

A photograph of three people (two women and one man) watering plants in a field. The man is on the left, wearing a patterned shirt and a cap. The woman in the center is wearing a pink top. The woman on the right is wearing an orange top. They are all using green watering cans. The background shows trees and a clear sky. The image is framed by a green and yellow border.

Outcome Assessment and Impact Estimation: FTA's Research Contributions to Address Widespread Unsustainable Land Use Practices (Challenge 3)

An Integrative Study of the Forests, Trees and
Agroforestry Research Program (2010-2021)



RESEARCH
PROGRAM ON
Forests, Trees and
Agroforestry



Alliance

Cover photo: Acacia trees being planted in Yangambi. Yangambi, Democratic Republic of Congo. (Photo: Axel Fassio/[CIFOR](#))

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This evaluation was carried out as part of the as part of the [CGIAR Research Program on Forests, Trees and Agroforestry](#) (FTA). FTA is the world's largest research for development program to enhance the role of forests, trees and agroforestry in sustainable development and food security and to address climate change. CIFOR leads FTA in partnership with ICRAF, the Alliance of Bioversity International and CIAT, CATIE, CIRAD, INBAR and TBI.

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List of Acronyms

3E	Effective, efficient, equitable
ACFAP	<i>Agence Congolaise de la Faune et des Aires Protégées</i> (Congolese Agency for Fauna and Protected Areas, Congo)
ACM	Adaptive Collaborative Management
ACOFOP	<i>Asociación de Comunidades Forestales de Petén</i> (Association of Forest Communities of Petén, Guatemala)
ADB	Asian Development Bank
AFC	Agroforestry concessions
AFLI	Agroforestry for livelihoods of smallholder farmers in Northwest Vietnam Project
AFORPOLIS	African Forest Policies and Politics Conference
AFR100	African Forest Landscape Restoration Initiative
AGEOS	<i>Agence Gabonaise d'Observation Spatial</i> (Gabonese Space Observation Agency)
AgFor	Agroforestry and Forestry in Sulawesi: Linking Knowledge with Action Project
AgroFor	Peru's Agroforestry Concessions Scheme: Collaborative Action to secure Multi-level Readiness for Implementation of an Innovative, Transformative Policy Project
ALAR	African Ladies and Renewables company
ANCOVA	<i>Association nationale du collectif des vendeurs et assimilés de bois</i> (National Association of Wood Sellers and Related Workers)
ANPN	<i>Agence National des Parcs Nationaux</i> (National Agency for National Parks, Gabon)
ANR	Assisted natural regeneration
ANSAB	Asia Network for Sustainable Agriculture and Bio-resources
APAMY	Association des Planteurs d'Acacia pour la production de MAKALA à Yelongo (Acacia Planters Association for the Production of MAKALA in Yelongo)
APBEYA	<i>Association des Producteurs de Bois Energie de Yanonge</i> (Yanonge Wood Energy Producers Association)
ASEAN	Association of South East Asian Nations
ASFCC	ASEAN-Swiss Partnership on Social Forestry and Climate Change
ASOF	ASEAN Senior Officials on Forestry
ASRF	ASEAN Strategic Response Fund
ATBC	Association for Tropical Biology and Conservation
ATIBT	<i>Association Technique Internationale des Bois Tropicaux</i> (International Technical Association of Tropical Woods)
BAM	Bosques Amazónicos (Private investment company for sustainable development, Peru)
BAPPEDA	<i>Badan Perencana Pembangunan Daerah</i> (Regional Development Planning Agency, Indonesia)
BAPPENAS	<i>Badan Perencanaan Pembangunan Nasional</i> (National Development Planning Agency, Indonesia)
BDS	Benefit Distribution System (for REDD+ in Vietnam)
BICU	Bluefields Indian and Caribbean University
BIOPAMA	Biodiversity and Protected Areas Management Programme
BNPB	<i>Badan Nasional Penanggulangan Bencana</i> (National Board for Disaster Management, Indonesia)
BRG	<i>Badan Restorasi Gambut</i> (Peatland Restoration Agency, Indonesia)
CAFI	Central African Forest Initiative
CARE	Cooperative for Assistance and Relief Everywhere
CaSAVA	Capacity Strengthening Approach to Vulnerability Assessment method
CATIE	<i>Centro Agronómico Tropical de Investigación y Enseñanza</i> (Tropical Agricultural Research and Higher Education Center)
CBFM	<i>Kelompok Kerja Pengelolaan Hutan Berbasis Masyarakat</i> (Community-based Forest Management Working Group)
CBFP	Congo Basin Forest Partnership
CBO	Community-based organization
CCBA	Climate, Community and Biodiversity Alliance
CCPM	Consultation Circle of Partners of MINFOF/MINEPDED
CERSGIS	Centre for Remote Sensing and Geographical Information Services (Ghana)

FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

CFCL	<i>Concession Forestière des Communautés Locales</i> (Local Community Forest Concession)
CFE	Community forest enterprise
CFM	Community forest management
CFR	Central Forest Reserve of Uganda
CIAT	<i>Centro Internacional de Agricultura Tropical</i> (International Center for Tropical Agriculture)
CIDA	Canadian International Development Agency
CIFOR	Center for International Forestry Research
CIRAD	<i>Centre de Coopération Internationale en Recherche Agronomique pour le Développement</i> (French Agricultural Research Centre for International Development)
COCOBOD	National Cocoa Board (Ghana)
ColFM	Collaborative forest management
COMIFAC	<i>Commission des Forêts d'Afrique Centrale</i> (Central African Forest Commission)
COMIT	Coach Mission Observatory Information Toolkit
CONAP	<i>Consejo Nacional de Areas Protegidas</i> (National Council of Protected Areas, Guatemala)
COP	Conference of Parties
CO-PROMISE	Community-based Peatland Restoration Monitoring System
CRP	CGAIR Research Program
CSB	<i>Centre de Surveillance de la Biodiversité</i> (Biodiversity Monitoring Centre)
CSO	Civil society organization
CUF	CIFOR-USAID Fellowship
DEVCO	European Commission for International Cooperation and Development
DIBIO	<i>Dirección General de Biodiversidad</i> (General Directorate of Biodiversity, Honduras)
DIDA	Danish International Development Agency
DPRD	<i>Dewan Perwakilan Rakyat Daerah</i> (Regional House of Representatives, Indonesia)
DRC	Democratic Republic of Congo
DRYAD	Improving Livelihoods and Land Use in Congo Basin Forests – Financing Sustainable Community Forest Enterprises in Cameroon Project
DryDev	Drylands Development Programme
EARTH	<i>Escuela de Agricultura de la Región Tropical Húmeda</i> (School of Agriculture of the Humid Tropical Region)
EII	Earth Innovation Institute
EL	Exemplar landscapes
ENBCC	<i>Estrategia Nacional sobre Bosques y Cambio Climático</i> (Peruvian National Strategy on Forest and Climate Change)
ERAIFT	Regional Postgraduate School for Integrated Planning and Management of Forests and Tropical Territories
ESS	Environment and Social Safeguards monitoring tool
ETHZ	<i>Eidgenössische Technische Hochschule Zürich</i> (Swiss Federal Institute of Technology, Zurich)
EU	European Union
FAO	Food and Agriculture Organization
FDT	Farm demonstration trials
FENAGH	<i>Federación Nacional de Agricultores y Ganaderos de Honduras</i> (National Federation of Agricultural and Livestock Producers of Honduras)
FIM	Financial Incentive Mechanism
FKPB	<i>Forum Komunikasi Perkebunan Berkelanjutan</i> (Sustainable Plantation Communication Forum, Indonesia)
FLARE	Forests & Livelihoods: Assessment, Research, and Engagement Conference
FLEGT	Forest Law Enforcement, Governance and Trade
FMNR	Farmer-managed natural regeneration
FMS	Field Monitoring System
FMU	Forest management unit
FMV	<i>Fundación Madera Verde</i> (Green Wood Institute)
FODER	<i>Forêts et Développement Rural</i> (Forests and Rural Development NGO)
FOERDIA	Forestry and Environmental Research Development and Innovation Agency (affiliated with Indonesia's KHLK)

FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

FORETS	<i>Formation, Recherche, Environnement dans la Tshopo</i> (Training, Research, Environment in the Tshopo Project)
FORSIBU	<i>Forum Negara Bebas Kabut</i> (Forum of Haze-Free Country, Indonesia)
FP	Flagship program
FPDR	<i>Forum Peduli Daerah Aliran Sungai Rejoso</i> (Rejoso Watershed Care Forum, Indonesia)
FRA	FAO Global Forest Resources Assessment
FREL	Forest reference emission levels
FRPS	<i>Forum Rembug Perhutanan Sosial</i> (Dialogue Forum for Social Forestry, Indonesia)
FSSD	Forest Sector Support Department (Uganda)
FTA	Forests, Trees and Agroforestry
FTL	Forest timber licensees
GCF	Green Climate Fund
GCS	Global comparative study
GGGI	Global Green Growth Institute
GHG	Greenhouse gas
GIS	Geographic information system
GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i> (German Society for International Cooperation)
GML	Governing Multifunctional Landscapes in Sub-Saharan Africa: Managing Trade-Offs between Social and Ecological Impacts Project
GOLS	Governing Oil Palm Landscapes for Sustainability Project
ha	hectare
HCV	High conservation value
HKm	<i>Hutan Kemasyarakatan</i> (Community forest)
HPHD	<i>Hak Pengusahaan Hutan Desa</i> (Village Forest License, Indonesia)
HTR	<i>Hutan Tanaman Rakyat</i> (Community plantations)
IASC	International Association for the Study of the Commons
ICCN	<i>Institut Congolais pour la Conservation de la Nature</i> (Congolese Institute for Nature Conservation, DRC)
ICEL	Indonesian Centre for Environmental Law
ICF	<i>Instituto de Conservación Forestal</i> (Forest Conservation Institute, Honduras)
ICRAF	World Agroforestry
ICV	<i>Instituto Centro de Vida</i> (Life Centre Institute, Brazil)
IDO	Intermediate Development Outcome
IEMaC	Alliance for Forestry Innovation in India - Innovation in Ecosystem Management and Conservation Project
IFAD	International Fund for Agricultural Development
IHCafe	<i>Instituto Hondureño del Café</i> (Honduras Coffee Institute)
IIAP	<i>Instituto de Investigaciones de la Amazonia Peruana</i> (Research Institute of the Peruvian Amazon)
IKI-TonF	International Climate Initiative Trees on Farms
IMET	Integrated Management Effectiveness Tool
INBAR	International Network for Bamboo and Rattan
INCAS	Indonesian National Carbon Accounting System
INDC	Intended Nationally Determined Contributions
INERA	<i>Institut de l'Environnement et de Recherches Agricoles</i> (National Institute of Agronomic Studies and Research, DRC)
INREMP	Integrated Natural Resource and Environmental Management Program
INSTANT	Information System for Sustainable Land Development framework
IPAM	<i>Instituto de Pesquisa Ambiental da Amazônia</i> (Amazon Environmental Research Institute, Brazil)
IPB	<i>Institut Pertanian Bogor</i> (Bogor Agricultural Institute)
IPOP	Indonesian Palm Oil Pledge
ISPO	Indonesian Sustainable Palm Oil
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature
IWMA	Integrated Watershed Management Approach

FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

I2D	Sustainable Development Engineering
JBM	<i>Jardin Botanique de Meise</i> (Meise Botanical Garden)
JFMC	Joint Forest Management Committees
KANOPPI	Development of timber and non-timber forest products' production and market strategies for improvement of smallholders' livelihoods in Indonesia Project
Kemenko	<i>Kementerian Koordinator Bidang Perekonomian</i> (Coordinating Ministry of Economic Affairs, Indonesia)
KHLK	<i>Kementerian Lingkungan Hidup dan Kehutanan</i> (Ministry of Environment and Forestry, Indonesia)
KoLFACI	Korean-Latin American Food and Agriculture Cooperation Initiative
KTPH	<i>Kelompok Tani Pengelolaan Hutan</i> (Forest Management Farmers Group)
LAMA	Locally Appropriate Mitigation Actions
LAMA-I	Locally appropriate mitigation actions in Indonesia Project
LAPAN	<i>Lembaga Penerbangan dan Antariksa Nasional</i> (National Institute of Aeronautics and Space, Indonesia)
LCBC	Lake Chad Basin Commission
LDSF	Land Degradation Surveillance Framework
LEAP	Long-range Energy Alternatives Planning tool
LIPI	<i>Lembaga Ilmu Pengetahuan Indonesia</i> (Indonesian Institute of Science)
LORTA	Learning-Oriented Real-Time Impact Assessment initiative
LTKL	<i>Lingkar Temu Kabupaten Lestari</i> (Sustainable District Gathering Circle, Indonesia)
LUMENS	Land Use Planning for Multiple Environmental Services framework
LUWES	Land Use Planning for Low Emission Development Strategy tool
MAB	Man and Biosphere Programme
MAP	Mesoamerican Agri-environmental Programme
MARD	Ministry of Agriculture and Rural Development (Vietnam)
MARLO	Managing Agricultural Research for Learning and Outcomes database
MDA	<i>Mechanismo de Desarrollo Alternos</i> (Alternative Development Mechanism, NGO)
MECNT	<i>Ministère de l'Environnement, Conservation de la Nature et Tourisme</i> (Ministry of Environment, Nature Conservation and Tourism, DRC)
MEF	<i>Ministerio de Economía y Finanzas</i> (Ministry of Economy and Finance, Peru)
MEFCCA	<i>Ministerio de Economía Familiar, Comunitaria, Cooperativa y Asociativa</i> (Ministry of Family, Community, Cooperatives and Associative Economy, Nicaragua)
MELIA	Monitoring, Evaluation, Learning and Impact Assessment
MFSC	Ministry of Forest and Soil Conservation (Nepal)
MiAmbiente	<i>Secretaría de Recursos Naturales y Ambiente</i> (Ministry of Natural Resources and the Environment, Honduras)
MINAGRI	<i>Ministerio de Desarrollo Agrario y Riego</i> (Ministry of Agriculture and Irrigation, Peru)
MINAM	<i>Ministerio del Ambiente</i> (Ministry of Environment, Peru)
MINEF	<i>Ministère des Eaux et Forêts</i> (Ministry of Water and Forests, Gabon)
MINEPDED	<i>Ministère de l'Environnement, de la Protection de la Nature et du Développement Durable</i> (Ministry of Environment, Nature Protection and Sustainable Development, Cameroon)
MINFOF	<i>Ministère des Forêts et de la Faune</i> (Ministry of Forestry and Wildlife, Cameroon)
MINPMEESA	<i>Ministère des Petites Moyenne Entreprises, de l'Economie Sociale et de l'Artisanal</i> (Ministry of Small and Medium Size Enterprises, Social Economy and Handicrafts, Cameroon)
MLG	From Climate Research to Action under Multilevel Governance: Building Knowledge and Capacity at Landscape Scale Project
MOAD	Ministry of Agricultural Development (Nepal)
MoANR	Ministry of Agriculture and Natural Resources (Ethiopia)
MOCCA	<i>Maximando Oportunidades en Café y Cacao en las Américas</i> (Maximizing Opportunities in Coffee and Cocoa in the Americas Project)
MoU	Memorandum of Understanding
MNGS	<i>Mesa Nacional de Ganadería Sostenible</i> (National Platform for Sustainable Livestock Production, Honduras)
MRAC	<i>Musée Royal d'Afrique Centrale</i> (Royal Museum of Central Africa)
MRV/MMRV	Monitoring, Measurement, Reporting, and Verification

FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

MTCS	Malaysia Timber Certification Scheme
MWE	Ministry of Water and Environment (Uganda)
M&E	Monitoring and evaluation
NAMA	Nationally Appropriate Mitigation Actions
NAP	National Action Plan
NDC	Nationally Determined Contributions
NEPAD	New Partnership for Africa's Development Programme
NFA	National Forestry Authority (Uganda)
NGO	Non-governmental organization
NHSL	Nicaragua–Honduras Sentinel Landscape
NICADAPTA	<i>Adaptación a Cambios en los Mercados y a los Efectos del Cambio Climático en Nicaragua</i> (Adaptation to Changes in the Markets and the Effects of Climate Change in Nicaragua Project)
NPC	<i>Nouveaux Paysages du Congo</i> (New Landscapes of Congo Project)
NRM	Natural resource management
NRMD	Natural Resource Management Directorate (affiliated with Ethiopia's MoANR)
NTFP	Non-timber forest product
NWAMP	National Watershed and Agroforestry Multi-stakeholders Platform (Ethiopia)
OASE	Organization for Action on Social Issues and the Environment
OFAC	<i>Observatoire des Forêts d'Afrique Centrale</i> (Central African Forestry Observatory)
OFAC 3	<i>Contribution à l'observatoire des forêts d'Afrique centrale</i> (Contribution to the Central African Forests Observatory Project)
OFLP	Oromia Forested Landscape Programme (Ethiopia)
OICR	Outcome impact case report
ONAMIAP	<i>Organización Nacional de Mujeres Indígenas Andinas y Amazónicas del Perú</i> (National Organization of Andean and Amazonian Indigenous Women of Peru)
OPAL	Oil Palm Adaptive Landscapes Project
OPPBYA	<i>Organisation Paysanne des Producteurs de Bois Energie de Yawenda</i> (Farmer Organization of Wood Energy Producers of Yawenda)
OSINFOR	<i>Organismo de Supervisión de los Recursos Forestales y de Fauna Silvestre</i> (Supervisory Agency of Forest Resources and Wild Fauna, Peru)
OxC	Options-by-context
P3MHA	<i>Peraturan Daerah Pengukuhan, Pengakuan dan Perlindungan Masyarakat Adat Ammatoa Kajang</i> (District Regulation on Confirmation, Recognition, and Protection of Ammatoa Kajang Indigenous People, Indonesia)
PAR	Participatory action research
PARA	Piloting approaches to rural advisory services in support of scaling of the Agroforestry Concessions scheme in Peru Project
ParCiMon	Participatory Monitoring by Civil Society of Land-use Planning for Low-emissions Development Strategies Project
PDAZAM	<i>Projet de Développement de la Productivité et Diversification Agricole des Zones Arides du Mali</i> (Mali Drylands Development Project)
PDRC	<i>Plan de Desarrollo Regional Concertado</i> (Concerted Regional Development Plan, Peru)
PERDA	<i>Peraturan Daerah</i> (Provincial Regulation, Indonesia)
PERGUB	<i>Peraturan Gubernur</i> (Governor Regulation, Indonesia)
PFES	Payment for Environmental Services
PGIS	Participatory geographic information system
PIM	Policies, Institutions, and Markets CRP
PNDA	<i>Paroisse Notre Dame de l'Assomption</i> (Parish of Our Lady of the Assumption)
PNRPS	Philippine National REDD-Plus Strategy
PPA	Prospective Participatory Analysis
PPP	Public-private partnership
PROCAGICA	<i>Programa Centroamericano de Gestión Integral de la Roya del Café</i> (Central American Program for the Comprehensive Management of Coffee Rust)

FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

PROFEAAC	<i>Promouvoir et Formaliser l'Exploitation Artisanale du bois en Afrique Centrale</i> (Promote and Formalize Artisanal Logging in Central Africa Project)
PRO-FORMAL	Policy and regulatory options to recognise and better integrate the domestic timber sector in tropical countries Project
P3SEPKI	Center for Research and Development on Social, Economics, Policy and Climate Change (research group within the KHLK's FOERDIA, Indonesia)
R-PIN	Readiness Plan Idea Notes (for REDD+)
RAAN	<i>Región Autónoma del Atlántico Norte</i> (North Atlantic Autonomous Region, Nicaragua)
RAD-GRK	<i>Rencana Aksi Daerah Penurunan Emisi Gas Rumah Kaca</i> (District/City/Provincial Action Plan for Reducing Greenhouse Gas Emissions, Indonesia)
RAN-GRK	<i>Rencana Aksi Nasional Penurunan Emisi Gas Rumah Kaca</i> (National Action Plan to Reduce Greenhouse Gas Emissions, Indonesia)
RANKSB	<i>Rencana Aksi Nasional Perkebunan Kelapa Sawit Berkelanjutan Tahun</i> (National Action Plan for Sustainable Oil Palm Plantations, Indonesia)
RAPAC	<i>Réseau des Aires Protégées de l'Afrique Centrale</i> (Network of Protected Areas of Central Africa)
RASTOMA	<i>Réseau des Acteurs de la Sauvegarde des Tortues Marines en Afrique Centrale</i> (The Central Africa Marine Turtle Network)
RaTA AGATA	<i>Rapid Land Tenure Assessment Analisis Gaya Bersengketa</i> (Rapid Land Tenure Assessment Dispute Analysis)
RDDSIBU	<i>Relawan Duta Desa Bersih Jerebu</i> (UNRI Haze Clean Village Ambassador Volunteers, Indonesia)
RECOFTC	Regional Community Forestry Training Center (Indonesia)
REDD+	Reducing Emissions from Deforestation and Forest Degradation
REFORCO	<i>Appui à la politique nationale de conservation et gestion des forêts et de la diversité en République Démocratique du Congo</i> (Support for the National Policy for the Conservation and Management of Forests and Biodiversity in the Democratic Republic of Congo Project)
REL	Reference emission levels
RENJA BPSKL	<i>Rencana Kerja Balai Perhutanan Sosial dan Kemitraan Lingkungan</i> (Work Plan for the Social Forestry and Environmental Partnership Center, Indonesia)
RENSTRA DKP	<i>Rencana Strategis Dinas Kehutanan Provinsi</i> (Provincial Forestry Service Strategic Plan, Indonesia)
REPAR	<i>Réseau des Parlamentaires pour la gestion durable des Ecosystèmes Forestiers d'Afrique Centrale</i> (Network of Parliamentarians for Sustainable Management of Forest Ecosystems in Central Africa)
RES	Rewards for environmental services
RIOFAC	<i>Renforcement et Institutionnalisation de l'Observatoire des Forêts d'Afrique Centrale</i> (Strengthening and Institutionalization of the Central African Forest Observatory Project)
RKHD	<i>Rencana Kerja Hutan Des</i> (Village Forest Management Plan, Indonesia)
RPHJP	<i>Rencana Pengelolaan Hutan Jangka Panjang</i> (Long-term Forest Management Plan, Indonesia)
RPJMD	<i>Rencana Pembangunan Jangka Menengah Daerah</i> (Regional Medium-term Development Plan, Indonesia)
RPJMN	<i>Rencana Pembangunan Jangka Menengah Nasional</i> (National Medium-term Development Plan, Indonesia)
RPP	Readiness Preparation Proposal (for REDD+)
RRI	Rights and Resources Initiative
RSPO	Roundtable for Sustainable Palm Oil
RTRW	<i>Rencana Tata Ruang Wilayah</i> (Regional Spatial Planning, Indonesia)
RUPES 2	Rewards for, use of and shared investment in pro-poor environmental services Project (phase 2)
SECURED	Sustaining Ecosystem and Carbon benefits by Unlocking Reversal of Emissions Drivers in Landscapes Project
SERFOR	<i>Servicio Nacional Forestal y de Fauna Silvestre</i> (National Forest and Wildlife Service, Peru)
SERNAP	<i>Servicio Nacional de Áreas Naturales Protegidas por el Estado</i> (National Service of Natural Protected Areas, Peru)
SFM	Sustainable forest management
SGDRN	Society for the Management and Development of the Niassa Reserve
SIGMOF	<i>Sistema de Información para la Gestión y Monitoreo Forestal</i> (Information System for Forest Management and Monitoring, Honduras)
SIS	Safeguards Information System
SLANT 2	Sloping Lands in Transition: Land Use Change and Smallholder Adaptive Capacity in Bhutan Project

FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

SLO	System-level outcome
SME	Small and medium enterprises
SPDA	<i>Sociedad Peruana de Derecho Ambiental</i> (Peruvian Society of Environmental Law, NGO)
SPOI	Sustainable Palm Oil Initiative
SRAP	<i>Strategi Rencana Aksi Provinsi</i> (Provincial Action Plan Strategy)
SRE	Sustainability Research Effectiveness
STI	Climate-smart, Tree-based, Co-investment in Adaptation and Mitigation in Asia Project
SUCCESS	Support to the Development of Agroforestry Concessions in Peru Project
SWC	Soil and water conservation
TEEB	The Economics of Ecosystem and Biodiversity Initiative
TIARA	Transforming Investments in African Rainfed Agriculture Initiative
TNC	The Nature Conservancy
ToC	Theory of Change
TonF	Trees on Farms
TPP	Transformative Partnership Platform
UDENAR	<i>Universidad de Nariño</i> (Nariño University)
UI	<i>Universitas Indonesia</i> (University of Indonesia)
ULg	<i>Université de Liège</i> (University of Liège)
UNA	<i>Universidad Nacional de Agricultura</i> (Honduras National University of Agriculture)
UNAMAD	<i>Universidad Nacional Amazónica de Madre de Dios</i> (National Amazonian University of Mother of God)
UNCBD	United Nations Convention on Biological Diversity
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commission for Refugees
UNIKARTA	<i>Universitas Kutai Kartanegara</i> (Kutai Kartanegara University)
UNIKIS	<i>Université de Kisangani</i> (University of Kisangani)
UNILA	<i>Universitas Lampung</i> (University of Lampung)
UNMUL	<i>Universitas Mulawarman</i> (Mulawarman University)
UNPATTI	<i>Universitas Pattimura</i> (Pattimura University)
UN-REDD	United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation
UNRI	<i>Universitas Riau</i> (University of Riau)
UNTAMA	<i>Universitas Antakusuma</i> (Antakusuma University)
UNTAN	<i>Universiti Tanjungpura</i> (University of Tanjungpura)
UPB	<i>Universitas Panca Bhakti</i> (Panca Bhakti University)
URACCAN	<i>Universidad de las Regiones Autónomas de la Costa Caribe Nicaragüense</i> (University of the Autonomous Regions of the Nicaraguan Caribbean Coast)
USD	United States dollar
UTOLIMA	<i>Universidad del Tolima</i> (Tolima University)
UWICE	Ugyen Wangchuck Institute for Conservation and Environment
VND	Vietnamese đồng
VNFF	Vietnam Forest Protection and Development Fund
VNFOREST	Vietnam Forestry Administration
VPA	Voluntary Partnership Agreements
WCMC	World Conservation Monitoring Centre
WRI	World Resources Institute
WWF	World Wildlife Fund
YPS	<i>Yangambi, pôle scientifique au service de l'homme et des forêts</i> (Yangambi, Scientific Center at the Service of Man and Forests Project)
3PAD	Pro-poor Partnerships for Agroforestry Development Project



FTA conducts research in a variety of landscapes to support improved management and address unsustainable land use; forests within the Maya Biosphere Reserve are one such example. A community forest concession in Petén, Guatemala (Photo: [PIM/FTA](#))

Executive Summary

Introduction

The study “Outcome Assessment and Impact Estimation: FTA’s Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)” is part of a series of integrative studies assessing the contributions of the Forests, Trees and Agroforestry (FTA) CGIAR Research Program (CRP) since the program’s inception in 2011. This evaluation features research undertaken as part of the FTA program¹, led by FTA partner institutions (Center for International Forestry Research (CIFOR), World Agroforestry (ICRAF), Bioversity International, the French Agricultural Research Centre for International Development (CIRAD), the Tropical Agricultural Research and Higher Education Center (CATIE), the International Network for Bamboo and Rattan (INBAR), and Tropenbos International) and/or other international and national partners.

The FTA CRP represents a substantial investment of approximately 850 million USD over the past ten years. Its research agenda aimed to develop solutions to major societal problems as a way to contribute to developmental and environmental impacts on a large scale. In practice, FTA is an umbrella for different and often inter-related research initiatives. To date, hundreds of research initiatives have been implemented in diverse country contexts, policy and research environments, geographies, landscapes, and socio-economic conditions of local communities to address pressing issues related to forests, trees, and agroforestry. In 2016, at the beginning of the second phase, FTA set aspirational impact targets to which it aimed to contribute. Nearing the end of the program, this study aims to assess the extent and nature of FTA’s contributions and whether impacts are likely to be realized over time. To do so, the evaluation team focused its efforts on evidencing outcomes and laying the groundwork for estimating impacts of FTA’s research in five distinct, albeit inter-related, areas or ‘challenges’ (Figure 1).

These challenges were identified together with the management team and leadership of FTA, highlighting five important areas of commitments relevant to many countries and actors, donors’ priorities, the Sustainable Development Goals, the global forest goals, the CGIAR system-level outcomes (SLO), and the FTA Phase II proposal. The five challenges are as follows:

- Challenge 1: Accelerating rates of deforestation and forest degradation;
- Challenge 2: High prevalence of degraded land and ecosystem services;
- Challenge 3: Widespread unsustainable land use practices;
- Challenge 4: Persistent rural poverty with increasing levels of vulnerability; and
- Challenge 5: Rising demand and need for nutritious food for both current and future generations

¹ The evaluation uses the term ‘FTA’ to represent the collective contributions of partners and/or the organization that led the research.

The five challenges are not the sole issues that FTA tackles, but several are precursors to other issues. For instance, FTA also worked to address biodiversity loss and climate change through actions to address deforestation, land and forest degradation, and unsustainable land use practices. Therefore, the assessment of the five challenges is a first step to a wider assessment of other issues that FTA tackles. This report focuses on Challenge 3, while the other challenges are assessed in separate reports using a similar methodology.

