deforestation and degradation (REDD+), build social organization, and generate additional income for forest products and services.³⁹ Approved in 2012 and closed in February 2018, the project was part of a national strategy to mitigate the effects of climate change. The project worked with rural communities⁴⁰ (*ejidos* and indigenous *comunidades*) throughout the country and was implemented by the National Forestry Commission (CONAFOR).

The PBCC had three components: (1) policy design and institutional strengthening, (2) consolidation of the priority community-based programs at the national level, and (3) innovation for REDD+ in early-action areas. The FIP-funded activities were linked to the third component and promoted innovations in early-action areas identified for the project in the state of Jalisco as well as in the states that form the Yucatán Peninsula. The project encouraged stakeholders to align agricultural and forest policies and promoted the design and implementation of sustainable landscape management models by communities. The project also financed technical assistance to a series of local development/technical agents to encourage and coordinate REDD+ activities with communities. Resources from FIP under the third component were mainly disbursed in two subsidy programs to communities for REDD+-relevant activities: the Special Program for the Yucatán Peninsula (PEPY) and the Special Program for Coastal Watersheds in Jalisco. *Ejidos* and *comunidades* voluntarily answered the call from CONAFOR and submitted their proposals with the help of a technical adviser.

38 PEPY was only implemented in *ejidos*.

39 Project Appraisal Document P123760.

40 In the report, we refer to community when talking about both *ejidos* and *comunidades*.

Local procedures inside each participating community played a role in deciding the details of the proposed project.

This included how the grant could be used and which *ejidatarios* or *comuneros* (members of the *ejidos* or *comunidades* with full property rights; see Box B1) could participate in the project. In some instances, the internal distribution of the funding was decided only by the current board (Comisariado Ejidal); in other cases, an inclusive consultation of the whole assembly was undertaken to decide on the program and who receives the funding. The grant from CONAFOR was received by the *ejido* or *comunidades* according to their work program and had to be implemented according to CONAFOR's operational rules.

Inside each community, work programs depend on the socioeconomic and environmental

characteristics of the *ejidos* and *comunidades*, previous participation on CONAFOR programs, traditional rules and practices, and the degree of social cohesion.

The community application to PEPY relied on the drafting of a work program that listed all activities to be carried either individually or collectively. The funding received by the community from PEPY can either be distributed to *ejidatarios* or *comuneros*, so they can implement the activities proposed during the application process, or be used directly by the community authorities for collective or common goods. It is important to mention that in general few women directly received funding since women rarely have rights to the land and some are reluctant to participate in meetings dominated by men; other barriers also prevent women from participating in the program (World Bank 2018).

Box B.1 Ejidos and Comunidades in Mexico

In Mexico, by law social land tenure is divided in two main forms: *ejidos* and *comunidades*. *Ejidos* result from the endowment of land to a group of peasants or people who become owners of the land together. In *comunidades*, they own the land due to restitution from their rights, and because they already owned those territories before the colonial times. Local organization is a result of these facts: The main authority is the *asamblea* (assembly), which has the full rights to make decisions regarding the territory of the *ejido* or *comunidad*. Only *ejidatarios* or *comuneros* have the right to vote in an assembly. Local inhabitants who do not have land rights, and hence have no voting rights, are known as *avecindados*. A *comisariado* (directive board) is a group of representatives elected by the assembly to make decisions regarding the territory of the *ejido* or *comunidad*; the board is called a Comisariado

Ejidal (Ejidal Board) in an *ejido*, and a Comisariado de Bienes Comunales (Board of Communal Goods), in a *comunidad*, which is usually constituted by an indigenous group. Each board is headed by a *presidente* (president). The *comisariado* decides on the constitution of a Consejo de Vigilancia (Vigilance Council), who are all agrarian representatives.

In terms of the civil authorities, there is a head of order in small localities, and a mayor or *presidente municipal* in the capital town, which is usually bigger than the other urban areas in the municipality.

In *comunidades* or *ejidos*, agrarian institutions are generally stronger than civil ones at the local level. There is a clear distinction in terms of functions and activities. Agrarian authorities make decisions on land and forests, while civil authorities make decisions regarding the human settlements.

Methodology and Data

This study relied primarily on quantitative data for the selection of sites; qualitative data was collected to analyze welfare changes.

The quantitative data analysis preceded and informed the qualitative study; results from the qualitative study give detailed information on changes in welfare resulting from the Special Program for the Yucatán Peninsula (PEPY).

Quantitative Approach and Methods

The quantitative approach consisted of analyzing different sources of secondary data.

The National Forestry Commission (CONAFOR) provided two data sets. The first one, the registry of *ejidos* and *comunidades* receiving PEPY (called here the FIP Database), contained information related to the type of projects funded, location, and the amount granted to the communities. The second data set is from the Encuesta Nacional de Beneficiarios (ENBC), a national survey on CONAFOR beneficiaries, undertaken each year between 2011 and 2016 (see Annex B1). In addition to CONAFOR data sets, the study relied on data from the population census collected by INEGI and poverty information generated by the National Council of Social Development Policies Evaluation (CONEVAL, by its Spanish acronym).

The information from the ENBC is not representative of households in the community. The ENBC data set provides information on program recipients or *beneficiarios* at the national level. A *beneficiario* is a legal entity (*ejido* or *comunidad*) that during the fiscal year benefited from one or more CONAFOR programs. The legal representative of the *núcleo*

*agrario*⁴¹ responded to a basic questionnaire on social conditions and welfare, as well as on the implementation of all interventions; however, the asked for socioeconomic information was about the person being interviewed, not the entire group or a sample of the *comunidad* or *ejido*. The data available had observations from 107 questionnaires about the PEPY, although the team had access to only limited data about the activities undertaken and not about the person responding to the survey. The representative also answered a questionnaire about perceived changes related to social capital and productive activities in the community. The data set is stratified and sampled by type of program (11 categories) and by type of land tenure (organizations, *ejidos*, landowners, and small private owners).

Census and remote sensing data were used to obtain more information about the municipalities and localities of the *ejidos* and communities. The ENBC data were complemented with census data from 2010,⁴² as well as with poverty estimates from CONEVAL. The information on poverty comes from two periods: 2010 and 2015. Deforestation data were obtained for the period between 2002 and 2011 from the National Forest Inventory (INEGI 2009, 2015), which depicted the initial deforestation occurring at the municipality level for the study areas. More than 450 different localities with approximately 1,500 different projects through five years in four different states were identified in the data. Given the characteristics of the data sets available, the objective of the quantitative analysis was to identify communities that had received funding from CONAFOR and that could be part of the qualitative fieldwork.

41 This is the *ejido* or *comunidad* formed legally through an administrative agricultural resolution, a jurisdictional resolution, and voluntary agreements.

42 The location given in this data set was converted (if needed) to the coding system used by INEGI for state, municipality, and locality. There was a significant amount of missing or mismatching codes, which needed to be manually corrected one by one.

Qualitative Approach and Methods

Qualitative research seeks to gather information based on the observation of behaviors, discourses, and open answers for the subsequent interpretation of meanings.

The diverse qualitative methods analyze the whole of the discourse among the subjects and their meanings, according to the cultural, ideological, and sociological contexts. The qualitative methods used in this research were focus group discussions (FDGs), life histories, and semi-structured interviews (SSIs), undertaken in a purposefully selected sample of villages participating in the project (El Poste and Xcanhá in Campeche state; San Isidro Mac-Yam and Kantemó in Yucatán state; and San Juan de Dios and San Isidro in Quintana Roo state). To our knowledge there is no overlap between the respondents to the quantitative survey (ENBC) and those who participated in the qualitative fieldwork.

Two FDGs were conducted in each community, one with adult men and one with adult women.

The people invited to the focus groups were either participants in the PEPY activities or were aware of the implementation of the program in the community.⁴³ These groups explored the relationship of community members with forestry activities, and their perception of PEPY. The dialogues in these groups were accompanied by spatial references to the places referred to by the participants. The questions used to guide the FDGs (Table B3.1 in Annex B1) make it possible to identify opinions and attitudes of the population on a specific topic, thus generating a moderated debate on the topics that this study seeks to explore. FDGs provide an overview of local activities and events (Salinas Meruane 2009).

Life histories, with a clinical sociology perspective, delve into the primary causes of people's situations and the dynamics of their past and present personal lives. This instrument allows one to go deeper into the private dimension of people's lives and provides information about events and customs to show what a person looks like. It reveals the actions of an individual as a human actor and as a participant in social life through the reconstruction of the events he or she lived through and how this experience is replicated (De Gaulejac, Rodríguez Márquez, and Taracena Ruiz 2005).