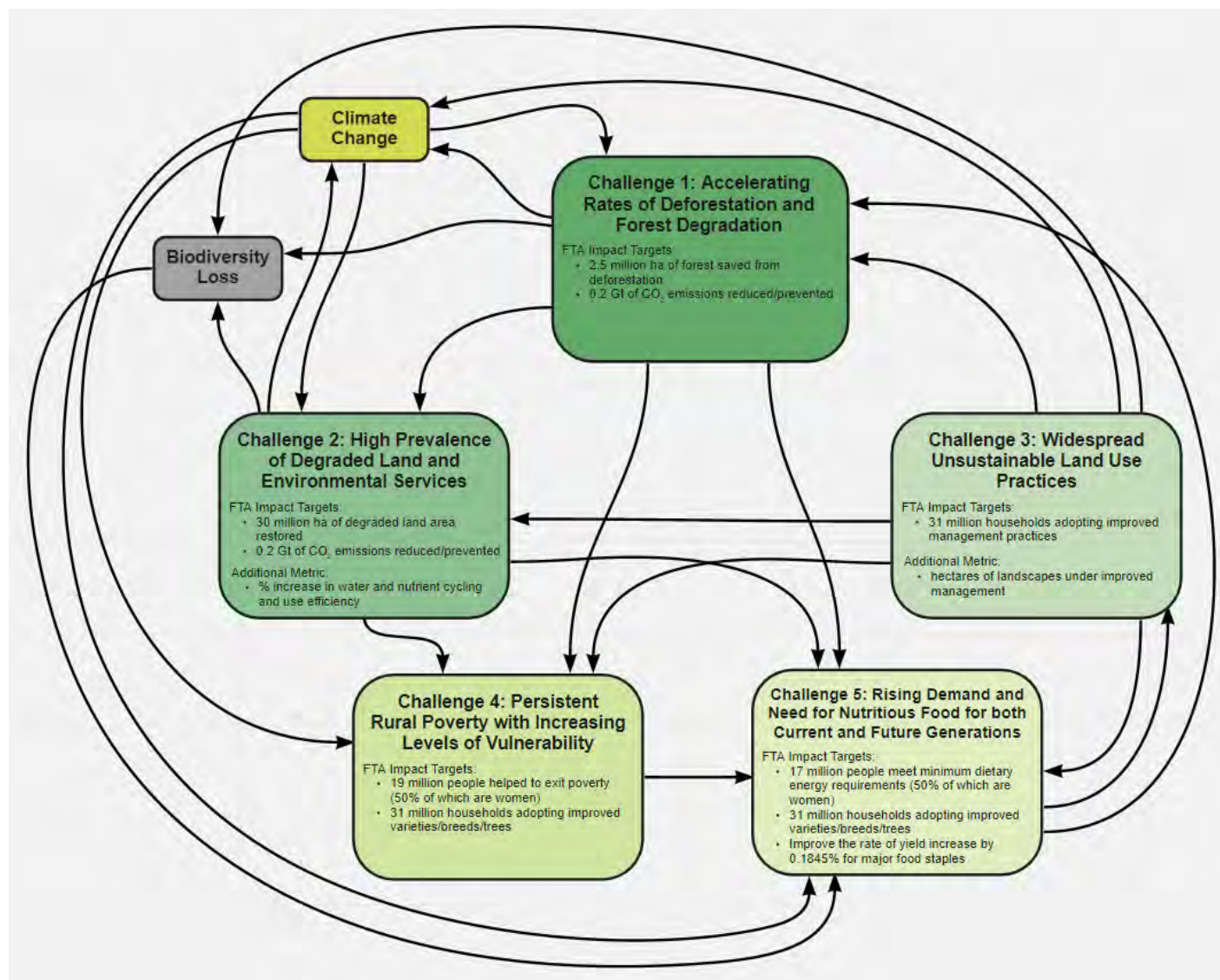


Figure 1. Complex interconnections between the five key global challenges FTA aims to address.

Unsustainable land use is defined as the practices which alter landscapes and contribute to the loss of the productive capacity and natural ecological function of the land to sustain life and future use (Choudhury & Jansen, 1998; FAO, 1999; IFAD, 1992). In the long-term, unsustainable land use and management have serious ramifications for the environment, the economy, and society at the local and global scales (OECD, 2020). Much of the world's land use change is associated with agricultural expansion and intensification for food production, the forestry sector, and urbanization (Diamond, 2005; FAO, 2021; Howe et al., 2014; OECD, 2020; Olsson et al., 2019; Vlek et al., 2017). Sustainable landscape management involves informed decision-making, policies, and measured actions to adapt and monitor practices to protect, conserve, restore, and sustainably use natural resources as well as prevent further land and forest degradation (FAO, 2021; Olsson et al., 2019).

Methods

The evaluative approach relies on the documentation of nested Theories of Change (ToC) for each of the five challenges, including underlying hypotheses of how and why intended changes are expected to happen. The ToCs

link FTA's research activities and engagements to actions taken by other actors in the system (from next users to boundary partners to other users) and changes within the enabling environment.

Step 1. Mapping projects to frame FTA contributions to addressing the five challenges

In order to assess the importance and scale of FTA's contributions to improved landscape management, the evaluators first conducted a comprehensive review of projects and initiatives to map FTA contributions to the five challenges. The mapping exercise identified and grouped FTA's activities into research clusters by theme and geography for each challenge, informed by interviews and document review of project proposals, FTA's Flagships, operational priorities, and work plans. These research clusters² constitute key components of the ToC.

Step 2. Documenting composite overarching and sub-ToCs per challenge – the case of Challenge 3

All available information was used to retrospectively document³ composite ToCs (i.e., combining ToCs for related projects and research initiatives) for each of the five challenges as well as cluster-level ToCs nested within the challenge-level ToCs. Challenge 3's ToC is comprised of nineteen clusters, representing 59 projects and initiatives led by FTA partner institutions.

Step 3. Collating existing evidence to identify gaps and assess FTA's contributions to outcomes

Available evidence was collected and organized for each cluster to test each element in the ToCs. Critical data and knowledge gaps were also identified during this process. Additional data from external sources (e.g., semi-structured interviews with stakeholders, policy documents, etc.) were collected as needed to assess outcomes, estimate impacts using projections from available documentation and evidence, and make plausible connections between FTA's contributions to outcomes and the likelihood for potential impacts to be realized in the future. Data availability was a key challenge in this process, with substantial variability in the quality of reporting and records management from project to project.

Step 4. Deep dive selection and analysis

One cluster (i.e., Agroforestry Concessions in Peru) was selected for more detailed analysis in a 'deep dive' case study to explore policy contributions, practice influence, and potential impact (see Box 1). Although it was clear from an initial review of evidence sources that FTA had contributed to and supported the government's implementation of the agroforestry concession mechanism in San Martín, a province located in the Peruvian Amazon, several evidence gaps remained and updated evidence from more recent projects was needed. We filled these gaps using key informant interviews and further document review (e.g., project documents, policy documents, presentations, websites, etc.). The report also showcases a tool for modelling shade for trees on farm and agroforestry systems (see Box 2 for CATIE's ShadeMotion software) and features FTA's contributions to the development of a national agroforestry policy in Nepal (see Box 3).

Step 5. Estimation of potential impact

Seventeen of the nineteen clusters had quantitative estimates available for a range (low- and high-end) of impact potential and/or evidence of impact achievement⁴, while two clusters had no reporting of impacts. Impact metrics for the integrative study were defined using end-of-program outcome, intermediate development outcome (IDO), and SLO targets identified in FTA's Phase II proposal. The evaluation of Challenge 3 aims to determine whether and to what extent FTA's target contribution of '31 million households adopting improved management practices'

² The term 'cluster' has a specific unique meaning (related to the challenge ToC); it is not the same as the "cluster of activities" identified in the Flagships.

³ Part of the "construction" of these ToCs can be seen as a step within the learning loop to periodically revisit the ToCs of the program. However, our process went a step further because of the extent of the reorganization around the five high-level challenges. For instance, FTA's Phase II did have a generic global ToC for the whole program, with a corresponding ToC by Flagship, but neither of these pre-existing ToCs could be used for the purpose of this detailed and cross-cutting investigation around the five challenges.

⁴ Low-end estimates represent a conservative estimate and do not represent all FTA interventions (only for interventions where quantifications were available). High-end estimates represent a more liberal estimate but also do not represent all FTA interventions (only those interventions where quantifications were available and where further exploration highlighted FTA's contributions to policies focused on landscape management and monitoring).

was realized. However, the majority of reporting does not document impacts in terms of household units, instead reporting on area. Therefore, impact estimates for Challenge 3 are reported in terms of the number of hectares under improved management as a result of policy mechanisms, monitoring systems, and changes in on-the-ground management and land use practices influenced by FTA. Both metrics of households (or number of people) and hectares are reported when available.

Challenge 3 Theory of Change

Governance and the management of different landscapes (e.g., forests, drylands, wetlands, etc.) are important focal areas of FTA's research (Figure 2). The research tackles several drivers, including poor governance and oversight, weak institutions, agricultural expansion, and unsustainable land use practices at the large- and small-scale. FTA's research also aims to address the resulting compounding effects of mismanaged landscapes, such as climate change, damaged ecosystem services, land degradation, natural resource scarcity, food insecurity, poverty, and poor health. These drivers and effects serve as entry points for FTA's work.

The logic of the ToC is as follows: To address widespread unsustainable land use practices, FTA aimed to tackle the challenge with both top-down and bottom-up approaches by providing knowledge to frame issues, generating data on land and forest use to understand current conditions and trends over time, developing tools and methods for monitoring, proposing policy solutions and innovations, lending guidance and support for policy implementation, and offering training in improved management and monitoring practices. FTA's research and engagement efforts aimed to contribute to the enhanced governance and management of landscapes across Latin America, Africa, and Asia by informing and influencing a wide range of actors, from researchers, government policy-makers, non-governmental organizations (NGO), boundary partners and allies, to the corporate-scale and small-scale private sector actors. At the international level, FTA aimed to improve mechanisms for climate mitigation (e.g., Reducing Emissions from Deforestation and Forest Degradation (REDD+), wetlands, agroforestry, payment for environmental services (PFES), etc.) and advance the climate agenda. At the national level, FTA aimed to enhance forest protection and sustainable forest management (SFM) (with a particular focus in countries in Mesoamerica, the Congo Basin, East Africa, and Southeast Asia); improve forest monitoring systems (e.g., Forest Law Enforcement, Governance and Trade (FLEGT)/Voluntary Partnership Agreements (VPA)) to discourage illegal logging (with a particular focus in countries in Central and West Africa); expand market options and rewards schemes that incentivize sustainable management practices (with a particular focus in South Asia and Southeast Asia); influence policy to manage and reduce forest fires (in Indonesia); promote incentive mechanisms to reduce agricultural expansion into watersheds and natural forests for cash crop production (in Peru, Indonesia, and the Philippines); and encourage uptake of sustainable land use practices and management in dryland areas (with particular focus on countries in Sub-Saharan Africa)⁵.

Results

Outcome Evaluation

The assessment indicates that FTA made notable achievements to influence policies, practices, and research that contribute to the improved governance and management of landscapes across Latin America, Africa, and Asia. The majority of FTA's contributions to intended outcomes for each research cluster were either partially or fully realized. For outcomes that have not yet been realized, it is likely that many will be realized in the future though others may remain unrealized because of political, regulatory, economic, or social barriers. Government, NGO/partner, researcher, and smallholder pathways were the most prevalent and strongest impact pathways through which FTA influenced change. FTA did succeed in influencing some international organization, practitioner, private sector, and public impact pathways in different countries, but to a lesser degree. Evidence suggests that FTA's contributions to outcomes are likely to continue post-FTA, as much of FTA's influence on change processes in the respective research clusters helped build momentum for ongoing commitment by FTA centres, partners, and NGO allies to advance progress on intended outcomes and impacts.

⁵ Appendix 1 contains the list of countries, disaggregated by cluster, where FTA's research was mapped to Challenge 3.

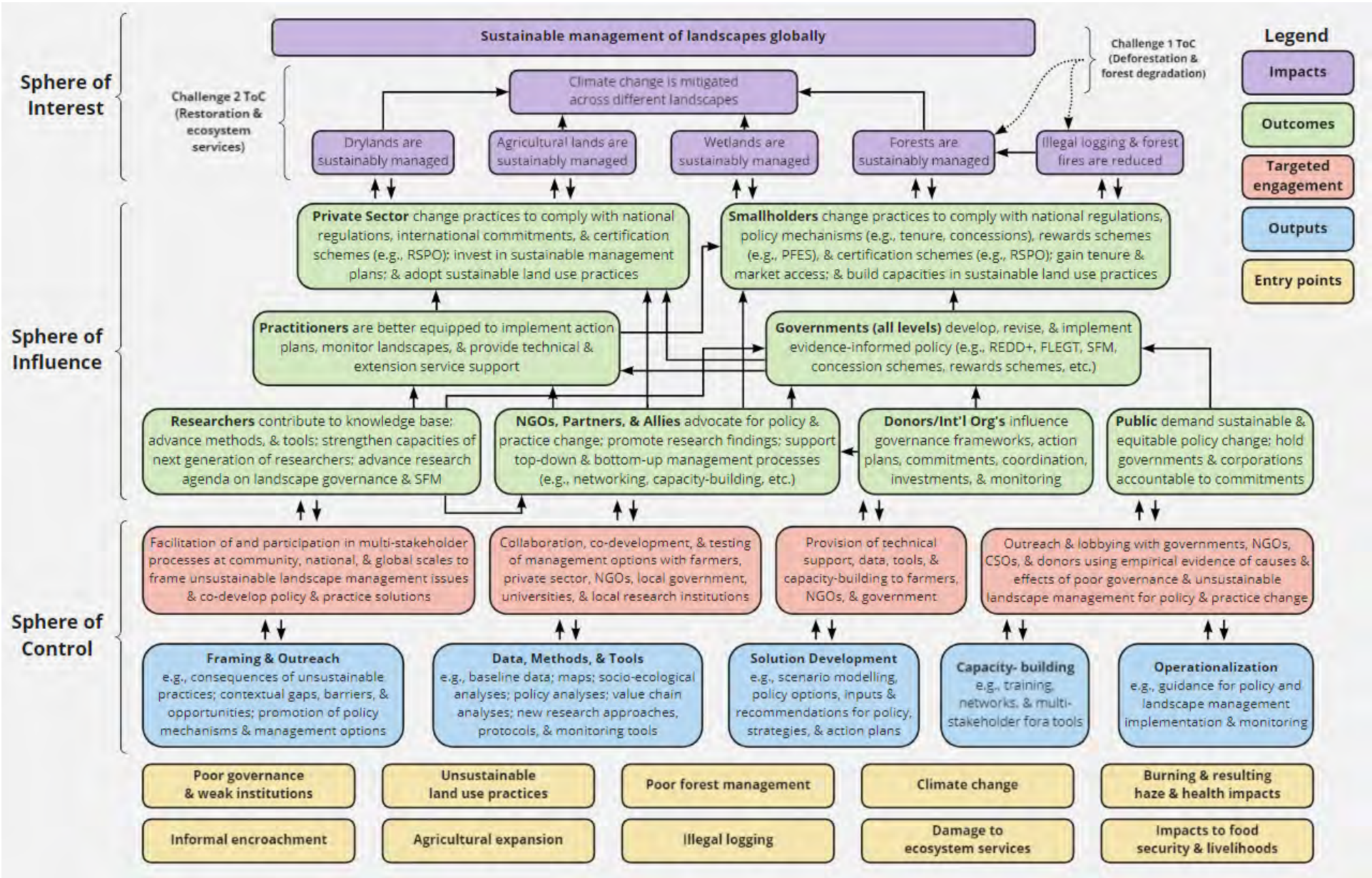


Figure 2. Summary overarching ToC outlining expected FTA’s contributions to Challenge 3 (Widespread Unsustainable Land Use Practices).

Table 1 lists achieved policy and practice influence and shows the extent to which FTA's intended end-of-program outcomes were realized across Latin America, Africa, and Asia through concentrated efforts on landscape governance and management. FTA exceeded its first end-of-program outcome target, contributing to over 300 policies, strategies, frameworks, guidelines, action plans, development plans, land use plans, agreements, and governance arrangements at multiple levels (i.e., international, regional, national, sub-national) that support more sustainable landscape management across 29 countries. FTA's technical inputs, data and tools, evidence-based recommendations, and involvement in working groups supported context-appropriate decision-making, improved governance mechanisms, and strengthened institutional capacities for integrated landscape planning, policy implementation, and monitoring that balances socio-economic and ecological objectives.

FTA also exceeded its second end-of-program outcome target, influencing the decision-making, investments, pilots, and/or practices of at least 34 companies, 178 SMEs, and over 1,500 private sector actors to better manage and monitor natural resources, safeguard ecosystem services, and support inclusive, equitable, and sustainable livelihoods. Influence through private sector certification bodies (e.g., RSPO), private sector platforms, and farmer/producer associations supported far-reaching knowledge-sharing, capacity-building, and practice change for more environmental commitments, sustainable business models, and natural resource management (NRM).

Through contributions to address Challenge 3 alone, FTA fell short of its third end-of-program outcome target to equip public and private sector actors to deliver more effective extension and pedagogical services to support the sustainable management of landscapes and natural resources. Through capacity-building and technical support across 18 countries, FTA trained close to 40,000 government officers, extensionists, and NGO staff to build new and enhanced skills in participatory governance and tenure reform, rewards scheme implementation, land use planning, conservation, NRM, SFM, dryland management, wetland management, management of trees on farms, and/or landscape monitoring, among others. These supports translated to enhanced practice and extension delivery. This outcome was also supported by the implementation and expansion of governmental programmes, monitoring systems, educational programmes and learning centres, public campaigns, as well as pilots, farm demonstration trials (FDT), and exemplar landscapes (EL).

FTA did not meet its fourth end-of-program outcome through projects mapped to Challenge 3. Evidence indicates that at least 282,365 people across 18 countries are better equipped to take up and apply context-appropriate agroforestry and landscape management practices as a result of FTA's training and engagements. The majority of this capacity-building was concentrated in Africa. Projects with participatory and experiential learning activities, tailored knowledge-sharing and engagement, and dedicated capacity-building for communities increased the likelihood for sustainable practice change. Pilots, FDT, and EL were particularly effective means to support community learning, showcase the viability of different management and practice options applied to the local context, and encourage uptake. Ongoing support and commitment of NGO partners in the target communities was key, and increased the potential for scaling in nearby communities and other regions.

Table 1. Extent to which FTA's end-of-program outcomes were realized across Latin America, Africa, and Asia

End-of-Program Outcome #1	
25 countries improve governance mechanisms, institutions & tools for a) safeguarding forests/tree diversity and b) equitably managing forests & trees within mosaic landscapes	
Contributions to Outcome Realization	Global
	<ul style="list-style-type: none"> • Informed international climate negotiations for a global REDD+ agreement • Inclusion of tenure in UN-REDD Strategy Framework • UNFCCC adopts FTA's step-wise approach to set, measure, and report REL (implications for 197 signatory countries; uptake in Guyana, Ethiopia, and Indonesia) • Established south-to-south knowledge exchange platforms for tenure reform (Peru, Uganda, and Indonesia) • Enhanced horizontal and vertical interactions between stakeholders for decision-making • Better representation and empowerment of women, youth, and indigenous groups in landscape governance
	Latin America (4 countries)
	<ul style="list-style-type: none"> • Supported 5 national and sub-national policies, strategies, and plans for REDD+ (Peru) • Enhanced institutional capacity for MMRV (Peru) • Supported tenure reform processes (Peru) • Enhanced institutional capacity for agroforestry concession implementation (Peru) • Revised regulations for timber and Brazil nut management (Peru) • Revised technical norms for community forest concession renewal (Guatemala) • Integration of trees on farms in National Biodiversity Strategy (Honduras) • Established multi-stakeholder platforms for trees on farm (Nicaragua, Honduras)
	Africa (15 countries)
	<ul style="list-style-type: none"> • Supported 9 national policies, plans, and programmes for REDD+ (Ghana, DRC, Cameroon, Ethiopia, Tanzania) • Established national MRV and safeguards information systems (Ethiopia) • Enhanced institutional capacity for MMRV (Cameroon, Ethiopia, Guyana) • Supported tenure reform processes (Uganda) • Informed Niassa National Reserve Community Development and Management Strategy (Mozambique) • Informed integrated development plan for Yangambi Biosphere Reserve and preparation of local development plans (DRC) • Co-developed 110 community action plans and sub-catchment plans for dryland management (Ethiopia, Kenya, Mali, Niger, Burkina Faso) • Adoption of sub-catchment approach in national watershed management plan (Ethiopia) • Informed dryland management decisions in 3 national policies and programmes (e.g., Irrigation Act in Kenya; Land Act in Mali; National Regreening Programme in Ethiopia) • Ratified 3 agreements with national agencies (DRC, Congo, Gabon) to establish a regional forest monitoring framework • Informed roadmap and cooperation framework for Congo Basin Forest Partnership • Informed timber sector industrialization plan (Cameroon) • Revised forest law to include regulations for domestic markets (Cameroon) • Conjoint decree promoting use of legal timber in public contracts (Cameroon) • Revised national forest control strategy to prevent illegal logging (Gabon) • Established Atewa Landscape platform and influenced mandate for sustainable forest management (Ghana) • Informed national climate change strategy and 2 national programmes for sustainable forest management (Ghana) • Informed national forestry and agroforestry policy and charcoal sector roadmap (Kenya) • Integration of sustainable wood-fuel value chain options into county plans (Kenya) • Contributed to policy dialogue for charcoal regulations (Zambia) • Inclusion of CFEs in national definition of social enterprises (Cameroon)
	Asia (10 countries)
	<ul style="list-style-type: none"> • Supported 9 national policies and strategies for REDD+ (Indonesia, Vietnam, Laos, Philippines) • Established national carbon accounting systems and safeguard information systems for REDD+ (Indonesia, Laos) • Enhanced institutional capacity for MMRV (Indonesia, Vietnam) • Supported tenure reform processes and establishment of a working group on social forestry (Indonesia) • Integration of incentive schemes (e.g., PFES, RES) into 19 national and sub-national policies, directives, protocols, governance arrangements, and/or land use plans (Indonesia, Philippines, Vietnam, China) • Implementation of a monitoring and evaluation system for PFES (Vietnam) • Co-development of Strategy and Action Plan for Forest Landscape Restoration in Sarawak, outlining directives, levies, and certification requirements (Malaysia) • Informed priority-setting of national Grand Strategy and 9 local strategies for integrated NTFP management (Indonesia)

	<ul style="list-style-type: none"> • 4 district strategies for sustainable livelihoods and conservation in Sulawesi (Indonesia) • Informed strategic district planning for environmental management in Sumbawa (Indonesia) • Revised 2 decrees for management of village forest licenses (Indonesia) • Co-developed 9 village forest management plans (Indonesia) • Informed 23 multi-level low-emissions development plans, local mitigation action plans, and/or green growth plans across several provinces for climate management (Indonesia) • 3 district-level working groups on low-emissions strategies established (Indonesia) • Government adopts integrated watershed management approach (Indonesia) • Supported 4 sub-national policies and/or governance arrangements for watershed management (Indonesia) • Established multi-stakeholder forum for management of Rejoso Watershed (Indonesia) • Informed Grand Design for Fire Prevention and multiple sub-national standards, strategies, and regulations for fire management (Indonesia) • Established multi-stakeholder forum on fire and haze (Indonesia) • Informed 2 sub-national regulations to manage high conservation areas in East Kalimantan (Indonesia) • Informed spatial planning in West Kotawaringin (Indonesia) • Supported 29 indigenous peoples plans and development plans for watershed management (Philippines) • Informed 3 national policies for agroforestry and fruit tree solutions and 3 provincial policies for son tra (H'mong apple) development and subsidies (Vietnam) • Co-developed provincial green growth action plan (Vietnam) • Informed Kathmandu Declaration on Agroforestry and National Agroforestry Policy (Nepal) • Co-developed 13 ASEAN policies, strategies, guidelines, and tools for agroforestry-based climate change management • Established working groups for social forestry, community forestry, and/or village forestry in 5 ASEAN member states (Cambodia, Laos, Myanmar, Philippines, Vietnam) • Supported 14 national forest laws, policies, and guidelines in 8 ASEAN member states (Indonesia, Philippines, Thailand, Vietnam, Cambodia, Myanmar, Laos, Malaysia)
End-of-Program Outcome #2	
About 20 multinational companies and 500 private sector actors pursue models & investments for a) improved mgt. & safeguarding of forest & tree resources and b) enhancement of inclusive landscape-based livelihoods & ecosystem services	
Contributions to Outcome Realization	Global (1 private sector certification body)
	<ul style="list-style-type: none"> • Integration of gender considerations in RSPO Principles and Criteria (implications for all RSPO-certified companies)
	Latin America (1 company, 1 private sector platform)
	<ul style="list-style-type: none"> • 1 water supply company requested FTA training on ecosystem services and watershed management (Peru) • Adoption of live fences (trees on farms) in NAMA-Livestock Initiative by national livestock platform (Honduras)
	Africa (25 companies, 34 SMEs, >1,500 private sector actors)
	<ul style="list-style-type: none"> • Initiated engagement for public-private partnership for Yangambi Landscape; 2 investment funds interested to join (DRC) • Established 1 business incubator for SFM (DRC) • 4 public institutions and 4 construction companies commit to source legal timber supplies (DRC, Cameroon) • 17 construction companies informed on legal timber supply (Cameroon) • 2 supply chain management companies monitor informal producers and traders in public traceability contracts (Cameroon) • Established 34 CFEs (84 additional business cases ready for investment) equipped to self-monitor (Cameroon) • 3 companies pilot business models and independent monitoring and traceability systems (Ghana) • Established 3 farmer/producer associations (DRC) • Supported formalization of 1,500 farmer groups (Ethiopia, Kenya, Mali, Niger, Burkina Faso)
	Asia (8 companies, 144 SMEs, 1 private sector platform)
	<ul style="list-style-type: none"> • Established 30 CSOs for NTFP collection and new business ventures (India) • 1 national power company committed to co-finance rehabilitation and management of watershed in Lantapan (Philippines) • 6 multi-national oil palm companies develop company commitments for women's rights, establish gender committees, and/or support equitable supply chain initiative (Indonesia) • 1 company defined mitigation actions in annual work plan using FTA's REL calculations (Indonesia) • Progress for fire prevention via private sector-led Fire Free Alliance (Indonesia) • Established 114 community-based agroforestry enterprises (Indonesia) • Uptake of ASEAN Guidelines for Agroforestry Development by companies, private investors, and international financing institutions across the region

End-of-Program Outcome #3	
National and sub-national public & private sector actors in 25 countries deliver more effective & equitable tree related breeding, delivery, extension & pedagogical services	
Contributions to Outcome Realization	Latin America (4 countries) <ul style="list-style-type: none"> • Implementation of socio-environmental monitoring systems for 2 jurisdictional programmes (Brazil) • Enhanced capacity of 500 government and NGO staff in tenure reform, tenure rights and governance, gender reporting, and conflict management (Peru) • Supporting institutional capacities for implementation of technical guidelines and extension services for agroforestry concessions (Peru) • Government, NGO, and FTA pilots for agroforestry concessions (Peru) • Enhanced multi-management practices of <i>regentes</i> and extensionists (Peru) • Enhanced capacity of 400 government staff in forest monitoring (Nicaragua) • Enhanced capacity of 595 extensionists in FTA tools and trees on farms management (Nicaragua, Honduras) • National livestock platform implementing a 5-year pilot across 1,200 farms (Honduras)
	Africa (9 countries) <ul style="list-style-type: none"> • Enhanced capacity for conservation, hive management, and monitoring in Niassa National Reserve (Mozambique) • Uptake of lessons on traditional honey harvesting and tree conservation in local educational materials (Mozambique) • Established 2 nurseries and 2 pilot farms (DRC) • Enhanced capacities of 600 government, private sector, and extension staff in forest conservation and management (DRC) • Operationalization of 19 village management committees and brigadier units (DRC) • Government and CSO partners support outreach on community forestry arrangements to 15,000 people (DRC) • Implementation of Environmental Education and Awareness Programme on forest conservation and management in 63 local schools, reaching 8,650 students (DRC) • Enhanced capacity of 3,650 government staff, technical experts, and extensionists in agricultural extension services for improved dryland management (Ethiopia, Kenya, Mali, Niger, Burkina Faso) • 8,500 government and NGO stakeholders engaged to support adoption and scaling of dryland management practices post-project (Ethiopia, Kenya, Mali, Niger, Burkina Faso) • 500 stakeholders engaged to strategize and collaborate on SFM in Congo Basin • Implemented fixed and mobile forest patrols to prevent illegal logging (Gabon) • Sensitization campaigns for legal timber reach 380,000 people (Cameroon) • Reforestation tree-planting campaign (100,000 trees) (Cameroon) • Government assists CFEs to obtain environmental impact notice certificates (Cameroon)
	Asia (5 countries) <ul style="list-style-type: none"> • Sub-national government adopts community-based forest monitoring systems (India) • Expansion of rewards schemes via Lantapan Incentive-based Policy Programme (Philippines) • Enhanced capacities of 500 NGO staff in community-based monitoring tool (Philippines) • Enhanced capacities of 400 forest officers on RES and ecosystem service decision-making tools (Bhutan) • Enhanced capacities of 100 government staff and extensionists in land use planning tools and son tra management (Vietnam) • Enhanced capacities of 8,500 people from 195 institutions in participatory governance (Indonesia) • Enhanced capacities of 15,250 government and NGO staff in geomatics, land use planning tools, carbon and biodiversity monitoring, forest law, RES, and/or IWMA (Indonesia) • Enhanced capacities to verify and monitor licenses and oil palm expansion (Indonesia) • Implementation of collaborative mechanism for management of Nipa-Nipa Forest Watershed (Indonesia) • Sub-national government pilot participatory land use planning approach (Indonesia) • Local governments pilot a PFES scheme for watershed management (Indonesia) • Local governments pilot monitoring schemes in 3 village forests (Indonesia) • Regency governments pilot monitoring indicators for climate-related ecological and social change (Indonesia) • NGOs support fire prevention activities with communities (Indonesia) • University partner launched a student volunteer programme for fire prevention in 4 districts (Indonesia) • Established apiculture learning centre in Sumbawa (Indonesia) • Established 562 FDT for community forest management (Indonesia) • Established 2 exemplar landscapes through co-investment scheme with Son La provincial government (Vietnam)

End-of-Program Outcome #4	
At least 40 million smallholders & other users access more productive tree planting material & uptake higher performing, context appropriate & inclusive AF & small-scale forestry mgt. option	
Contributions to Outcome Realization	Latin America (2,030 people across 4 countries)
	<ul style="list-style-type: none"> Enhanced capacities of 200 farmers in sustainable agroforestry practices (Peru) Enhanced capacities of 180 farmers on forest governance and management (Guatemala) Enhanced capacities of 650 farmers in FTA tools for trees on farms (Honduras) Established farmer field school programme for 1,000 farms (Nicaragua, Honduras)
	Africa (223,985 people across 9 countries)
	<ul style="list-style-type: none"> 65 people from 9 honey gathering groups adopt traditional honey harvesting practices (Mozambique) Enhanced capacities of 250 farmers in tree grafting, tree planting assessment, micro-finance schemes, and Adaptive Collaborative Management approach (Uganda) Enhanced capacities of 2,000 producer associations in agricultural techniques, business management, forest governance, and monitoring (Cameroon) Enhanced capacities of 800 farmers and producers in timber harvesting, processing, and marketing (DRC) Enhanced capacities of 220,000 farmers in dryland management, technologies, and sustainable farming practices (Ethiopia, Kenya, Mali, Niger, Burkina Faso) Enhanced capacities of farmers in FMNR, SFM, and charcoal production (Kenya, DRC) 270 households adopt community agroforestry systems and carbonization techniques (DRC, Cameroon) 600 farmers adopt cocoa management models (DRC)
	Asia (56,350 people across 5 countries)
	<ul style="list-style-type: none"> 700 farmers/producers adopted sustainable harvesting and fuelwood management practices (India) Enhanced capacity of 600 smallholders on RES and ecosystem service decision-making tools (Bhutan) Enhanced capacities of 1,200 smallholders in agroforestry practices (Vietnam) Enhanced capacities of 51,350 farmers in agroforestry and NRM, nursery management, and tree propagation (Indonesia) Enhanced capacities of 2,500 smallholders in agroforestry, silviculture, apiculture, and NTFP value chains (Indonesia) 7 community groups support fire prevention and peatland restoration (Indonesia) Implementation of participatory monitoring system for fire and haze (Indonesia) 428 partner CBOs implement NRM practices in 1,281 sub-projects (Philippines)

Impact Estimation

Across the nineteen research clusters assessed to date, we estimate that 59.5 million ha (low-end estimate) of landscapes globally are now under improved management as a result of policy mechanisms, monitoring systems, and changes in on-the-ground management and land use practices influenced by FTA. In addition, we project that if other relevant FTA-influenced policies, action plans, and monitoring systems are effectively implemented, a total of 204 million ha (high-end estimate) of landscapes have potential to be better managed. The majority of FTA's impact contributions were localized in Asia, with a range of nearly 59 million to 167.5 million ha under improved management (over three-quarters of these impacts were achieved in or projected for Indonesia, with an estimated impact range of over 49.4 million ha and 127.7 million ha). In other regions, such as Latin America, approximately 126,000 ha are better managed to date and 13 million ha are likely to be under improved management in the future (approximately half of these impacts were projected for Peru, with the other half projected for Nicaragua and Honduras). In Africa, between 275,000 ha are already under improved management or governance arrangements and 23.3 million ha have potential to be in the future through policy change and scaling (almost three-quarters of these impacts were projected for Ethiopia).