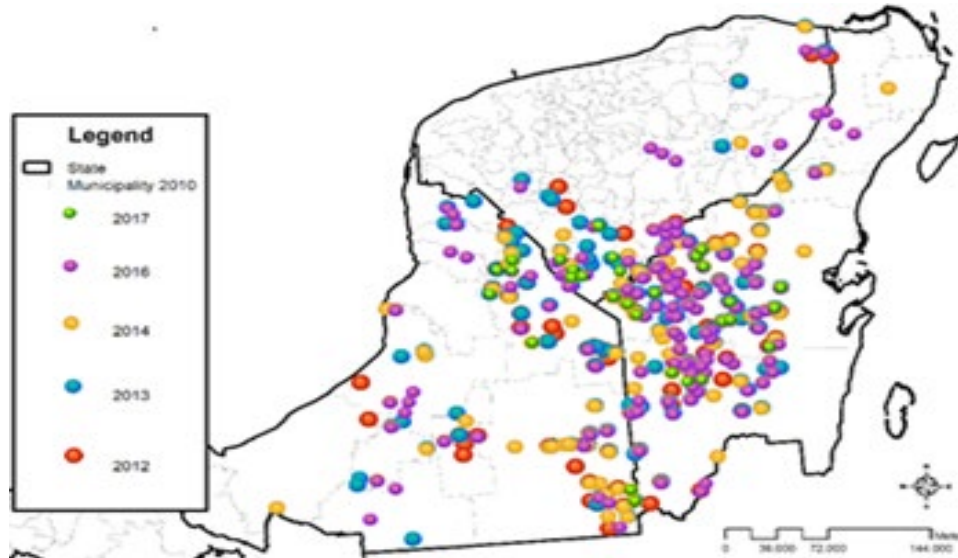
Two life histories were conducted in each community, in a gender-balanced manner.

Each life history consisted of an interview with a person of interest and one or two verification interviews with a family member and/or friend. Life histories were constructed from deep interviews conducted in the home of each participant, allowing the observation of socioeconomic conditions. The verification interviews functioned as a complement to the individual person's speech in the main life history interview. These verification interviews also made it possible to delve into the interaction between the person studied and his or her family and community environment (for example, the network of friends). The interviews in the life histories addressed four main components: the individual speech, family history, social structures, and perceptions of change and welfare (Table B3.2 in Annex B3).

Three SSIs were carried out with key social actors, mainly people who were or had been in positions of authority within the community.

The SSIs were conducted to understand the dynamics of the communities, the motivations

⁴³ Each focus group had between five and seven participants.

Map B.1 Localities in the Program by Starting Year in Yucatán Peninsula

Source: Original estimations using 2012–2017 CONAFOR data.

Note: GPS information was only available at the locality level, not at the ejido/comunidad level. A locality is a geographic term and represents the smallest subnational level recognized as a governmental entity.

for applying to PEPY, and the willingness of the community to collaborate in activities related to the program. This type of instrument gathers information based on guiding questions to obtain precise data, but it also goes deeper into the aspects that are considered necessary. SSIs allow for improvisation, giving more fluidity to the conversation, which often leads to more information (Salinas Meruane 2009). For the SSIs, the questions were aligned to four components: (1) community organization, (2) organization of forest-related activities, (3) forestry project decision-making process, and (4) community participation in forestry project implementation (Table B3.3 in Annex B3).

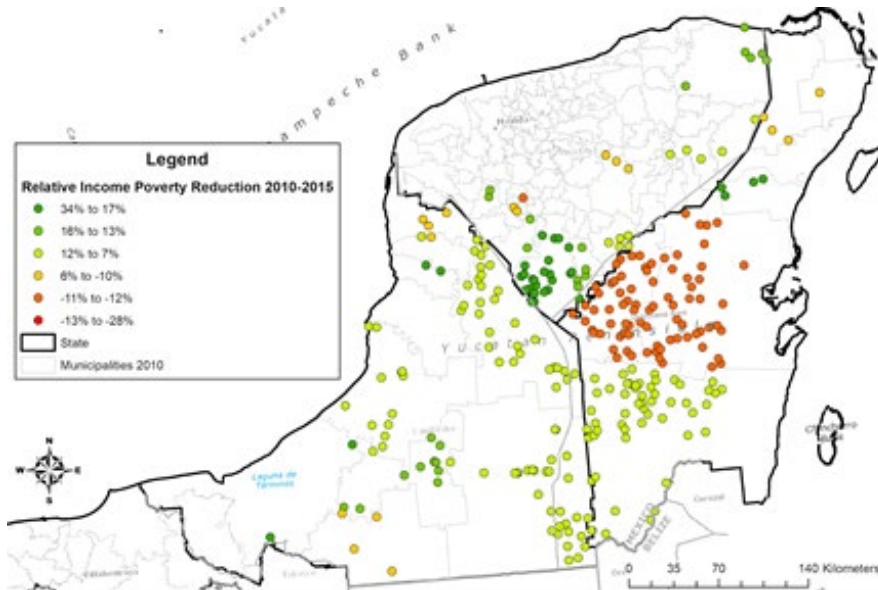
The communities chosen for the qualitative fieldwork were selected through purposeful sampling. Purposeful sampling consisted of selecting communities and households

considered as information-rich in terms of the objectives of the program. The approach used was to decide from the larger administrative division (state) to the smaller (localities⁴⁴ and communities), starting from the CONEVAL information and the FIP Database, down to census data and ENBC data.

With the consolidated information, the team first analyzed the inclusion of the four states in the study. Time and budget restrictions precluded going to all four states. With three out of four states part of the Yucatán Peninsula (Quintana Roo, Yucatán and Campeche), the team decided to focus the analysis there, omitting the Jalisco program. By doing so, it was possible to capture experiences with the forest-related investments in different states while maintaining a homogeneous social and environmental context in the study (Map B.1).

⁴⁴ A locality is geographic term and represents the smallest subnational level recognized as a governmental entity. Subnational levels in Mexico are state, municipality, and locality. *Ejid*os and *comunidades* can be in a single locality or span across multiple localities.

Map B.2 Income Poverty Reduction for Localities in PEPY



Source: Original estimations using 2010–2015 CONEVAL data.

Note: The range of relative poverty reduction defined according to quantiles of poverty reduction in the data.

Municipalities were selected based on municipal-level information.

One criterion was that the municipality had a relatively high reduction in poverty during the period using CONEVAL multidimensional measure of poverty,⁴⁵ to try to associate this to PEPY. Between 2010 and 2015, poverty reduction in the Yucatán Peninsula had not been uniform, with poverty decreasing by up to 30 percent in some municipalities and increasing by 13–28 percent in others (Map B.2). The number of CONAFOR investments in the municipality were also considered. Additional information such as road connectivity and deforestation rates was also taken into account.

The selected municipalities were Hopolchén (Campeche), Tekax (Yucatán), and Tulum (Quintana Roo). Two localities were chosen within each selected municipality. Census

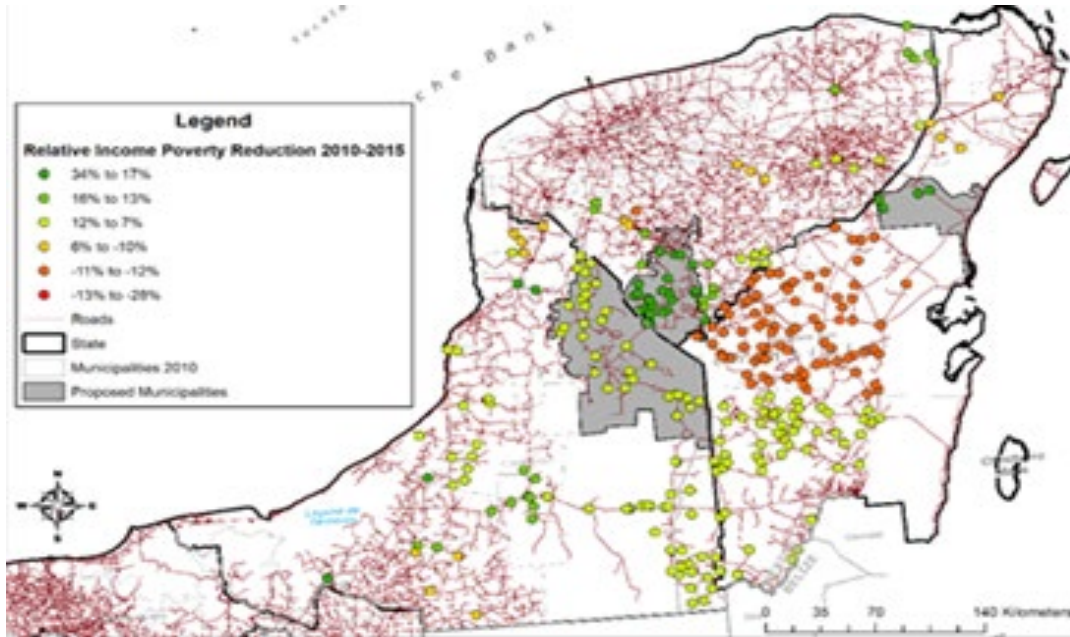
information was the main information used to select the localities, while the *ejidos* and *comunidades* were identified through the amounts granted by PEPY and the ENBC; CONAFOR provided its input for the final selection of the municipalities.