The realization of impacts relies on several conditions and caveats, including the effective enforcement of policies, the full adoption and implementation of new practices, the scaling of initiatives, and continuity of collective action post-project and post-FTA. While FTA holds a credible position as an independent producer of scientific knowledge that is useful to inform governance decisions and actions to sustainably manage landscapes and their natural resources, FTA is one contributor among many organizations that aim to address this complex challenge. Impact estimates are also sensitive to a number of key conditions that vary on the basis of the research initiative, contextual factors in which the research is taking place (e.g., geography, politics, economy, culture, etc.), and specific contributions of the research, including the notion that research outputs are relevant, appropriately translated for the target audience, adapted to fit the needs of boundary partners, and positioned for use. This exercise attempted to trace specific program contributions to intended impacts across intervening geographies to specify how and where FTA made contributions to address widespread unsustainable land use practices in a global context.

Limitations

Several factors limited the analysis and interpretation of results. FTA centre- and partner-level project information databases varied in terms of completeness. Many projects had no explicit ToC narratives or models already documented, hence substantial document review and a targeted series of interviews were required to situate these projects in the composite models. Data on projects' outcomes and impacts were varied and inconsistently reported. Baseline data was scarce. As a consequence, not all of FTA's interventions could be captured; hence, the reported estimates do not reflect FTA's entire contribution that addresses the challenge, but rather a selection of well-documented research initiatives.

Accessing further qualitative evidence (e.g., interviews) during the COVID-19 pandemic limited the depth of the deep dive analysis. Recall of project details may have been challenging because of the time that has passed (as many projects were launched during Phase I); therefore, triangulation with available documentation and further review of external evidence (e.g., government policy documents) was undertaken. Moreover, the discrepancy in short project timelines and the reality of time lags before FTA's impacts can be observed limited the reporting of actual impact achievement and capacity to assess potential for future impact. Many of FTA's reported impact contributions rely on context-specific conditions and require time to observe concrete effects on-the-ground. Furthermore, the ways in which FTA projects report on their contributions and achievements were inconsistent; this was particularly apparent in reporting for multi-country projects and programmes, where often reported evidence is not disaggregated by study sites, let alone by country. At times, this limited testing of the ToC logic, increasing the potential for misinterpretation or misattribution. Few projects presented impact targets, or reported on expected or potential impacts. The disparities in reporting against established targets and in the appropriate units also introduced possible under-reporting. Moreover, there were difficulties in separating outcomes and impacts between clusters where FTA's work on landscape governance and management was closely aligned and

overlapped in terms of project topics, geography, actors engaged, and intended outcomes, as well as the confluence of external dialogues and fora on inter-related issues and initiatives.

The limitations that emerged from the evaluative process informed a set of lessons for the implementation of change-making research on the topic of unsustainable land use practices, governance, and landscape management, and improve future Monitoring, Evaluation, Learning and Impact Assessment (MELIA) practices.

Conclusions

Overall, FTA influenced numerous changes in policy, practice, and research to support pathways to impact for improved landscape governance and management across Latin America, Africa, and Asia. FTA contributed to over 300 policies at multiple levels, supported institutional capacities for improved governance, and influenced a more enabling environment for sustainable landscape management across 29 countries. Through FTA's research, there is growing recognition of and interest in integrated landscape approaches to tackle the political, economic, social, and ecological inter-complexities of landscape governance and land use. Landscape approaches aim to reconcile competing interests, gain a systems perspective, and collectively negotiate solutions and trade-offs with relevant stakeholders (FTA, 2016b; Reed et al., 2020). Moreover, FTA helped equip close to 40,000 practitioners to deliver more effective technical assistance and extension services for NRM and monitoring in different landscapes across 18 countries. FTA influenced the land use practices of corporate-scale (at least 34 companies) and small-scale private sector actors (178 SMEs), in addition to approximately 282,365 farmers across 18 countries to more sustainably manage the landscapes on which they depend for their production, consumption, and livelihoods. FTA's influence on the research pathway was achieved through its contributions to new knowledge and advancing research agendas, broad and far-reaching research networks, mutually beneficial research partnerships, and opportunities for local research capacity-building.

Over the course of ten years, FTA clearly contributed to diverse changes in knowledge, attitudes, skills, relationships, and behaviours through diverse impact pathways to support the realization of impacts on-the-ground and increase the likelihood for further impacts with respect to sustainable management and land use across study sites and target countries in Latin America, Africa, and Asia in the future. This report includes lessons for consideration regarding the impact pathways of FTA's research on landscape governance and management conducted and assessed to date. The report also presents key recommendations to enhance the MELIA of similar research-for-development projects and programmes.

Lessons Learned and Recommendations

Lessons for Research on Landscape Governance and Management

Government Pathway

- Contributing to international, national, and sub-national policies a predominant means by which FTA can play a role in reducing unsustainable land use practices. Many of the other impact pathways intersect with and are influenced by policy change on landscape management.
- Providing policy-makers with knowledge and training through collaborative processes strengthened the capacities to implement sustainable change. Engaging policy-makers and decision-makers in multi-stakeholder dialogues fostered common understanding, co-generation of recommendations, and coalition-building. Ongoing support through training increased the likelihood for policy change and uptake of outputs. It was important to engage policy-makers at multiple levels to support policy alignment.
- Research projects led by scientists with established relationships with policy-makers were more likely to contribute to policy outcomes. Positive pre-existing relationships supported knowledge-sharing and trust in research outputs to support their uptake and use within national and sub-national policy processes.
- However, with frequent government turnover, knowledge can be lost, particularly when restructuring occurs. Research centres should consider developing institutional relationships and partnerships with government agencies or departments that enhance institutional capacity, collaboration, trust, and build momentum for continued political commitment.

- Aligning the research with parallel issues supported the uptake of research outputs by policy-makers and placing issues on the political agenda (e.g., climate change, tenure, illegal logging, etc.).
- Policy outcomes rely on continuous promotion and use of research outputs by institutions and decision-makers to influence legislations and regulations for effective landscape management. FTA supported this through ongoing institutional and individual relationships with government actors and departments, some of which were stronger in some geographies (e.g., Indonesia, Peru, Vietnam, Cameroon, DRC) than others.
- Supporting social process contributions are equally or more important than knowledge contributions. Projects and research initiatives that supported social processes (e.g., systems-thinking, more equitable/multi-perspective decision-making, collaborative problem-solving and solution development, coordination, capacity-building, implementation processes, etc.) were more effective at sustaining policy change and ultimately contributing to institutional or systemic changes.

Practitioner Pathway

- While a less common pathway, FTA did succeed in influencing practitioners' knowledge and practices. Knowledge-sharing and training were common strategies used to equip and influence practitioners for better management and monitoring. Changes in practitioners' practices had onward effects for both private sector and farmer practices. There may be more scope to engage and influence practitioners and extensionists to support outcomes in other pathways.

NGO and Allies Pathway

- Influencing NGOs was a reinforcing pathway to stimulate changes in other pathways, particularly governmental decision-making, private sector practice, community practice, and advocacy to the general public. Boundary partners should be identified based on their ability to use research solutions to support progress to intended outcomes.

Private Sector Pathway

- Influencing private sector policy and practice was one of the weaker pathways. Some successful private sector change was often influenced by changes in other pathways, such as international commitments, national policy, contracts with governments, or NGO advocacy. Capacity-building in sustainable management and land use practices were effective means to support outcomes for SMEs.

Community Pathway

- Community engagement, participatory activities, and presenting knowledge in ways that are appropriate for the target audience increased the utility of the research process and FTA's outputs for smallholders and communities to build understanding and apply learning in their local context.
- Short-term projects experienced more challenges in achieving behaviour change. Investments in relationship-building and community buy-in are key, and communities need to be equipped to manage their land post-project.

Public Pathway

- The public pathway was not as prevalent within FTA's engagement on landscape management topics. However, targeted dissemination through national media, sensitization campaigns, and NGO advocacy garnered public attention on persistent governance and land use issues. There may be more scope to leverage the public to influence change in other pathways.

Donors/Investors Pathway

- The donor pathway was also relatively weak. Most of FTA's influence on donors supported additional funding for new or follow-up projects. In some cases, this helped bring more alignment, continuity, and sustainability to FTA's interventions. There is scope to more actively involve and influence donors.

Research Pathway

- Many clusters mapped to Challenge 3 utilized a research pathway to contribute to outcomes and impacts in other pathways. In many research areas, FTA was a lead contributor to the knowledge base to advance the research agenda on governance and landscape management issues.
- FTA also works to build the capacity of students, researchers, local universities, government research agencies, and international research organizations to advocate for science-based decision-making and advance in-country research.
- Diverse dissemination methods (e.g., conferences, peer-reviewed publications, blogs, multi-stakeholder platforms, etc.) helped raise academic interest, spread awareness of FTA's findings, raised FTA's research profile, and stimulated new research questions on landscape governance and management.
- Long-standing research partnerships strengthened working relationships.

Recommendations for Enhanced MELIA

1. *Aim for consistent documentation of projects and influence across centres.* Implement a well-functioning, results-based data management system to support documentation, monitoring, and reporting for both the project- and program-level and collate information in ways to support MELIA processes. MELIA should be embedded into the research process from the outset. Remove the siloes between researchers and MELIA (e.g., integrate research and MELIA teams together, invest in MELIA capacity-building, build appropriate organizational structures for reflection and learning).
2. *Strive for consistency in the application of monitoring and evaluation concepts.* We recommend enhanced capacity-building for FTA researchers on MELIA definitions to ensure consistent understanding, use, and application of these concepts.
3. *Use nested ToCs to support challenge-centric program and strategy design and target-setting.* Researchers and programme managers should fully utilize ToC as a core element of strategic project planning, adaptive management, and monitoring. Nested ToCs – with cross-comparability at the organizational level – are useful tools to guide strategic program management and alignment of research initiatives. More explicit target-setting would require researchers to design research for impact. Future research-for-development programmes should be guided by the value offer of purpose-driven central coordination for impact, which can be informed by explicit and well-developed ToCs.



FTA conducts research in a variety of landscapes to support improved management and address unsustainable land use; oil palm landscapes in Indonesia are one such example. Oil palm plantation in Muara Kaman Ilir village, Kutai Kartanegara, East Kalimantan (Photo: Ricky Martin/[CIFOR](#))

Introduction

The study “Outcome Assessment and Impact Estimation: FTA’s Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)” is part of a series of integrative studies that aim to assess the extent to which the Forests, Trees and Agroforestry (FTA) CGIAR Research Program (CRP) contributed to solutions addressing five key global challenges since the program’s inception in 2011.

The FTA CRP represents a substantial investment of close to 850 million USD over the past ten years. Its research agenda aimed to develop solutions to major societal problems as a way to contribute to developmental and environmental impacts on a large scale. FTA is an umbrella for different and often inter-related research initiatives. Over the last decade, hundreds of research initiatives have been implemented in diverse country contexts, policy and research environments, geographies, landscapes, and socio-economic conditions of local communities to address pressing issues related to forests, trees, and agroforestry.

As an integrated program, FTA is particularly challenging to evaluate. It comprises five distinct research themes (i.e., Flagship Programs (FP)), and each FP comprises multiple projects, most of which are funded bilaterally. Moreover, the funding from Windows 1 and 2 targeted a set of 25 demand-driven operational priorities focusing on different areas of the program. As with Grand Challenge Programs and other large transdisciplinary programmes, FTA is expected to analyze and devise solutions to pressing societal problems and thereby contribute to tangible developmental and environmental impacts on a large scale. In 2016, at the beginning of Phase II, FTA set aspirational and ambitious impact targets which the program was expected to deliver by 2022 (Table 2)⁶:

- 31 million more farm households have adopted improved varieties, breeds or trees, and/or improved management practices
- 19 million people, of which 50% are women, helped to exit poverty
- Improve the rate of yield increase for major food staples by 0.1845%/year
- 17 million more people, of which 50% are women, meeting minimum dietary energy requirements
- 0.225% increase in water and nutrient (inorganic, biological) use efficiency in agroecosystems, including through recycling and reuse (same target)
- Reduce agricultural-related greenhouse gas (GHG) emissions by 0.2 Gt CO₂-e yr compared with business-as-usual scenario in 2022
- 30 million ha degraded land area restored
- 2.5 million ha of forest saved from deforestation

⁶ Original targets were crafted by the CGIAR in a top-down manner for the whole portfolio, and then distributed to different CRPs, but without a clear quantitative approach and method.

Nearing the end of the program, this study seeks to evidence and understand the extent to which and nature of FTA's contributions, and the likelihood that the high-level targets will be realized over time.

Table 2. FTA's Expected Results (as noted in FTA's Phase II Proposal (FTA, 2016a))

End-of-Program Outcomes	Intermediary Development Outcomes (IDOs)	System-level Outcome (SLO) Target	FTA Target Contribution
1. 25 countries improve governance mechanisms, institutions & tools for a) safeguarding forests/tree diversity and b) equitably managing forests & trees within mosaic landscapes	1. Improved ecological integrity, equitable mgt. & protection of forests & non-forest-based tree resources (IDOs 3.1 & 3.3)	1. 100 million more farm households have adopted improved varieties, breeds or trees, and/or improved management practices	1. 31 million
2. About 20 multinational companies and 500 private sector actors pursue models & investments for a) improved mgt. & safeguarding of forest & tree resources and b) enhancement of inclusive landscape-based livelihoods & ecosystem services	2. Enhanced ecosystem service provision (e.g., carbon storage, nutrient cycling, water filtration & soil health) (IDOs 2.3 & 3.2)	2. 30 million people, of which 50% are women, helped to exit poverty	2. 19 million
3. National and sub-national public & private sector actors in 25 countries deliver more effective & equitable tree related breeding, delivery, extension & pedagogical services	3. Increased resilience of female, male & poor smallholders & other forest/tree users to climate change & other shocks (IDO 1.1)	3. Improve the rate of yield increase for major food staples from current <1% to 1.2-1.5% per year	3. 0.1845%
4. At least 40 million smallholders & other users access more productive tree planting material & uptake higher performing, context appropriate & inclusive AF & small-scale forestry mgt. option	4. Productivity, food & nutritional security & incomes for female, male & poor smallholders & other forest/tree users (IDOs 1.2-1.4, 2.1)	4. 30 million more people, of which 50% are women, meet minimum dietary energy requirements	4. 17 million
		5. 5% increase in water and nutrient (inorganic, biological) use efficiency in agroecosystems, including through recycling and reuse (target same)	5. 0.225%
		6. Reduce agricultural-related GHG emissions by 0.2 Gt CO ₂ ^e yr ⁻¹ (5%) compared with business-as-usual scenario in 2022	6. 0.2 Gt CO ₂ ^e yr ⁻¹
		7. 55 million ha degraded land area restored	7. 30 million
		8. 2.5 million ha of forest saved from deforestation	8. 2.5 million

The causal links between research and impact are long and complex, making it difficult to precisely measure FTA's contribution to the above targets. To generate evidence of FTA's contributions to these targets, an integrated impact estimation strategy was developed. This strategy considers that FTA addresses five challenges:

- Challenge 1: Accelerating rates of deforestation and forest degradation;
- Challenge 2: High prevalence of degraded land and ecosystem services;
- Challenge 3: Widespread unsustainable land use practices;
- Challenge 4: Persistent rural poverty with increasing levels of vulnerability; and
- Challenge 5: Rising demand and need for nutritious food for both current and future generations

To address each of these challenges, multiple strands of research are being spearheaded by various global, regional, and country research teams. The evaluation supports two objectives: i) the generation of coherent 'impact narratives' on what FTA and its partner institutions (i.e., CIFOR, ICRAF, Bioversity International, CIRAD, CATIE, INBAR, and Tropenbos International) have done and are doing to address some of the most pressing challenges of our times; and ii) the estimation of outcomes and impacts of this work.