Fieldwork Methodology

The private firm SIMO (Research on Marketing and Opinion System) undertook the fieldwork over four weeks, spending on average four days in each locality. The first stage of the fieldwork was a pilot exercise to refine the questions included in the field guides for the SSIs, FGDs, and life histories. This exercise was carried out in the locality of Chunyaxnic, in the municipality of Hopolchén, in Campeche state, preselected according to the criteria described above. All the field guides designed

⁴⁵ This measure is done through the calculation of eight indicators: income, education, health, social security, food, housing, social cohesion, and access to basic services.

Map B.3 Selected Highlighted Municipalities in the Yucatán Peninsula



Source: INEGI, CONAFOR, and CONEVAL.

for the study were applied. After the pilot, corrections and adjustments were made to the field guides to improve their focus and allow for triangulation of the information obtained with each one. Participants were informed about the confidentiality of their data and interviews and information they expressed in them, and they all signed an informed consent regarding participation in this study. Consent was also obtained to record the interviews, allowing for a more detailed analysis of the discussions, by recovering references to topics addressed in participants' own words.

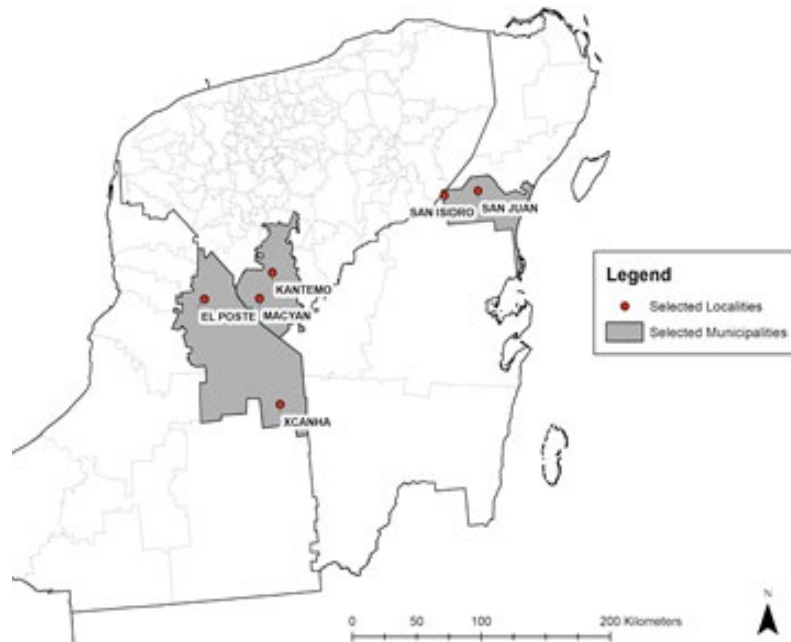
Selected localities for the second stage of the fieldwork were El Poste and Xcanhá in Campeche state, San Isidro Mac-Yam and Kantemó in Yucatán state, and San Juan de Dios and San Isidro in Quintana Roo state (Map B.4).

In Campeche, the fieldwork took place in the municipality of Hopelchén, working in

two communities. In El Poste, 13 individuals participated in two FGDs; two life histories were conducted, which included five interviews; and three SSIs were conducted with key actors. In Xcanhá, two FGDs (16 participants) took place; two life histories (four interviews) were completed; and three SSIs were conducted with key actors (Table B.1).

In Yucatán state, the fieldwork was done in the municipality of Tekax, working in two communities. In San Isidro Mac-Yam, two FGDs were conducted (17 participants); two life histories were completed (five interviews); and three SSIs were conducted with key persons in the community. In Kantemó, there were two FGDs (14 participants), two life histories (six interviews), and three SSIs with key actors (Table B.1).

Map B.4 Selected Localities for Qualitative Study



Source: INEGI and CONAFOR data.

Finally, in Quintana Roo, the fieldwork was done in the community of San Juan de Dios, in the municipality of Tulum. The team conducted two FGDs (13 participants); two life histories (six interviews); and three SSIs with key actors (Table B.1). The second locality, San Isidro, which belongs to the *ejido* of SachabMucuy

is not inhabited, and thus fieldwork was not conducted there; however, the team inquired about the situation of the locality and investments in forest conservation and informal talks were held with some villagers, and an SSI was conducted with a former board member of the *ejido*.

Table B.1 Techniques and Participants for Qualitative Analysis in the Yucatán Peninsula

COMMUNITIES	FOCUS GROUPS	LIFE HISTORIES	SEMI-STRUCTURED INTERVIEWS
El Poste, municipality of Hopelchén, Campeche	Women 18 years and older (6 participants); Men 18 years and older (7 participants)	Man, <i>ejidatario</i> older than 40 (verification: brother and son); Man, younger than 40, without <i>ejidal</i> title (verification: brother)	President of Comisariado Ejidal, older than 40; Member of the Vigilance Council, younger than 40; Secretary of Comisariado Ejidal, older than 40
	Total: 2 focal groups, 13 participants	Total: 5 interviews	Total: 3 interviews
Xcanhá, municipality of Hopelchén, Campeche	Women 18 years and older (8 participants); Men 18 years and older (8 participants)	Woman, <i>ejidataria</i> older than 40 (verification: granddaughter); Man, <i>ejidatario</i> older than 40 (verification: brother)	Former president of Comisariado Ejidal, older than 40; President of Comisariado Ejidal, younger than 40; Municipal Commissioner, younger than 40
	Total: 2 focal groups, 16 participants	Total: 4 interviews	Total: 3 interviews
San Isidro Mac-Yam, municipality of Tekax, Yucatán	Women 18 years and older (9 participants); Men 18 years and older (8 participants)	Woman, <i>ejidataria</i> older than 40 (verification friend); Man, older than 40 (verification: wife, nephew)	Former president of Comisariado Ejidal, older than 40; President of Comisariado Ejidal, younger than 40; Municipal Commissioner, older than 40
	Total: 2 focal groups, 17 participants	Total: 5 interviews	Total: 3 interviews

Kantemó, municipality of Tekax, Yucatán	Women 18 years and older (8 participants); Men 18 years and older (6 participants)	Woman, <i>ejidataria</i> older than 40 (verification friend and brother); Man, older than 40 (verification: uncle and godfather)	Former president of Comisariado Ejidal, older than 40; Former president of Comisariado Ejidal, older than 40; Former president of Comisariado Ejidal, older than 40
	Total: 2 focal groups, 14 participants	Total: 6 interviews	Total: 3 interviews
San Juan de Dios, municipality of Tulum, Quintana Roo	Women 18 years and older (5 participants); Men 18 years and older (8 participants)	Woman, <i>ejidataria</i> older than 40 (verification friend and nephew); Man, <i>ejidatario</i> older than 40 (verification: friend and brother-in-law)	Former president of Comisariado Ejidal, older than 40; Secretary of the Ejidal Sub-Delegate, younger than 40; Member of the Vigilance Council, older than 40
	Total: 2 focal groups, 13 participants	Total: 6 interviews	Total: 3 interviews
San Isidro, municipality of Tulum, Quintana Roo	n/a	n/a	Former president of Comisariado Ejidal, older than 40
	n/a	n/a	Total: 1 interview

Qualitative Data Processing and Analysis

The processing and analysis of the qualitative information followed best practices. The interviews and FGDs were transcribed, including the date, instrument, participants, and the name of the interviewer. Results were categorized into four axes of analysis oriented to the objectives of this research: (1) *gender*, which explores the extent to which PEPY affected women's roles at the individual, family, and community levels; (2) *forest care*, which analyzes the extent to which PEPY has an influence on the conceptualization

of and the relationship between the community and its forest resources, as well as the activities related to these resources; (3) *welfare*, which explores how people define welfare and how they associate welfare changes to PEPY; and (4) *governance*, which seeks to understand how actors participate in the decision-making at the community level.