This report will focus on progress made to date on evidencing outcomes and estimating impacts for Challenge 3 (Widespread Unsustainable Land Use Practices). We begin by describing the methods and process for the outcome evaluation and impact estimation. We then present the overarching Theory of Change (ToC) for Challenge 3, and report on results of FTA's contributions to address unsustainable land use practices in terms of outcomes realized and potential impacts for each cluster of work under Challenge 3. The section that follows concludes with lessons for future research on landscape management and Monitoring, Evaluation, Learning and Impact Assessment (MELIA).



FTA conducts research in a variety of landscapes to support improved management and address unsustainable land use; drylands in East Africa are one such example. Degraded landscape in Adi Gudom, Tigray, Ethiopia (Photo: Ake Mamo/[ICRAF](#))

Methods

This study examined whether and how FTA contributed to changes in governmental (sub-national, national, and international) and organizational policy and development practice that would influence social and environmental change in the contexts where FTA's research operates and beyond. The assessment uses a theory-based evaluation approach (Belcher, Davel, & Claus, 2020) to model collective FTA activities and outputs as well as intended outcomes and impacts. Evaluators tested the theoretical frameworks (i.e., ToCs) to ground evidence of FTA's achievements and estimate (potential) FTA's contributions to the aforementioned impact targets (Table 2).

The assessment investigates how FTA influenced new knowledge, attitudes, skills, relationships, and behaviour change among key actors to address deforestation and forest degradation (Challenge 1), land degradation (Challenge 2), unsustainable land use practices (Challenge 3), poverty and vulnerability (Challenge 4), and food insecurity (Challenge 5). The objective of this report is to critically assess the portfolio of FTA's research for Challenge 3 by collecting and analyzing information about its activities, outputs, and outcomes to provide plausible estimations of potential impact, as well as support learning for research effectiveness and impact.

The assessment is guided by the following questions:

1. Research Outcome Evaluation: To what extent and how did FTA's research portfolio realize outcomes in each of the five challenges?

- i. *What is the evidence that outcomes have been realized?*
- ii. *Could the outcomes have been realized in the absence of FTA?*
- iii. *Were the ToC assumptions valid?*

2. Impact Estimation: What is the scope and scale of impacts to which FTA's research portfolio has contributed for each of the five challenges?

- i. *What is the spatial location and extent where impact is (likely to be) realized?*
- ii. *What plausible ranges of effects have and are likely to manifest (e.g., reduced carbon emissions per ha; increased income per household)?*
- iii. *What key assumptions are required to estimate the impact?*
- iv. *How sensitive is the estimation to varied assumptions?*

The assessment uses a set of composite ToCs as the main analytical framework. A ToC is a set of projected causal relations, hypotheses, and assumptions that describe and model how and why a project or program is expected to contribute to a change process. The ToC details the main activities and outputs, identifies key actors involved in the change process, specifies their actions as a sequence of steps or stages (i.e., outcomes) in the process, and exposes the theoretical reasoning for the expected changes (Earl, Carden, & Smutylo, 2001; Vogel et al., 2007). The ToC aims to explain who (i.e., individuals and organizations) is expected to do what differently and why as a result of FTA's research and engagement. Given that FTA's work is diverse and comprises numerous individual

research-for-development projects, efforts were made to systematically document what work has and is being undertaken vis-à-vis each challenge. The iterative process for developing the overarching ToCs and cluster-level sub-ToCs is explained below.

Step 1. Mapping projects to frame FTA contributions to addressing the five challenges

As an overarching program-level ToC did not exist for the specific challenges, the first step was to retrospectively map FTA's projects and initiatives to the five challenges. This was guided by FTA's operational priorities and the corresponding list of contributing projects, complemented by interviews with FP leaders and scientists. Owing to the integrative nature of the challenges, many projects could relate to one or more of the five challenges, so primary and secondary challenge categories were mapped by project when possible. This first step defined research clusters by theme and geography. 59 projects were mapped to Challenge 3.

Step 2. Documenting composite overarching and sub-ToCs per challenge – the case of Challenge 3

The evaluation team reviewed documents of projects mapped to Challenge 3 and consulted scientists and FP leaders to guide the development of the ToC models. Some projects had explicit ToCs documented, but most had only implicit or general ToCs available. Key ToC components were mapped in a database to identify key activities, outputs, outcomes, and impacts at the project-level. Population of the database and the mapping exercise enabled the evaluation team to first organize ToC components by project and then group similar projects by topic and/or geography into distinct clusters. For example, clusters of projects addressing particular sub-challenges (e.g., Reducing Emissions from Deforestation and Forest Degradation (REDD+), Forest Law Enforcement, Governance and Trade (FLEGT), wetland management, etc.) were identified through this process. Clusters could also be specified by the location of the research and engagement and by the intended application domain; that is, where the intended outcomes and impacts were expected to manifest (e.g., extensive research efforts on sustainable forest management (SFM) were supported by FTA in different geographies such as Mesoamerica, the Congo Basin, and Mozambique that each aim to influence different actor groups and processes specific to each region).

Nineteen clusters were identified for Challenge 3. Following the clustering of projects, ToC components were aggregated to conceptualize the key activities, knowledge and social process contributions, outcomes, and impacts for each cluster, resulting in a cluster-level sub-ToC. Cluster-level sub-ToCs were sufficiently broad to convey the logic of the challenge, with specific project-level details mapped within each component (Challenge 3's cluster-level ToCs have been documented on an online platform⁷ and can also be found in Appendix 1). By further aggregating the clusters' sub-ToCs, it was possible to derive an overarching ToC and narrative for the challenge. This was an iterative process, which enabled subsequent identification and integration of additional projects (and clusters) that could be mapped to the challenges. This analytical framework provided the structure for a review of available evaluation reports, project documents, and other data to both provide evidence to test the ToCs and identify gaps to guide the subsequent data collection phase, as described in the following steps.

Step 3. Collating existing evidence by challenge to identify gaps

Over the last decade, FTA has commissioned theory-based evaluations and impact assessments of several of its projects, which provided an initial base of evidence that could be built upon in this study. In order to identify where the existing evidence base was strong and where additional empirical evidence needed to be collected to fill gaps, we mapped the available evaluation evidence (i.e., use/uptake of outputs, outcomes, impacts) and systematically reviewed and appraised evidence for each project. In cases where external evaluations were not available, other documents were reviewed to collate available evidence or indications of potential evidence (e.g., external outcome evaluations, FTA and centre annual reports, outcome and performance stories, midterm reports, final reports, briefs, donor reports, presentations, peer-reviewed articles, internal and external press releases, project and external webpages, blogs, policies, etc.).

⁷ Challenge 3's cluster-level ToCs can be found on [Miro](#).

Evaluation evidence sources for Challenge 3 included:

- 18 evaluation reports⁸
- 1 CGIAR performance report
- 9 FTA annual reports
- 5 CIFOR annual reports
- 3 ICRAF annual reports
- 7 outcome stories
- 2 performance stories
- 7 outcome impact case reports (OICR)
- 40 midterm reports
- 25 final reports
- 1 technical report
- 4 briefs
- 2 output reports
- 2 workshop/training reports
- 3 case study reports
- 5 donor reports
- 4 presentations
- 6 peer-reviewed articles
- 11 FTA press releases
- 9 external press releases
- 10 project webpages
- 6 external webpages
- 9 internal blogs

Evidence sources were then appraised for reliability and confidence (i.e., quality of the evidence source) (see footnote 9). This appraisal exercise also highlighted gaps in evidence for outcomes (by pathway) and/or impacts for each cluster to guide further data collection and evidencing. Through this process, we were able to identify which clusters (and projects within those clusters) have: i) strong and likely sufficient evidence to make a reliable assessment of outcome realization; ii) key evidence gaps that could be filled at low-cost; and iii) key evidence gaps that will be too time- and resource-intensive to assess. This enabled the evaluation team to select which clusters (and/or projects to represent the clusters) across the challenge for additional data collection and plan the next steps of the assessment process (i.e., a deep dive case study).

Table 3 presents a cluster-level appraisal of available evidence for Challenge 3 results. In recognition of the limited time and resources available to assess this and other challenges, only one cluster could be selected for in-depth analysis in a deep dive case study. A more detailed project-level appraisal per cluster can be found in Appendix 2, which was used to inform the evaluative focus of the deep dive and provide suggestions for methods to collect additional evidence of priority outcomes and impacts should the project and/or cluster be selected.

The availability, reliability, and confidence of evidence was highly variable. Clusters with low evidence availability, reliability, and confidence include those related to SFM (Mozambique, Congo Basin), forest monitoring in Central Africa, and illegal logging (FLEGT). Clusters working on REDD+, tenure, non-timber forest products (NTFP), community forest and agroforestry concessions, restoration, drylands, wetlands, fire management, and climate change had a mid- to high-level of data availability, reliability, and confidence to assess outcomes and estimate impacts. Clusters on Agroforestry Concessions in Peru and Sustainable Oil Palm Management in Indonesia had a high availability of reliable and recent data from outcome assessments. Most clusters had scope to estimate impacts.

Step 4. Assessing FTA's contributions to outcomes

The cluster ToCs, corresponding outcomes, and underlying assumptions were tested using empirical data identified through the mapping process, further review of project documents and reporting, and follow-up discussions with key scientists. Key scientists and project staff also provided insight on other sources of evidence to test the realization of cluster outcomes. Sources were reviewed for evidence of outcomes and impacts by the MELIA team, and triangulated against all available project data and relevant policy documents to assess their reliability and confidence in the information. The analysis explicitly recognizes that the relative influence of a project or programme declines the further it moves from the project boundary, where other actors and processes become relatively more influential (Belcher, Davel, & Claus, 2020). Therefore, the analysis explicitly considers alternative explanations of outcome realization in lieu of a true counterfactual. When possible, bibliometrics (i.e., number of citations, downloads, views) were used to illustrate uptake and use of FTA's outputs to supplement evidence of outcomes in the research pathway.

⁸ n.b. Evidence found in the evaluation reports and other reports were derived from a multitude of other data sources that are not reflected in this list; we only counted the sources directly reviewed by the evaluators.

Table 3. Summary Cluster-level Appraisal Process of Evidence for Challenge 3

Cluster	Assessment ⁹ of Evidence Sources	Pathways with Strong Outcome Evidence	Pathways with Weak Outcome Evidence	Feasibility of Cluster Impact Estimation	Prioritization of Cluster for Additional Evidence Collection ¹⁰
REDD+ Policy Mechanism (Global) (6 projects)	11 sources (5 external evaluations, 2 final reports, 2 outcome stories, 1 donor report, 1 webpage) • <i>Reliability</i> : medium to high • <i>Confidence</i> : high	<ul style="list-style-type: none"> • Government pathway (sufficient evidence) • Partner pathway (sufficient evidence) • Researcher pathway (sufficient evidence) • Practitioner pathway (sufficient evidence; update would strengthen) 	<ul style="list-style-type: none"> • Private sector pathway (limited evidence; need more detail) 	Some targets listed; some impacts reported; possibility to draw on policy targets	<i>Prioritization</i> : low to medium <ul style="list-style-type: none"> • Overlap in Challenges 1 (deep dive case study) and 2 • Supports multi-regional representation • CIFOR and ICRAF representation • Representative of FTA and bilateral investment (budget >USD \$50m) • Outcome evidence is substantial, but key gaps remain • Estimations of impact are possible, but require supporting evidence of outcomes (conditions must be explicit)
Forest Tenure Management (Global) (3 projects)	15 sources (3 external outcome evaluations, 1 synthesis outcome evaluation, 1 OICR, 2 briefs, 1 donor report, 1 case study report, 1 final report, 3 CIFOR annual reports, 1 FTA annual report, 1 flagship outcome story) • <i>Reliability</i> : medium • <i>Confidence</i> : medium to high	<ul style="list-style-type: none"> • Government pathway (sufficient evidence for 2 projects; no evidence for the other) • Researcher pathway (sufficient evidence) • Community pathway (sufficient evidence for 2 projects; no evidence for other; update would strengthen) 	<ul style="list-style-type: none"> • Donor pathway (no evidence) • NGO pathway (limited evidence; update would strengthen) • CSO pathway (limited evidence; update would strengthen) 	Target listed; some impacts reported	<i>Prioritization</i> : low to medium <ul style="list-style-type: none"> • Overlap in Challenge 4 • Supports multi-regional representation • CIFOR representation • Representative of FTA and bilateral investment (budget >USD \$3m) • More feasible if strategic selection of projects is prioritized <ul style="list-style-type: none"> • Regional overlap to prioritize: Uganda, Peru • Outcome evidence for 2 projects is substantial, but key gaps remain or require updated evidence • Estimations of impact are possible, but require supporting evidence of outcomes and from future policy change (conditions must be explicit)

⁹ The reliability of evidence sources was determined by an assessment of whether the source was internally produced (lower reliability) or conducted by an external source (higher reliability). It was thought that external reports provide an additional level of quality control of the evidence. The confidence of evidence sources was determined by an assessment of the quality of the evidence source and its assessment (criteria included methodological approach (e.g., theory-based evaluation, quasi-experimental design), primary versus secondary/tertiary data collection, level of detail, indications versus clear realization, triangulation of evidence, etc.).

¹⁰ A set of criteria was used to inform the prioritization assessment to enable strategic selection of clusters (and/or projects within a cluster) for additional evidence collection. These criteria include: potential overlap of cluster/project(s) for other challenges; geographic overlap and representation; FTA centre representation; pathway overlap; proportion of FTA and bilateral investment of cluster/project (i.e., prioritizing clusters/projects with larger budgets); likelihood for availability of outcome evidence; and likelihood for availability and/or feasibility to assess and quantify the scale of impact.