Using the NVivo program (a qualitative analysis tool by QSR International), all narratives from FGDs, SSIs, and life histories were systematized and organized into a matrix. This program made it possible to analyze, consult, and

explore the data in an organized manner, as well as to map the key concepts related to each of the defined thematic axes. Each axis was considered a "node" for coding information at three levels: individual, family, community. For each locality, a matrix was constructed covering the impact of PEPY on individual, family, and *ejido* life; the expected long-term impact; and what the interviewees perceive as the expected results if PEPY had been interrupted or had not existed.

In the results section, the qualitative analysis gives a description of the communities, explaining their characteristics, dynamics, livelihoods, interactions, and economy.

By describing the economic opportunities, sociopolitical subdivisions, history trajectory, and level of social cohesion, this initial synthesis provides the "context" for the qualitative approach. This information helped the team understand the livelihood activities inside and outside the community, the political dynamics, as well as some aspects of belonging, identity, and social cohesion. These variables can affect the way in which PEPY was received and adopted in the communities and is associated to welfare changes.

In each community analyzed, the study reports the mechanisms through which PEPY affected household welfare. The qualitative information also allows the team to better understand how PEPY could have contributed to stopping or containing both deforestation and agricultural practices threatening the forest integrity.

Findings

Description of Localities and Municipalities in PEPY

Considering that the data from the Encuesta Nacional de Beneficiarios (ENBC) survey are not representative of all people living in the *ejidos* or *comunidades*, National Institute of Statistics and Geography (INEGI, by its Spanish acronym) census information from 2010 as well as National Council of Social Development Policies Evaluation (CONEVAL, by its Spanish acronym) poverty data from 2010 and 2015 help characterize the localities or municipalities. The census information is available at the locality level, while CONEVAL poverty data is available at the municipality level. While it would have been better to describe only *ejidatarios* or *comuneros* receiving benefits from PEPY, the information contained in the ENBC database only had information about the representative who answered the questionnaire. Using information from INEGI and CONEVAL, it is possible to describe the average at the population level in the locality and municipality where PEPY took place. However, the description is for 2010, and PEPY started after 2010 and ended in 2018.

The registry of activities for PBCC in PEPY reveals that the main activity financed was support in early action areas and community forestry. Payments for ecosystem services (PES) were important in communities in the state of Campeche. The communities also received grants to support their efforts through technical assistance, reforestation projects, value chains, forest development, and regional organization (Annex B2).⁴⁶ The state of Yucatán has fewer localities and on average fewer projects than other states even though it has

46 More than one community/*ejido* can be represented by the same locality.

Table B.2 Localities, Average Number of Work Programs, and Population by State

STATE	NUMBER OF LOCALITIES	NUMBER OF WORK PROGRAMS PER LOCALITY	AVERAGE POPULATION PER LOCALITY (STANDARD DEVIATION)
Campeche	40	2.7	617.8 (187.8)
Quintana Roo	61	3.6	1,344.6 (485.4)
Yucatán	16	2.3	9,737.6 (4,071.3)

Source: CONAFOR and INEGI data.

Note: Work programs per locality represent the average number of work programs in each locality.

the largest population size per locality (seven times larger than in Campeche, which has the next largest average population per locality) (Table B.2). In addition, localities in the state of Yucatán are more likely to have a single work program. In the state of Quintana Roo, localities have more diversified work programs, with nearly half of them having between five and ten work programs.

The localities are largely composed of indigenous population and are in municipalities with high extreme poverty rates.

Between 53 and 90 percent of the population

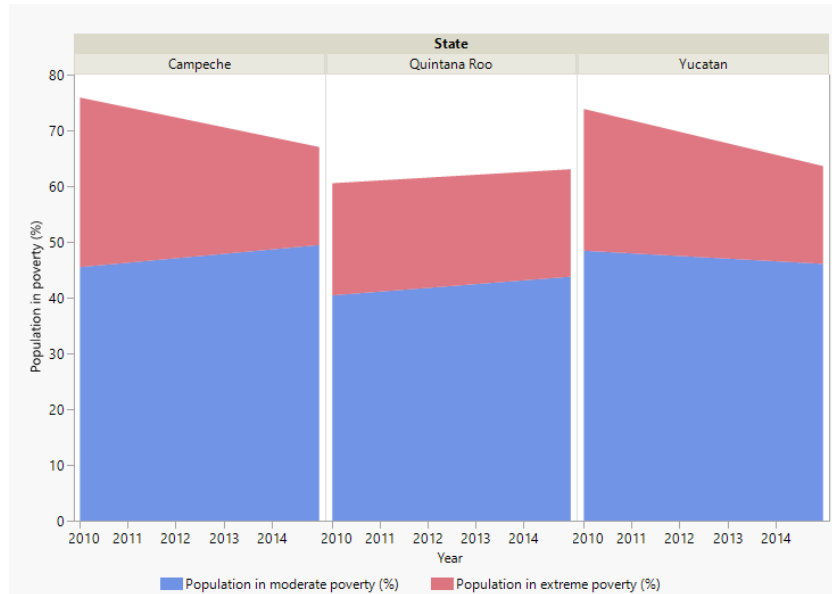
in the sampled localities are indigenous and between 10 and 13 percent of households are headed by a woman. Localities in Campeche and Quintana Roo have lower unemployment rates than localities in the state of Yucatán (Table B.3). Furthermore, the unemployment rates at the localities in Campeche and Quintana Roo are lower than at the state level. Poverty affects more than 60 percent of the population in the municipalities (Figure B.1). Poverty is higher in these municipalities than at the state level: Poverty in 2015 was 52 percent in Campeche, 41 percent in Yucatán, and 33 percent in Quintana Roo.

Table B.3 Description of Household Characteristics in Sampled Localities

STATE	CAMPECHE	QUINTANA ROO	YUCATÁN
Localities	39	58	16
Households with female head	11.2% (0.01)	10.7% (0.008)	13.3% (0.021)
Indigenous households	53%	74%	89%
Years of schooling	5.9 (0.16)	5.8 (0.13)	5.7 (0.37)
Unemployment rate of selected localities	1.2% (0.003)	1.8% (0.005)	3.0% (0.011)
Poverty rate at municipality level (2015)	68.9%	62.5%	62.5%
Unemployment rate at state level (2015)	2.7%	3.2%	2.58%
Poverty rate at state level (2015)	52%	41%	33%

Source: INEGI census and ENBC data.

Note: Standard errors in parentheses. The results are unweighted and not representative of all households in the localities nor in PEPEY.

Figure B.1 Multidimensional Poverty in Municipalities of Selected Localities by State, 2010–2015

Source: CONEVAL data.

Note: The graph presents the average at the state level of poverty at the municipality level.

Over time, poverty has decreased in all the municipalities except those in Quintana Roo.⁴⁷

Extreme poverty did not increase in any of the municipalities (Figure B.1), and municipalities in the states of Campeche and Yucatán saw extreme poverty decrease very rapidly.

Community and Household Participation in PEPY

Description of the Local Context

Four dimensions can be used to describe the communities that received PEPY: community features, economic opportunities and household income, social cohesion, and sociopolitical groups. These dimensions have emerged from the analysis and are linked to both the context in which PEPY took place and the way in which people recognize the benefits from PEPY.

COMMUNITY FEATURES

Ejidotes/comunidades analyzed are located at the center of the Yucatán Peninsula, sharing similar climatic conditions and land-productive activities (mainly maize production). People speak mainly Maya, with Spanish used mostly for activities that are official as well as to communicate with people coming from outside (generally related to government programs).

Xcanhá is home to the largest *ejido*, has the largest area belonging the *ejidatarios*, and has the largest area of forest under conservation. In addition, Xcanhá has the largest *ejidal* group, even though women are underrepresented in this group (Table B.4). San Juan de Dios has the largest population, with a greater representation of women in the *ejido*.

⁴⁷ Multidimensional poverty is defined as a weighted compilation of income poverty and lack of access to different basic services.

Table B.4 Locality Population (Total and Ejidatarios) and Area (Total and Conservation)

LOCALITY	POPULATION	EJIDATARIOS (% WOMEN)*	TOTAL AREA (HA)	CONSERVATION AREA (HA)
El Poste, Campeche	250	27 (3)	2,000	1,250
Xcanhá, Campeche	800	110 (3)	32,000	4,000
San Isidro Mac-Yam, Yucatán	75	27 (22)	2,490	960
Kantemó, Yucatán	600	76 (5)	4,600	3,000
San Juan de Dios, Quintana Roo	1,000	81 (12)	8,000	2,000

Source: Focus group discussions, May 2019.

Note: Conservation area under PEPY.

* The number in parentheses indicates the percentage of ejidatarios who are women.

The main source of livelihoods of the interviewed households is related to agriculture, though some of them have other activities, such as cattle raising, and temporary work. Agricultural production is intended both for self-consumption and to sell to intermediary buyers. Livestock production is small scale and is seen as a cash activity that can generate extra income in urgent situations. Beekeeping is a temporary activity and is done in the community. To diversify their income sources, people (mainly men) go outside the community to work in the tourist towns close to their localities.

In the communities analyzed, agriculture is practiced in land that has already been cleared. Communities follow the guidelines of National Forestry Commission (CONAFOR) forest programs that prioritize forest conservation. For instance, in San Isidro Mac-Yam people have been seeking to improve their productive activities inside the community, testing alternative techniques for beekeeping, cattle grazing, and small farming of citric production. The forest is seen as a source of money by means of the government programs. Other communities in Kantemó and San Juan report

a decreasing harvest (mainly for maize), but they are not creating or looking for alternative productive activities inside the locality. These communities have a great number of people working outside the communities (daily travel or emigrating) to get a better income to replace the lack of productivity in their lands.

ECONOMIC OPPORTUNITIES OUTSIDE THE COMMUNITY AND HOUSEHOLD INCOME

Agriculture is the main source of income. During the qualitative fieldwork, the interviewees reported corn production as their main cultivation. Besides agriculture, beekeeping, temporary paid work, a business as well as the "support" or resources of a government program are important sources of income provided by the men. Women's contribution to household income comes through participation in specific programs or through activities such as embroidery and work in the mills (Table B.5).

Income from participating in PEPY contributes to household livelihoods. Participating in PEPY brings additional income to support households unless the latter have additional job opportunities outside the community. Activities

Table B.5 Household Income Sources for the Communities Analyzed

TYPES OF INCOME	ACTIVITIES
Agriculture (Procampo not included)	Crop cultivation, sales of crops
Government program	Prospera
Government program	Payments for environmental services (direct)
Apiculture	
Temporary employment	Tourist centers, temporary migration to U.S.A., and Mennonite town
Women's complementary activities	Embroidery, handicrafts

Source: Qualitative study, May 2019.

outside the community have a direct impact on the relative importance of income from agriculture and forestry programs (Table B.6).

"Yes, for the money. For instance, at times when there is no money, I have a brother and I can ask him for a thousand pesos. He asks me when I am going to pay, and I answer: when CONAFOR [payment] arrives."

—Semi-structured interview, Kantemó

In some localities, income comes mainly from activities carried outside the community. In Kantemó and San Juan, which are closer to the Tulum and Cobá tourist centers, households work mostly in these cities and do not engage in forest-related activities. In these communities, more traditional production systems bring little income. Households do not feel encouraged to invest and innovate in local products or livelihoods because migration is the main source of money. This money has sometimes been used to improve the local productive practices, but individually, not as a collective effort.

In other communities, people are using funding from PEPY to provide public goods and to improve the welfare of the whole community. In

these communities, households diversify their livelihoods into off-farm activities performed in their own community since these communities are far from other income sources (for example, San Isidro Mac-Yam). People are adopting alternative productive activities (for instance, a citrus orchard) as well as implementing actions to improve the welfare of the local population. In San Isidro Mac-Yam, the population built a water tank to solve problems related to the spring water pollution in rainy seasons.

SOCIAL COHESION

Access to competitive economic opportunities outside the agriculture sector and especially outside the community affect the social fabric of the communities and their relationship to and perceptions of the forest and its conservation. The greater the economic opportunities outside the community, the lower the social cohesion. Conversely, in communities where there are fewer outside opportunities, social cohesion is strengthened (Table B.6).

In communities far from the tourist centers, greater social cohesion has strengthened the concept of natural resource management

activities as a means of subsistence, and of forest as a heritage. This concept regulates the exploitation of the forest in a more sustainable way. In these communities, there is discourse of overcoming the economic and social problems through work within the community itself. This discourse is presented with a sense of pride and belonging to the community, which could have potentially influenced how the community participates in PEPY. San Isidro Mac-Yam and Xcanhá have communities that decided to invest in common goods (for example, a water tank for household supply).

In communities that lack social cohesion, the notion of common heritage, including forest resources and the perception of the countryside as a source of primary income, is weaker. For instance, in San Juan, Quintana Roo, the forest program is seen as providing individual benefits with few or no investments in collective goods. In these communities, PEPY is perceived as dividing the population. As reported by the interviewees, communities that do not trust their local leaders quit the program.

AGRARIAN AND CIVIL AUTHORITIES

Agrarian authorities play a greater role in forest management than do civil authorities.

In some communities, the population feels that civil authorities use their relationships with some to create divisions in the community. For the civil authorities, forest management does not seem to be a priority since agrarian authorities govern forest management based on federal authorizations and subsidies. This kind of division between civilian and agrarian authorities in the communities affects the involvement in PEPY. Reinforcing the role played by agrarian authorities could prioritize forest management.

Decision-Making Process and Roles

Participating in PEPY depends on community features, the economic opportunities, leadership of agrarian authorities, and social cohesion. The degree of leadership and authority the president of the Comisariado Ejidal has matters greatly because he is the intermediary between the *ejido* and the

Table B.6 Synthesis of Factors Analyzed

	SAN ISIDRO MAC-YAM	XCANHÁ	EL POSTE	KANTEMÓ	SAN JUAN DE DIOS	EJIDO SACHABMUCUY
Community features	High	High	Medium	Low	Low	n.a.
Leadership from	Agrarian authorities	Agrarian authorities	Agrarian authorities	Agrarian authorities	Civil authorities	Civil authorities
Economic opportunities outside communities	Low	Low	Medium	Medium	High	High
Social cohesion	High	High	Medium	Low	Low	n.a.

Note: Community features: High level corresponds to a greater respect for the forest, and capacity to innovate inside the community. Economic opportunities outside communities: High level correspond to great opportunities for income from activities outside the community. Social cohesion: High level corresponds to stronger bonds inside the community. n.a. = not applicable.

institutions (CONAFOR in this case) and has firsthand information about PEPY.

In communities with higher economic opportunities outside, interviewees indicate a low level of interest and participation in the collective activities financed by PEPY.

The possibility to travel and work in tourist centers like Tulum, to migrate to the United States, or to work temporarily in the Mennonite zone decreases the relative importance of contributions from PEPY to household income.

In communities with a high presence and influence of civilian authorities and political parties, ejidatarios are less willing to participate in PEPY because of a lack of confidence in the process. In Quintana Roo, communities have a greater presence of civilian authorities than agrarian authorities, resulting in a reduction of the leadership of agrarian authorities. Strong political parties can create divisions in the community, reducing social cohesion, which discourages *ejidatarios* to participate in PEPY.

The technical adviser also plays a key role in the scope of program adoption, the regulation of conservation activities within the forest, and the distribution of resources in communities. During the fieldwork, it was observed that when the involvement of the technical adviser was clear and continuous, better decisions were made in the management of PEPY. The amounts to be invested, the way the investment was made, as well as the way through which the resources were distributed directly to households in the community were usually left to the technical adviser's discretion.

Per the rules of the program, the technical adviser usually decides the size and location of the forest area designed as a reserve area as well as the activities to be carried out. The

“The technical adviser comes and says: ‘what about submitting a project? I will help you.’ We are lucky, we are in [cause] we did the work that we had to do. Now, we have two years with this project, and we are building rainwater catching systems.”

—Semi-structured interview, man, San Isidro Mac-Yam

technical adviser reminds the *ejidatarios* to participate in the activities and assemblies, while at the same time people feel he/she imposes rules about what can or cannot be done in the forest. In some cases, it was reported that the technical adviser played a key role in the reinvestment in public goods. When the money is disbursed at the individual level, the technical adviser inspects and confirms that the agreed activities are being implemented.

Benefits From PEPY

Women's Empowerment and Participation in Decision-Making

At the community level, the participation of women has varied depending on the presence of men and the economic status of the family.

Women traditionally stay home, doing domestic work, while men provide the household income. Sometimes women are involved in agricultural activities; however, this depends on the family needs and the absence of their husbands (for example, due to migration). In some families, the sons usually work the land. Although women contribute to the family income, men and women perceive this contribution as being a complement to men's work.