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Agroforestry Concessions in Peru (3 projects)	14 sources (1 OICR, 1 external evaluation, 1 peer-reviewed article, 6 external press releases, 1 ICRAF press release, 1 ICRAF annual report, 1 FTA annual report, 2 webpages) • <i>Reliability</i> : high • <i>Confidence</i> : high *1 project has no evidence sources (too young)	<ul style="list-style-type: none"> • Government pathway (sufficient evidence; update would strengthen) • Partner pathway (sufficient evidence; update would strengthen) 	<ul style="list-style-type: none"> • Researcher pathway (update would strengthen) • Smallholder pathway (low preliminary evidence; update would strengthen) 	1 project produced potential impact estimations (similar figures noted in follow-up projects); some impacts reported	<i>Prioritization</i> : medium to high <ul style="list-style-type: none"> • Overlap in Challenges 1, 2, and 4 • Under-represented region • ICRAF representation • Representative of FTA and bilateral investment (budget <USD \$5m) • Feasible (projects are closely interlinked, but some may be too recent) • Outcome evidence for 1 project is substantial (e.g., SUCCESS), but key gaps remain or require updated evidence • Estimations of impact are possible, but require supporting evidence for future outcomes and policy implementation (conditions must be explicit)
Sustainable Resource Management for NTFPs in Peru (1 project)	9 sources (2 donor reports, 1 external evaluation, 3 peer-reviewed articles, 1 CIFOR annual report, 2 FTA annual reports) • <i>Reliability</i> : high • <i>Confidence</i> : high	<ul style="list-style-type: none"> • Government pathway (sufficient evidence; update would strengthen) • Researcher pathway (sufficient evidence) • NGO pathway (sufficient evidence) 	<ul style="list-style-type: none"> • Donor outcomes (update would strengthen) • Practitioner pathway (need more detail) • Concessionaire pathway (low preliminary evidence) 	No target(s) listed; possibility to derive quantifications based on area of Brazil nut concessions in Madre de Diós (study area)	<i>Prioritization</i> : low <ul style="list-style-type: none"> • No challenge overlap • Under-represented region • CIFOR representation • Relatively small budget (<USD \$1m) • Feasible (1 project) • Outcome evidence is substantial, but key gaps remain or require updated evidence • Estimations of impact are possible, but require supporting evidence for future outcomes (conditions must be explicit)
Community Forest Management in Mesoamerica (1 project)	9 sources (1 midterm report, 1 final report, 1 performance report, 1 OICR, 1 peer-reviewed article, 3 press releases, 1 website) • <i>Reliability</i> : medium • <i>Confidence</i> : high	*evidence only for Guatemala component <ul style="list-style-type: none"> • Researcher pathway (need more detail) • Community pathway (need more detail) 	*evidence only for Guatemala component <ul style="list-style-type: none"> • Government pathway (1 strong piece of evidence, have indications of other potential outcome realization) • Forestry cooperative pathway (need more detail) 	No target(s) listed; possibility to derive quantifications based on likelihood of community forest concession renewal in Guatemala	<i>Prioritization</i> : medium <ul style="list-style-type: none"> • Overlap in Challenges 1 and 4 • Under-represented region • Bioversity International representation • Relatively small budget (<USD \$1m) • Feasible (1 project to assess) • Outcome evidence is promising for Guatemala, but key gaps exist <ul style="list-style-type: none"> • No evidence of outcomes in Nicaragua • Estimations of potential impact are possible for Guatemala, but require supporting evidence of outcomes (conditions must be explicit)

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Management of Trees on Farms in Mesoamerica (1 initiative)	8 sources (3 blogs, 1 performance story, 1 case study report, 1 OICR, 2 webpages) <ul style="list-style-type: none">• <i>Reliability</i>: medium• <i>Confidence</i>: medium	<ul style="list-style-type: none">• Government pathway (sufficient evidence; more detail would strengthen)• Researcher pathway (sufficient evidence)• Extensionist pathway (more detail would strengthen)• Community outcomes (more detail would strengthen)	<ul style="list-style-type: none">• NGO outcomes (need more detail)	Targets listed; no impact reported	<i>Prioritization</i> : low <ul style="list-style-type: none">• No challenge overlap• Unique region representation• CATIE, ICRAF, and CIFOR representation• Budget information not available• Feasible (1 initiative to assess)• Preliminary outcome evidence is promising, but key gaps exist• Estimations of potential impact are possible for Honduras, but require supporting evidence of outcomes (conditions must be explicit)
Sustainable Conservation and Management of Protected Areas in Mozambique (1 project)	4 sources (1 midterm report, 1 final report, 1 presentation, 1 FTA annual report) <ul style="list-style-type: none">• <i>Reliability</i>: low• <i>Confidence</i>: low-medium	<ul style="list-style-type: none">• Researcher pathway (need more detail)• Community pathway (need more detail)	<ul style="list-style-type: none">• Forest reserve manager pathway (need more detail; need to account for and follow up on turnover)• National forest agency pathway (have indications of potential outcome realization)	No target(s) listed; uncertain possibility to derive quantifications based on areas within the Niassa National Reserve influenced by the project (e.g., Mecula, Negomano)	<i>Prioritization</i> : low <ul style="list-style-type: none">• Overlap in Challenge 1• Unique region representation• Bioversity International representation• Relatively small budget (<USD \$1m)• Feasible (1 project to assess)• Preliminary outcome evidence is promising, but key gaps exist• Estimations of potential impact may not be feasible to collect
Sustainable Forest Management in the Congo Basin (5 projects)	14 sources (9 midterm reports, 1 final report, 3 CIFOR annual reports, 1 CIFOR case study report) <ul style="list-style-type: none">• <i>Reliability</i>: low• <i>Confidence</i>: low to medium	<ul style="list-style-type: none">• Research pathway (sufficient evidence)• Timber company pathway (preliminary evidence is promising; update would strengthen)• Community pathway (preliminary evidence is promising; update would strengthen)	<ul style="list-style-type: none">• Government pathway (limited evidence; have indications of potential influence, but need more detail)• Donor/international organization pathway (limited evidence; have indications of potential influence, but need more detail)• NGO pathway (limited evidence; need more detail)	Target listed; many impacts reported	<i>Prioritization</i> : low <ul style="list-style-type: none">• Overlap in Challenges 1 and 2• Overlap in region representation• CIFOR representation• Representative of FTA and bilateral investment (budget <USD \$50m)• Feasible if a strategic selection of projects is prioritized (e.g., FORETS, NPC)• Preliminary outcome evidence is promising, but key gaps exist• Estimations of impact are possible, but require supporting evidence of outcome realization and project contributions (conditions must be explicit)
Landscape Management in Dryland Areas in	10 sources (1 final report, 1 external evaluation, 2 webpages, 3 ICRAF	<ul style="list-style-type: none">• Government pathway (need more detail)• Partner pathway (need more detail)	<ul style="list-style-type: none">• Donor pathway (limited evidence)• Private actor pathway (no evidence)	Target listed; many impacts reported	<i>Prioritization</i> : medium <ul style="list-style-type: none">• Overlap in Challenges 4 and 5• Overlap in region representation• ICRAF representation

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Sub-Saharan Africa (1 project)	annual reports, 3 FTA annual reports) • <i>Reliability</i> : medium • <i>Confidence</i> : medium	• Farmer pathway (sufficient evidence)			<ul style="list-style-type: none"> • Representative of FTA and bilateral investment (USD \$50m) • Feasible (1 programme to assess, though it spans 5 countries) • Outcome evidence is substantial, but key gaps exist • Estimations of impact are possible (though may reflect double-counting¹¹)
Forest Monitoring in Central Africa (3 projects)	10 sources (9 midterm reports, 1 final report) • <i>Reliability</i> : low • <i>Confidence</i> : low	<ul style="list-style-type: none"> • Partner pathway (need more detail) • Researcher pathway (need more detail) 	<ul style="list-style-type: none"> • COMIFAC pathway (limited evidence) • International actor pathway (preliminary evidence is promising; need more detail) • Government pathway (preliminary evidence is promising; need more detail) 	No target(s) listed; uncertain possibility to quantify forest area under OFAC monitoring	<i>Prioritization</i> : low <ul style="list-style-type: none"> • No challenge overlap • Overlap in region representation • CIFOR representation • Representative of FTA and bilateral investment (budget <USD \$5m) • More feasible if strategic selection of projects is prioritized (e.g., OFAC 3) • Preliminary outcome evidence is promising, but key gaps exist • Estimations of potential impact may not be feasible to derive
FLEGT Mechanism for Illegal Logging in Sub-Saharan Africa (6 projects)	20 sources (2 output reports, 4 midterm reports, 2 final reports, 1 outcome story, 1 presentation, 1 external evaluation report, 1 CIFOR annual report, 4 FTA annual reports, 3 press releases, 1 external website) • <i>Reliability</i> : low • <i>Confidence</i> : low	• Policy-maker pathway (sufficient evidence for 2 projects; update would strengthen)	<ul style="list-style-type: none"> • NGO/CSO pathway (preliminary evidence is promising for 1 project; need more detail) • Researcher pathway (preliminary evidence is promising for 1 project; need more detail) • Timber company pathway (preliminary evidence is promising for 1 project; need more detail) • Smallholder/SME pathway (preliminary evidence is promising for 2 projects; need more detail) 	No target(s) listed; uncertain possibility to draw on policy targets	<i>Prioritization</i> : low <ul style="list-style-type: none"> • Overlap in Challenges 1 and 4 • Overlap in region representation • CIFOR representation • Representative of FTA and bilateral investment (budget >USD \$15m) • More feasible if strategic selection of projects is prioritized (e.g., GML, PRO-FORMAL Project) • Regional overlap to prioritize: DRC, Cameroon • Preliminary outcome evidence for 2 projects are promising, but notable gaps exist • Estimations of potential impact may not be feasible to derive
Sustainable Forest	7 sources (1 blog, 1 presentation, 1 final report, 1 ICRAF	• CFE pathway (sufficient evidence)	• Government pathway (limited evidence; more detail needed)	Target listed; some impacts reported	<i>Prioritization</i> : medium <ul style="list-style-type: none"> • Overlap in Challenges 1 and 4

¹¹ An external report notes that it is “difficult to assess what has been the overall reach of the programme in terms of beneficiaries as these are listed under many different activities and in many cases are double counted since the same beneficiaries benefit from multiple activities” (van Gerwen et al., 2018, p.21); this same issue applies to hectareage reported.

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Enterprises in Cameroon (1 project)	annual report, 3 FTA annual reports) <ul style="list-style-type: none"> • <i>Reliability</i>: medium • <i>Confidence</i>: high 		<ul style="list-style-type: none"> • Investor pathway (no evidence) • Implementing organization pathway (limited evidence; need more detail) 		<ul style="list-style-type: none"> • Overlap in region representation • ICRAF representation • Representative of FTA and bilateral investment (budget <USD \$10m) • Feasible (1 project; though had recent reporting) • Preliminary outcome evidence is promising (strong for 1 pathway), but notable gaps exist • Estimations of impact are possible, but require supporting evidence of outcomes and project contributions (conditions must be explicit)
Support to Landscape Restoration and Management in Asia (4 projects)	18 sources (1 workshop report, 2 midterm reports, 2 final reports, 1 OICR, 1 outcome story, 1 brief, 1 donor report, 1 FTA annual report, 2 websites, 6 press releases) <ul style="list-style-type: none"> • <i>Reliability</i>: medium • <i>Confidence</i>: medium to high 	<ul style="list-style-type: none"> • Government pathway (sufficient evidence for 2 projects; update would strengthen) • Researcher pathway (sufficient evidence for 2 applicable projects; update would strengthen) • CBO pathway (sufficient evidence for 2 applicable projects; update would strengthen) • Community pathway (sufficient evidence for 3 projects; update would strengthen) 	<ul style="list-style-type: none"> • Partner pathway (limited evidence) • Practitioner pathway (insufficient evidence) • Private sector pathway (limited evidence; more detail needed) 	No target(s) listed; some areas of study sites and impact reported; uncertain possibility to draw on policy targets	<i>Prioritization</i> : low to medium <ul style="list-style-type: none"> • Overlap in Challenges 2 and 4 • Unique regional representation • Bioversity International, CIFOR, and ICRAF representation • Representative of FTA and bilateral investment (budget >USD \$5m) • More feasible if selection of projects is prioritized (e.g., Malaysia project, RUPES 2) • Preliminary outcome evidence is promising for some projects, but notable gaps exist • Estimations of impact are possible for 1 project (derivation from policies may be possible for others), but require supporting evidence of outcomes and contributions to achieving policy targets (conditions must be explicit)
Expanding Market Options via Landscape Management in Asia (5 projects)	12 sources (2 midterm reports, 1 technical report, 1 training report, 3 final reports, 1 blog, 1 evaluation report, 1 OICR, 1 FTA annual report, 1 webpage) <ul style="list-style-type: none"> • <i>Reliability</i>: medium 	<ul style="list-style-type: none"> • Government pathway (sufficient evidence for 4 projects; update would strengthen) • Community pathway (sufficient evidence for 3 projects; no evidence for 2 projects) 	<ul style="list-style-type: none"> • Partner pathway (limited evidence; more detail needed) • Researcher pathway (insufficient evidence) • Extensionist pathway (insufficient evidence) 	No targets listed; some impacts reported; possibility to draw on policy targets	<i>Prioritization</i> : low to medium <ul style="list-style-type: none"> • Overlap in Challenge 4 (deep dive case study) • Overlap in region representation • ICRAF representation • Representative of FTA and bilateral investment (budget <USD \$7m) • More feasible if selection of projects is prioritized (e.g., Vietnam projects) • Preliminary outcome evidence for projects in Vietnam is promising

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	<ul style="list-style-type: none"> • <i>Confidence:</i> medium to high <p>*1 project has no evidence (project is ongoing)</p>				<p>(though notable gaps for Indonesian projects would be valuable to fill)</p> <ul style="list-style-type: none"> • Estimations of impact are possible, but require supporting evidence of outcomes and projects' contributions to achievement of policy targets (conditions must be explicit)
Community Forest Management in Indonesia (2 projects)	<p>11 sources (2 midterm reports, 3 final reports, 1 outcome story, 1 webpage, 2 blogs, 2 FTA annual reports)</p> <ul style="list-style-type: none"> • <i>Reliability:</i> low to medium • <i>Confidence:</i> medium 	<ul style="list-style-type: none"> • Government pathway (sufficient evidence for 1 project; more detail needed for other) • Community pathway (sufficient evidence; update would strengthen) 	<ul style="list-style-type: none"> • Partner pathway (limited evidence; more detail needed) • Researcher pathway (insufficient evidence) • Enterprise pathway (insufficient evidence; low primary data) 	Target listed; some impacts reported	<p><i>Prioritization:</i> medium</p> <ul style="list-style-type: none"> • Overlap in Challenge 4 • Overlap in region representation • ICRAF representation • Representative of FTA and bilateral investment (budget >USD \$10m) • Feasible (2 projects) • Preliminary outcome evidence is promising, but notable gaps exist • Estimations of impact are possible, but require supporting evidence of outcomes and project contributions (conditions must be explicit)
Watershed Management in South-east Asia (3 projects)	<p>10 sources (3 midterm reports, 1 final report, 3 webpages, 1 publication, 1 blog, 1 evaluation report)</p> <ul style="list-style-type: none"> • <i>Reliability:</i> low to medium • <i>Confidence:</i> medium <p>*1 project has little to no evidence (project is ongoing)</p>	<ul style="list-style-type: none"> • Government pathway (sufficient evidence for 1 project; more detail needed for other 2) • NGO pathway (sufficient evidence for 1 project) • Local association pathway (sufficient evidence for 1 project) 	<ul style="list-style-type: none"> • Donor pathway (no evidence) • Private sector pathway (insufficient evidence) • Community pathway (insufficient evidence; low primary data) 	Targets listed; some impacts reported	<p><i>Prioritization:</i> low to medium</p> <ul style="list-style-type: none"> • Overlap in Challenges 2 and 4 • Overlap in region representation • CIFOR and ICRAF representation • Representative of FTA and bilateral investment (budget <USD \$3m) • Feasible (3 projects) • Preliminary outcome evidence is promising for 2 projects (e.g., Integrated Watershed Management, INREMP), but notable gaps exist • Estimations of impact are possible, but require supporting evidence of outcomes (conditions must be explicit)
Fire Management in Indonesia (3 projects)	<p>10 sources (2 midterm reports, 1 final report, 1 outcome story, 1 performance story, 3 CIFOR annual reports, 1 FTA annual report, 1 article based on external evaluation)</p>	<ul style="list-style-type: none"> • Government pathway (sufficient evidence; update would strengthen) • NGO pathway (sufficient evidence; update would strengthen) • Private sector pathway (sufficient evidence; update would strengthen) 	<ul style="list-style-type: none"> • Public pathway (need more detail, update would strengthen) • Smallholder pathway (no preliminary evidence) 	No target(s) listed; possibility to draw on policy targets	<p><i>Prioritization:</i> low to medium</p> <ul style="list-style-type: none"> • Overlap in Challenges 1 and 2 • Overlap in region representation • CIFOR representation • Relatively small budget (~USD \$1m) • Preliminary outcome evidence for projects is substantial, but key gaps remain or require updated evidence