“As she...was the only one, her father told her ‘you are my daughter and my son, and as such, you have to do the work.’”

—Life story, San Juan

The public presence of women in the communities has been changing as CONAFOR requested more participation from everyone in the *asambleas* (assemblies), including *ejidatarías*. However, at the start of the assemblies women usually have less information about what will be discussed. Women also tend to wait for others to inform them about the meetings and to give them information about the program guidelines. In addition, as mostly men attend the assemblies, women do not feel comfortable participating in the discussions. For some communities, the fact that men dominate participation in both the assemblies and the program activities, seems to socially impose a bad reputation on participating women.

Communities with a higher social cohesion have a greater proportion of *ejidatarías* giving more opportunities to women to expand their own network and to actively participate in the decision-making process. For instance, in the *ejidos* in San Isidro Mac-Yam and El Poste, where social cohesion is high, women have formed an Industrial Agricultural Unit of Women (UAIM, by its Spanish acronym) to improve their access to land. Women in San Isidro Mac-Yam, Xcanhá, and El Poste openly express their desire for more active public participation in the resolution of community issues. Women in these communities are informed and feel comfortable providing their opinion about the programs. In San Isidro Mac-Yam, women have been elected to the posts of municipal commissary and *ejidal* secretary

for several periods. These communities share the following common characteristics: They experience a more limited presence or influence from political parties, have lower economic opportunities outside the community, and receive an important proportion of the family income from governmental programs.

“We would like women to have more participation in the assemblies, a woman to run as commissioner, to know more about the issues of our projects.”

—Focus group discussion, women, Xcanhá

Communities with lower social cohesion have more traditional gender roles, with women given very few public roles. In Kantemó and San Juan, women cannot participate in public meetings without men’s permission. In communities like the ones in San Juan, with a higher presence of civil authorities, the participation of women is tied to seeking gender balance, although this is largely influenced by outside forces.

Women perceive PEPY as a benefit because it complements a household’s income, even if received by their husband. PEPY is particularly important for single mothers or women who have no support to work their lands.

“The payment from CONAFOR is important. The money is used for the household income. People work for themselves and not for other persons.”

—Life history, women, Kantemó

“Yes, [the CONAFOR payment] it gives a small support from the forest; when CONAFOR gives [money] to our husbands, it is for the family.”

—Focus group discussion, women, El Poste

The benefits women receive from government programs such as the one financed by PEPY are important. PEPY provides direct support for women who own land rights. In addition, these programs increase the local supporting network and social cohesion inside the community, encouraging women to participate in *ejido* meetings and in the program. However, one cannot ignore the structural and behavioral barriers women face when participating in this program: For instance, women have less time to take part in the assemblies because of the time dedicated to household chores, and women have less aspiration to develop economic activities outside their households (World Bank 2018).

Forest Care Resulting From the CONAFOR Program

Improved forest care has been confirmed as a result of PEPY in all the communities analyzed. Forest care practices are used (or implemented) to avoid deforestation and burning lands for agriculture. Agriculture is practiced in lands that were cleared before the arrival of PEPY. The adoption of forest care practices is part of the agreement with CONAFOR at the time communities decided to participate in PEPY. In communities with higher social cohesion, the money received from PEPY helps the community invest in forest management and conservation. Communities are able to find a balance between

agriculture and forest conservation, where it is possible to perceive an appreciation and respect for forest resources.

But in communities with more outside opportunities and lower social cohesion, forest care is not perceived as a priority. In these communities, people have decided not to apply to any additional PEPY. In addition, these communities prefer participating in programs through which each *ejidatario* receives individually the investments. In these communities, the money is perceived as an individual benefit. There is a lack of investment in public goods, and field journals indicate that there is a marked neglect for their environment, as garbage can be seen cluttering the streets.

Households have perceived PEPY as being successful in restraining deforestation, reducing the expansion of the agricultural frontier, and implementing practices that prevent the deterioration of forest areas. Mechanized agricultural activities have been seen in Yucatán Peninsula communities, with some peasants in favor of using new technologies to produce maize. PEPY limited losses of forest cover, which resulted in using the agricultural land that was already cleared, cultivating some parts of them with traditional practices and other parts with mechanized ones. The forest frontier was respected because of the rules CONAFOR imposed as part of the agreement to enter the program. To prevent the forest deterioration, *ejidatarios* agreed to reduce burning practices in agriculture to prevent the fire from spreading beyond the plot and damaging the forest. The qualitative evidence suggests that fuelwood harvest for home consumption has decreased too.

"To kill no more trees, not to burn the mountain like that. That is why we organize with these people [CONAFOR]. To help, not to burn. Well, only by accident [the fire] crosses just like that. You cannot go into the fire. But it almost didn't happen."

—Semi-structured interview, men, San Isidro Mac-Yam

The main intervention in the visited communities was the payments for ecosystem services (PES). The PES scheme has established a designated area for forest conservation without any kind of practice that could damage the forest and its wildlife. In the reserve zone, there are restrictions on cutting and hunting, as well as on burning in specific areas. Workdays are usually dedicated to cleaning the limits of the reserve and other zones of the *ejido* (that is, agricultural lands and dwelling areas), thus facilitating the mitigation of possible fires and the monitoring of the conservation areas committed to CONAFOR. The firebreaks were also cleaned and fire control trainings provided. These activities are part of the agreements at the beginning of the program and the working days (*jornales*) are paid with funds from the program.

There are sanctions for those who misuse the forest or the reserve area, as well as for those who do not attend the assemblies, which are mandatory for the *ejidatarios/comuneros* who participate in the program.

"Well, we don't burn it [the forest] because we already have the environmental service program,

whoever burns gets his penalty. We don't burn, we don't hunt, we don't cut down and we don't litter."

—Focus group discussion, men, El Poste

Being a time-bound program, increasing awareness of the importance of the forest in maintaining livelihoods and people's quality of life is a critical factor.

There is a risk that the good practices promoted by PEPY will be discontinued at the end of the program. A higher risk is perceived in communities where social cohesion is low, although it is a latent risk in all communities. Forest conservation activities and regulations are conditioned to payments, signaling that the end of these payments could lead to the end of the conservation activities.

PEPY achieved better results in terms of forest conservation if economic opportunities outside the community had not deteriorated the community's relationship with the forest.

Having access to outside economic opportunities weakens the social cohesion of the community and may have an impact on the daily and symbolic relationship with the forest.

Governance

Interviewed households felt that there were no clear mechanisms to reinvest in productive activities to generate more income in the long term.

So far, reinvestment mechanisms have only succeeded in generating public goods in certain specific contexts where high community cohesion is combined with timely guidance from the program technical adviser. An important finding is that the amount and use of the money reinvested is usually suggested by the technical adviser.

Social cohesion and communication with the technical adviser have an influence on decisions on participation and on the design of the work program submitted to CONAFOR.

High social cohesion and good communication with the independent technical assistance provider and CONAFOR local staff have resulted in the use of money for the provision of public goods. The provision of public goods, such as for water catchment systems and for building an ecotourism center, means delivering benefits for the medium and long term. Communities with a medium level of social cohesion have invested part of the funding in fixing the roads.

PEPY has strengthened the regularity of and improved participation in the assemblies.

As stated in the Agrarian Law (Box B1), each *ejido* or *comunidad* makes their decision through assemblies. The conditions to participate in CONAFOR programs have strengthened the regularity of and participation in these assemblies. The assemblies request the presence of all the *ejidatarios* to discuss and make decisions, and any absence is sanctioned by a fine, which ranges from Mex\$100 to Mex\$1,000, and by the suspension of PEPY activities.

A problem with regulatory mechanisms for forest care is that they exist only during

program implementation and are stopped when the program ends.

When PEPY ended in some communities, so too did the perception of forest care as a community heritage. One potential scenario is that the *ejidatarios*, through the assembly, decide to divide the *ejido* into individual plots with individual land titles so that each *ejidatario* can decide on the type of land management he/she would like to do and participate in, including potential deforestation. In contrast, in communities where the PEPY funded an ecotourism center, forest care is more likely to remain an integral part of the new business strategy of the *ejido*.

Welfare Impacts From CONAFOR Program

The persons interviewed did not have a clear concept of the word "welfare," but it was possible to recover the associated terms and references (Table B.7). The concepts related to welfare go beyond its monetary definition. Although the people interviewed recognized that money is an important factor, health, safety and clean air are an added value within their localities and factors associated with welfare. In addition, a good harvest, which for them represents not only the possibility of marketing but also the daily food for their families, is a key concept of welfare.

Table B.7 Concepts Associated by Participants to Welfare

El Poste	<p>Welfare is associated with the work the government does through its programs to organize the community in its daily activities. Money and work generate better individual and family conditions.</p> <p>"The living together of the community, there is healthy living together. There is unity. We all get together, it looks nice. Nobody fights. I like it because it's quiet, there's no violence, you breathe pure air now." —Focus group discussion, women</p>
Xcanhá	<p>Rain is a central element in "welfare." Water resources for crops are fundamental for household livelihoods. Welfare refers to public goods and the CONAFOR program helps invest in improving public goods, such as the lagoon located in the ecotourism zone. The word "program" is also important within the concept of welfare, and it is related to using the resource for the benefit of the entire community.</p> <p>"Sometimes when you have problems the people support you, with support, little by little, like medicine and hospital. People get organized or we go on to ask for a collection. Another thing, the ejidatarios organize themselves for the assembly to see what they are going to do." —Focus group discussion, women</p>
Kantemó	<p>The word "welfare" is present in the governmental discourse and in the programs that they have for their households. In the same way, concepts related to work are present in the discourse. In this ejido, programs are referred to as a solution to problems or as a source of conflict within the community. Cases were reported of internal divisions regarding entry into the programs, and internal problems with the ejidal commissioner.</p> <p>"Here in Kantemó there is a place to work when you want to, and its people are very organized. Almost nobody has big problems, sometimes there are arguments, but it does not get any bigger. In Kanka, on the other hand, you hear people killing each other, stoning each other, perhaps because it's a bigger town." —Life story, man</p>
San Isidro Mac-Yam	<p>Welfare relates to the public goods that have been created through the CONAFOR-funded interventions, mainly the construction of an elevated water tank. Other concepts are services, mainly for water supply, but also others such as health. In this community, the program is also identified as a means to generate benefits for the community and to solve present problems.</p> <p>"I continue to bet on the field because I believe that the field is so noble. Even with all the adversities and circumstances that we have. Maybe we won't get rich overnight, but seeking economic stability is also part of the agricultural issue." —Semi-structured interview, man</p>

San Juan	<p>The word "government" has the greatest presence in the understanding of welfare. Other related concepts are work, employment, and money, which are linked to the economic opportunities in nearby tourist areas. People appreciate the tranquility within their community as opposed to what is experienced in the city or in other communities.</p> <p>"Because we had already asked the government to make a small town. As they are now, it is the plan we have. In other words, because before San Juan we went out to Yucatán with horses through the breach. There was no Cobá, there was no Tulum. It's a problem for people when you're sick, to have to take you on horseback to Yucatán. That's why there was an agreement for us to make a small town for the government to take us into account."</p> <p style="text-align: right;">—Focus group discussion, men</p>
-----------------	---

From a household point of view, the resources provided by PEPY have contributed to family income and have generated temporary jobs in the localities. Also, in some communities, PEPY has been able to contribute to the creation of public goods, the empowerment of *ejidatarios*, and the improvement of economic governance mechanisms. At the same time, PEPY was successful in generating better practices for the use of forest resources.

"The truth is that the little money that comes to us we try to use for the field, because it comes during the sowing season and there, we pay for the work of what the machine sows and all that."

—Life story, man, El Poste

PEPY has had a positive impact community welfare. One of the main assumptions of PEPY is that sustainable forestry management activities provide households with an opportunity to improve welfare. Communities with higher social cohesion have invested in public goods, such as the water tank or the road improvement mentioned above. In addition,

PEPY created temporary jobs to clean forest boundaries or create firebreaks. While being the responsibility of the *ejidatarios*, these tasks can be carried out by other members of the locality, who are then remunerated about Mex\$120 and Mex\$180 per day by the *ejido*.

"Because then, they gave us a job, that is to say, what it was about, that we clean the boundaries. As you want, if you go with your father or if you go with your uncle, they occupy you, because you already have your own [piece of land to clean], I already have where to clean. The money with which it is going to be paid and it is good and if there is a little bit of employment and in that case there it benefited us as much as *ejidatarios* as the others."

—Semi-structured interview, man, San Isidro Mac-Yam

Discussion and Conclusion

The diverse local contexts in which the Special Program for the Yucatán Peninsula (PEPY) arrived and was implemented influenced the decision to participate in the forest project, the way in which people recognized the benefits from these investments, and ultimately the success of the forest interventions/project in improving welfare.

Although agriculture is the main livelihood for the communities visited, there are important distinctions among those communities. The main source of heterogeneity is related to how close a community is to important economic centers; arguably, this implies having access to more employment opportunities. Communities with less diverse livelihoods, lower social cohesion, and more outside opportunities are less interested in participating in PEPY. In communities far from tourist centers, greater social cohesion has strengthened the concept of natural resource management activities as a means of subsistence, and of forest as a heritage.

According to our qualitative analysis, the communities with a high presence and influence of civilian authorities and political parties have a lower willingness to participate in PEPY; this can be partially explained by a lack of confidence in the process (for example, localities at Quintana Roo). The technical adviser also plays a key role in the scope of program adoption, the regulation of conservation activities within the forest, and the distribution of resources in communities.

As explained above, PEPY was successful in improving welfare through these means:

- *Income generation and creation of temporary employment.* Although agriculture (for example, maize production) is the main

livelihood for the communities visited, PEPY was successful in improving the productivity of activities such as beekeeping and crafts. PEPY also provided temporary employment when employing *ejidatarios* and *non-ejidatarios* to restore the forest. At the household level, the resources provided by the program have contributed to the family income.

- *Empowerment of ejidatarias, with a potential snowballing effect on all women in communities.* The National Forestry Commission's (CONAFOR) request for assemblies on all relevant decisions has resulted in an increase in the presence of women.
- *Forest conservation and decrease in forest degradation.* Improved forest care has been reported as a result of CONAFOR's program in all the communities visited. In communities with higher social cohesion and lower presence of political parties, it is possible to perceive an appreciation and respect for forest resources.
- *Improvement in village governance with investment in public goods.* The CONAFOR program strengthened the regularity and improved participation in the assemblies.

However, there were missed opportunities to ensure the long-term adoption of forest conservation practices as new livelihood strategies; when payments stop, practices to conserve forests also stop.

As common in research, the study presents some limitations. The qualitative study is not meant to be representative of the whole population, but to give detailed information on experiences vis-à-vis PEPY, attitudes toward PEPY, perceptions of benefits, and expectations.

The interviews were done in a mix of Maya and Spanish, which does not guarantee that all questions were asked in the way they were meant to be asked and leaves more room for interpretation of the questions. In addition, this type of research does not allow researchers to investigate causality, but to illustrate the potential links between the investments and its impacts.

To perform a strong evaluation of forestry projects on welfare, future evaluation studies would gain from being designed at the early stage of preparation of the project. If it is decided that a quantitative impact

evaluation will be done, baseline and follow-up surveys must be carried out with a robust sampling design to take into consideration the requirements of information and representativeness that are associated with impact evaluation. Household or individual-level information (for example, income, consumption, or subjective welfare) could allow one to test for changes in household welfare. Having the same information for a sample of similar households that did not participate in the program would allow one to test for the attribution of changes to the program.

References

CONEVAL (Consejo Nacional de la Evaluación de la Política de Desarrollo Social). 2015. "Medición de la pobreza, Estados Unidos Mexicanos, 2010–2015." <https://www.coneval.org.mx/Medicion/Paginas/Pobrezalnicio.aspx>.

De Gaulejac, V., S. Rodríguez Márquez, and E. Taracena Ruiz. 2005. *Historia de vida. Psicoanálisis y sociología clínica*. Querétaro: Universidad Autónoma de Querétaro.

INEGI (Instituto Nacional de Geografía e Informática). 2009. *Guía para la interpretación de la cartografía uso del vuelo y vegetación: Escala 1:250,000, serie III*. Aguascalientes, Mexico: INEGI.

INEGI. 2015. *Guía para la interpretación de la cartografía uso del vuelo y vegetación: Escala 1:250,000, serie V*. Aguascalientes, Mexico: INEGI.

Salinas Meruane, P. S. 2009. "Procedimientos de recolección y producción de información en la investigación social." In *Métodos de investigación social*, ed. P. Salinas Meruane and P. Cárdenas Castro, 365–447. Quito: Ediciones Universidad Católica del Norte.

World Bank. 2018. *Closing the Gender Gap in Natural Resource Management Programs in Mexico*. Washington, DC: World Bank. <http://documents1.worldbank.org/curated/en/927551552882513940/pdf/Closing-the-Gender-Gap-in-Natural-Resource-Management-Programs-in-Mexico.pdf>.



Photo by Somerek Witthayanant/Shutterstock

Annex B1.

Variables in the Quantitative Analysis

Table B1.1 Variables Included in the Consulted CONAFOR Data Sets

FIP DATASET 2012–2017	CONEVAL DATASET 2010–2015
Location	Percent of the population in poverty 2010
Average assigned amount (Mexican pesos)	Percent of the population in extreme poverty 2010
Final amount (Mexican pesos)	Gini coefficient 2010
Disbursed amount (Mexican pesos)	Percent of the population in poverty 2015
CENSUS 2010	Percent of the population in extreme poverty 2015
Proportion of households with woman head	Gini coefficient 2015
Population in indigenous households	Deforestation 2002-2011
Population over 5 years old speaking an indigenous language	Forest cover (percent)
Illiterate population over 15 years old	ENBC 2012–2016
Average grade of schooling	Grant components
Unemployment rate	Land tenure
Population without access to health services	Distribution of incentives
Dwelling with dirt floor	Reported employment generation
Dwelling without electricity	Perceived increase in income
Dwelling without piped water	Perceived program impacts on natural resources
Dwelling without sanitation	Perceived improvements in nutrition, education...

Annex B2.

Received Support in PEPY in Ejidos and Comunidades



Photo by Unai Huizi Photography/Shutterstock

	VARIABLE	CAMPECHE	QUINTANA ROO	YUCATÁN
	MAX OBS	103	179	87
Granted component: Main	AATREDD+	44.7%	57.0%	32.2%
	Commercial forest plantation	1.0%	0.0%	0.0%
	Forest restoration	6.8%	5.6%	5.7%
	Forest cleaning	0.0%	2.2%	0.0%
	Community forestry	18.4%	16.2%	12.6%
	Value chains	1.0%	5.6%	1.1%
	Technical assistance	1.9%	1.7%	1.1%
	Priority basins	0.0%	0.0%	0.0%
	Forest development	4.9%	3.9%	3.4%
	Regional organization	0.0%	1.7%	2.3%
	PROCOREF-Reforestation	8.7%	1.7%	9.2%
	PROCOREF-Soil	0.0%	0.0%	2.3%
	PES	12.6%	4.5%	29.9%
Granted component: Secondary	AATREDD+	19.0%	25.0%	0.0%
	Forest cleaning	0.0%	2.5%	0.0%
	Community forestry	42.9%	25.0%	55.6%
	Value chains	4.8%	2.5%	0.0%
	Technical assistance	4.8%	12.5%	0.0%
	Forest development	9.5%	15.0%	0.0%
	Regional organization	0.0%	2.5%	0.0%
	PROCOREF-Reforestation	9.5%	7.5%	11.1%
	PROCOREF-Soil	0.0%	0.0%	0.0%
	PES	9.5%	0.0%	22.2%
	Forest restoration	0.0%	7.5%	11.1%
Land tenure	Agrarian group	62.1%	52.0%	42.5%
	Organizations or groups	15.5%	38.5%	12.6%
	Small landholders	22.3%	9.5%	44.8%
How was the incentive distributed?	Labor	49.2%	41.7%	48.9%
	Supplies	13.3%	18.6%	10.1%
	Investment	7.6%	9.4%	6.1%
	Transport	6.3%	3.9%	9.5%
	Consultancy	16.2%	22.4%	20.9%
	Management	2.7%	2.2%	0.4%
	Other	4.8%	1.6%	4.1%

Annex B3.

Instruments Used in the Qualitative Fieldwork

Table B3.1 Main Questions for the Focus Group Discussions

- What would you say your comunidad/ejido is?
- For what activities would you say the comunidad/ejido is organized?
- What would you say are the main problems of the comunidad/ejido?
- In the last year, what issues have united the comunidad/ejido? What issues have divided the comunidad/ejido?
- Who devotes more time to work to support the family?
- Do you consider that these activities contribute to the welfare of the community? Of the families in the comunidad/ejido?
- Do you know the rules or agreements on forest use?
- Do you or any member of your family participate in a CONAFOR program?
- Do you consider that participating in this program contributed to the welfare of your family? Your comunidad/ejido?
- Could you indicate where you carry out the activities of the CONAFOR program?
- How were the projects presented to the comunidad/ejido?
- What did you expect when you participated in the program?
- Why did the community decide to participate in this program?
- What benefits/supports did they obtain by participating in the project? (Deepening in economic resources, resources in kind, trainings, workshops)

Table B3.2 Main Questions for the Life Histories

INDIVIDUAL SPEECH	FAMILY HISTORY
<ul style="list-style-type: none"> <input type="checkbox"/> Where were you born? <input type="checkbox"/> Besides you, who else lives here? <input type="checkbox"/> Who oversees the subsistence of your family? <input type="checkbox"/> What role would you say the forest plays in your life and in your family's life in general? Do you do activities in the forest/mountain/forest/milpa? (collection of plants, herbs, game, wood) <input type="checkbox"/> What are your forestry activities? <input type="checkbox"/> Do you know the rules on forest use? <input type="checkbox"/> Who controls and supervises compliance? 	<ul style="list-style-type: none"> <input type="checkbox"/> Do you like your home and the community where you live? <input type="checkbox"/> Who makes the decisions in your home? <input type="checkbox"/> How did each parent contribute to the support of the household? <input type="checkbox"/> What was your parents' relationship to the forest? <input type="checkbox"/> Do your parents participate in any community or forest care programs? <input type="checkbox"/> What do you think has been the greatest difficulty your family has faced? Tell me how it was resolved.
SOCIAL STRUCTURES	PERCEPTIONS ON CHANGE AND WELL-BEING
<ul style="list-style-type: none"> <input type="checkbox"/> What defines this community? <input type="checkbox"/> Do you have a cultural center or sports league in your community? <input type="checkbox"/> What forest harvesting, and care projects exist in your community? <input type="checkbox"/> Do you or any member of your family participate in a CONAFOR program? <input type="checkbox"/> What did you expect when you participated in the program? <input type="checkbox"/> How was it decided what type of project would be applied in the community or ejido? <input type="checkbox"/> Do you think that having participated in this project has contributed to the welfare of your family? <input type="checkbox"/> From your perspective, how important are these programs in the economic activity of the community? 	<ul style="list-style-type: none"> <input type="checkbox"/> What would you say is family welfare and community welfare, or in your community? <input type="checkbox"/> Do you think these projects have brought some kind of welfare to people in your community? <input type="checkbox"/> Do you consider that the welfare provided by the project has been distributed among the members of the ejido or the community? Have agreements been made in this regard? <input type="checkbox"/> How was CONAFOR's approach in the community? Did some people come to explain the project? <input type="checkbox"/> What do you think the invitation to participate should be like so that the whole community participate?

Table B3.3 Main Questions for the Semi-structured Interviews

COMMUNITY ORGANIZATION	ORGANIZATION OF FOREST-RELATED ACTIVITIES
<ul style="list-style-type: none"> <input type="checkbox"/> Could you tell me in order of priority what the 3 main problems in the community are? <input type="checkbox"/> Could you tell me some examples of some cases in which the community has organized itself to make a decision to solve a problem? <input type="checkbox"/> Do you think that men and women were able to participate equally in this exercise? <input type="checkbox"/> With the decision made, who benefited? 	<ul style="list-style-type: none"> <input type="checkbox"/> Which forest resources (rainforest/mountain/milpa) are used most in the community? In what areas? <input type="checkbox"/> What governmental institutions or international organizations are present or have been present in the community related to forestry activities? <input type="checkbox"/> Have rules or agreements on forest use been in place? For how long? What are these rules?
FORESTRY PROJECT DEFINITION PROCESS	COMMUNITY PARTICIPATION IN FORESTRY PROJECT IMPLEMENTATION
<ul style="list-style-type: none"> <input type="checkbox"/> Who made the call? <input type="checkbox"/> Of the total number of people in the community, how many participated? <input type="checkbox"/> Who would you say was the most relevant to the discussions and decision making? <input type="checkbox"/> Who benefited from the decision made? 	<ul style="list-style-type: none"> <input type="checkbox"/> Who is invited to discuss the project? <input type="checkbox"/> From the implementation of the project, do you notice a change in the way the community is organized? In what way? <input type="checkbox"/> If so, do you think that these changes more or less take into account the opinions of all people, in what form?



Photo by TugceAktepe/iStock