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	<ul style="list-style-type: none"> • <i>Reliability</i>: medium • <i>Confidence</i>: medium to high 	<ul style="list-style-type: none"> • Researcher pathway (sufficient evidence) 			<ul style="list-style-type: none"> • Estimations of impact are possible, but require supporting evidence of outcomes and contributions to achieving policy targets (conditions must be explicit)
Sustainable Oil Palm Management in Indonesia (5 projects)	<p>7 sources (2 external evaluations, 1 midterm report, 1 final report, 1 CIFOR annual report, 1 FTA annual report)</p> <ul style="list-style-type: none"> • <i>Reliability</i>: medium to high • <i>Confidence</i>: medium to high 	<ul style="list-style-type: none"> • Government pathway (sufficient evidence; update would strengthen) • Partner pathway (sufficient evidence; update would strengthen) • Researcher pathway (sufficient evidence) • RSPO pathway (sufficient evidence; update would strengthen) 	<ul style="list-style-type: none"> • Corporations pathway (insufficient evidence) • Smallholder pathway (insufficient evidence; low primary data) 	No target(s) listed; 1 projection reported; possibility to draw on policy targets or corporate commitments	<p><i>Prioritization</i>: low to medium</p> <ul style="list-style-type: none"> • Overlap in Challenge 1 • Overlap in region representation • CIFOR representation • Representative of FTA and bilateral investment (budget >USD \$7m) • Outcome evidence is substantial and recent, but key gaps remain • Estimations of impact are possible, but require supporting evidence of outcomes and contributions to achieving policy targets and/or corporate commitments (conditions must be explicit)
Climate Change Management in Asia (4 projects)	<p>19 sources (1 external evaluation, 5 midterm reports, 2 final reports, 1 OICR, 1 presentation, 2 ICRAF annual reports, 3 FTA annual reports, 1 news bulletin, 2 press releases, 1 webpage)</p> <ul style="list-style-type: none"> • <i>Reliability</i>: low to medium • <i>Confidence</i>: medium 	<ul style="list-style-type: none"> • Government pathway (sufficient evidence; update would strengthen) • Researcher pathway (sufficient evidence; update would strengthen) • CSO pathway (sufficient evidence; update would strengthen) 	<ul style="list-style-type: none"> • Partner pathway (limited evidence, more detail needed) 	Targets listed (missing for 1 project); some impacts reported	<p><i>Prioritization</i>: medium to high</p> <ul style="list-style-type: none"> • No challenge overlap • Unique and overlap in region representation • ICRAF representation • Representative of FTA and bilateral investment (budget >USD \$13m) • Support regional representation (showcasing achievements in different Asian states) • More feasible if selection of projects is prioritized (e.g., ASFCC-II & III) • Outcome evidence is substantial, but key gaps remain • Estimations of impact are possible, but require supporting evidence of outcomes (conditions must be explicit)

Step 5. Deep dive selection and analysis

Owing to the complexity of FTA's approach to address Challenge 3, and the variable range of available evidence for each of the clusters (as identified in Table 3), it was decided that one cluster would be analyzed in greater detail in a 'deep dive study' to explore policy contributions and potential impact.

A thorough assessment was conducted to identify the most appropriate cluster candidate for an in-depth analysis of FTA's work on unsustainable land use practices and solutions to improve landscape management. A set of criteria was used to support the appraisal and selection of deep dive candidates (see footnotes 9 and 10 in Table 3). No cluster fully satisfied all criteria. The cluster "Agroforestry Concessions in Peru" (comprising three projects) met most criteria and was selected. For example, the agroforestry concession mechanism featured in the cluster illustrates well the intersection of top-down and bottom-up management in the Peruvian Amazon, though other challenges are also directly or indirectly addressed by this research, such as deforestation (Challenge 1), degradation (Challenge 2), poverty and vulnerability (Challenge 4), and food insecurity (Challenge 5¹²), revealing overlap of the cluster with other challenges. The overlap indicates the cross-cutting nature of FTA's work to address these integrated challenges, and selection of this cluster for the deep dive was also considered to supplement data availability for other challenges. Also, Latin America was not represented in a deep dive case study in the other challenges. While the cluster represents a smaller budget relative to other clusters (<USD \$5 million), the case illustrates both how a smaller project can exert high return-on-investment in terms of sustainable outcomes and potential for impact as well as how a smaller initial project can successfully attract additional investment for follow-up projects. An evaluation of one of the projects had recently been completed, but additional data needed to be collected for the two follow-up projects. One of the projects had calculated impact projections for scaling of the agroforestry concession mechanism in Peru, facilitating estimations of impact.

Step 6. Estimation of potential impact

This step used evidence and information from the preceding steps to estimate plausible ranges of FTA's impact vis-à-vis the intended targets for each challenge. We define impacts as a change in state or a change in flow resulting in whole or in part from a chain of events to which research (or another intervention) has contributed (Belcher, Davel, & Claus, 2020). Impacts can be social, economic, or environmental.

Impacts were estimated on the basis of projections and estimates from available documentation and evidence, making plausible connections between FTA's contributions to outcomes and the likelihood for potential impacts to be realized in the future. The previous steps surfaced conditions underpinning the documented impact targets and some preliminary projected impact estimates. The impact estimation exercise discusses the sensitivity and implications of the underlying conditions and caveats as part of the reasoning and demonstration of likelihood for impact realization (see Appendix 3). The method explicitly recognizes that there are alternative explanations for the realization of impact as multiple external actors are involved in the processes that contribute to changes in state or flow. The realization of impacts is therefore reported as contributions of FTA, partners, and other system actors. Impact estimates are derived from the review of the existing evidence base (± 185 documents) of the 59 projects and initiatives mapped to Challenge 3. 34 of these projects and initiatives from seventeen clusters had quantifications available of low- and high-end impact potential, with varying degrees of reliability. In some cases, the methods, conditions, and/or assumptions that projects used to project or estimate impacts were unclear or not reported. We explored FTA's policy influence in greater detail to assess the extent of FTA's inputs and contributions to policy change and subsequent contributions to the realization of those policies' impact targets for conservation, sustainable forest and landscape management, and sustainable land use plans, among others.

The impact metrics for Challenge 3 were defined based on the first set of end-of-program outcome, intermediate development outcome (IDO), and SLO targets identified in FTA's Phase II proposal (Table 2). This evaluation aims to determine whether and to what extent FTA's target contribution of '31 million households adopting

¹² It should be noted that while the evaluators recognize that there are interconnections between the potential of AFCs to indirectly support more sustainable food production for personal sustenance as well as increased income to purchase food by selling forest products (as the concessions enable increased market access), this cluster of work was not included in Challenge 5's assessment.

improved management practices' was realized. However, the majority of reporting does not document impacts in terms of household units, instead reporting on hectareage. Therefore, impact estimates for Challenge 3 are reported in terms of the number of hectares placed under improved management as a result of policy mechanisms, monitoring systems, and changes in on-the-ground management and land use practices influenced by FTA. Both metrics of households (or number of people) and hectares are reported when available.

Impact estimations are presented using a range between a 'low-end estimate' and 'high-end estimate' of hectares placed under improved management. In our review of impact evidence, available impact estimates for each project were classified as either a low- or high-end estimate. The low-end estimate is a conservative estimate of FTA's impact, and was classified based on either the potential area influenced by FTA projects (i.e., if the area of project study sites were available) or evidence of realized on-the-ground impacts. Examples of realized impacts included:

- i. Area of FTA's exemplar landscapes and demonstration farms;
- ii. Area reported where FTA innovations were implemented;
- iii. Area placed under improved management via implemented policies, land use plans, awarded concessions, pilots, etc.; or
- iv. Area covered by a monitoring system that has been implemented.

The high-end estimate is a more liberal estimate of potential impact, based on:

- i. Impact estimates and/or projections calculated by FTA projects (i.e., scenario modelling);
- ii. Policy targets of policies that have evidence of being influenced by FTA;
- iii. Area governed under a policy or action plan influenced by FTA (i.e., application domain);
- iv. Potential area that could be monitored with a FTA-proposed monitoring system; or
- v. An estimate of potential area under improved management if FTA recommendations and/or innovations are scaled elsewhere.

As evident from these lists, the low-end estimates focus on more immediate outcomes and impacts that already may have been fully or partially realized. Some low-end estimates may not have been realized yet (i.e., low-end potential) as some projects are still in progress and/or additional time is needed for full realization. The high-end estimates focus on longer-term potential outcomes and impacts that have not yet been (or may never be) realized. Many of the high-end estimates are based on optimistic (and sometimes unrealistic) assumptions about the uptake, use, and scaling of FTA's outputs. Moreover, the long lag times inherent to forests, trees, and agroforestry, as well as to some of the impact pathways within Challenge 3, make the high-end estimates highly uncertain.

Impact estimations are taken from aggregating project-level data (i.e., the sum of projects' low-end estimates, the sum of projects' high-end estimates¹³) to derive the total estimated impact range for the clusters and then the challenge. Note that some projects reported both low- and high-end impact data while some reported neither. The low-end and high-end estimates do not represent all FTA interventions, but only interventions where impact estimates were available or quantification was possible. To note, in some countries, there is potential for double-counting of or overlap in area that is governed by multiple policies; we have tried to account for this where possible, but recognize that the impact estimates contain some margin of error.

All challenges shared a set of general conditions and caveats that underpin the preliminary impact estimates. More detailed and challenge-specific conditions for each impact estimate are documented in Appendix 3. We relied on the presumption that the evidence sources consulted in the review contain accurate, reasonable, credibly-derived, and reliable impact estimates. We continuously interrogated the estimates and their corresponding supporting evidence to ensure FTA made plausible contributions to the reported impacts. Within the sphere of control, we assumed that FTA is perceived as a credible and trusted partner and is able to exert influence on policy and practice change as a result. In addition, we assumed that FTA's training and capacity-building efforts stimulated learning and built skills that are applied and scaled. Within the sphere of influence, in order to count the area targeted or governed by policies and monitoring systems influenced by FTA, we assumed that these mechanisms

¹³ It was not always possible to derive a high-end estimate; in these cases, the low-end estimate was used when adding the high-end estimates together.

are or will be properly implemented and enforced. We assumed that target groups of these mechanisms were and continue to be incentivized to comply with regulations and change practices to receive benefits (e.g., tenure, payment for environmental services (PFES)). We also assumed that boundary partners continue to support capacity-building and scaling of appropriate management practices post-project and post-FTA. Within the sphere of interest, we assumed that FTA's contributions to policy and practice change are significant enough to bear impacts, and that external factors and processes do not interfere with or reverse FTA-influenced policy or practice change. Moreover, we assumed that potential impacts can eventually be realized as successful policy mechanisms, monitoring systems, and management practices are scaled.

Limitations

Several factors limited the analysis and the interpretation of findings. FTA centre- and partner-level project information databases varied in terms of completeness, which made the mapping exercise challenging. Many projects had no explicit ToC narratives or models documented¹⁴, hence substantial document review and a targeted series of interviews were required to model these projects in the composite ToCs. As a consequence, not all of FTA's interventions could be captured; hence, the reported estimates do not reflect FTA's entire contribution that addresses the challenge, but rather a selection of relatively well-documented research initiatives. Developing the composite ToCs was also challenging because of the variable levels of project-level and MELIA reporting. Data on projects' outcomes and impacts were varied and inconsistently reported. Baseline data was also scarce. Some connections and pathways between research efforts and outcomes were unclear, and the use of MELIA terms was inconsistent across reporting.

Accessing further qualitative evidence (e.g., interviews) during the COVID-19 pandemic limited the depth of the deep dive analysis. The deep dive analyses had low response rates as a result. Relying on FTA scientists to identify potential informants to test outcomes and impacts can introduce bias into data collection as informants may be identified by key scientists for their likelihood to reflect positively on FTA project results. Therefore, findings were triangulated with evidence within project documents as well as external evidence (e.g., government documents, press releases) to ensure the reliability and credibility of data and cross-check information received. Respondents' recollections of project details and events (e.g., research activities and potential outcomes) that happened some time ago were limited (particularly as many projects were launched during Phase I); therefore, triangulation with available documentation and further review of external evidence was undertaken. Moreover, the discrepancy in short project timelines and the reality of time lags before FTA's impacts can be observed also provided severe challenges in reporting impact achievement and anticipating the potential for future impact at an aggregate level. Such nuance is provided at the cluster level, and all reported impacts expected to be realized as a result of FTA's contributions should be considered in terms of their potential, as many rely on context-specific conditions and require time to observe concrete effects on-the-ground. The availability of reporting against relevant SLO targets may have resulted in under-reporting in some cases. This also has likely led to under-reporting of FTA's impacts (particularly for the low-end estimates/potential), hence the provision of high-end estimate potentials and ranges for the estimates.

Furthermore, the ways in which FTA projects report on their contributions and achievements are inconsistent, making the review and analysis of available evidence an arduous task. This was particularly apparent in reporting for multi-country projects and programmes, where often reported evidence is not disaggregated by study sites, let alone by country. At times, this made testing of the ToC logic difficult and prone to misinterpretation or misattribution. The impact estimation exercise was also challenging. Few projects presented impact targets or reported on expected or potential impacts. In cases where impacts were reported, the methodologies used to derive the impact estimates were unclear (see Table 3 for the discussion of document reliability assessment) and relied

¹⁴ For bilateral projects, ToCs were devised and inserted into the program following a dialogue between the lead investigator, Flagship leader, and program leadership (n.b., a key requirement for this process in Phase II was the contribution of the bilateral project to one of the 25 operational priorities of the program and their linkages with the operational priorities 3-year workplans). However, specific ToC requirements and sometimes even the existence of a project ToC were primarily dependent on conditions imposed by the bilateral grant. FTA did not seek to impose ToC requirements on bilateral projects (as this would have been too costly or difficult to negotiate).

heavily on the realization of outcomes and conditions underpinning the impact. The disparities in reporting against established targets and in the appropriate units also introduced possible under-reporting. For example, for Challenge 3, most management-related impacts are reported in terms of hectares instead of the target unit of households, which has led to under-reporting of household adoption of management practices simply because this information is not documented or tracked by projects. Additionally, FTA contributed to several policies that could have far-reaching impact, but no policy targets or projections of impact potential could be identified or estimated. Moreover, there were difficulties in separating outcomes and impacts between clusters where FTA's work on landscape governance and management was closely aligned and overlapped in terms of project topics, geography, actors engaged, and intended outcomes, as well as the confluence of external dialogues and fora on inter-related issues and initiatives. For example, there is potential for overlap in the area governed by multiple policies, which may have resulted in the double-counting of some impact estimates. For example, the areas where FTA's projects were implemented in Indonesia (e.g., Sumbawa Watershed, Rejoso Watershed, etc.) as well as FTA's contributions to district regulations and regional development plans governing the implementation of watershed management in East Java and South Sulawesi may overlap with peatland areas protected and managed under the Indonesian Forest Moratorium (influenced as part of FTA's REDD+ programme); we have tried to account for these where possible, but acknowledge that the impact estimates contain some margin of error.



FTA conducts research in a variety of landscapes to support improved management and address unsustainable land use; Brazil nut concessions in Peru are one such example. Brazil nut area converted into agricultural area. Tambopata, Madre de Diós, Peru. (Yoly Gutierrez/[CIFOR](#))

Challenge 3 Theory of Change

Unsustainable land use is defined as the practices which alter landscapes and contribute to the loss of the productive capacity and natural ecological function of the land to sustain life (Choudhury & Jansen, 1998; FAO, 1999; IFAD, 1992). Unsustainable land and forest management constitute an important focal area of scientific and applied research for FTA. With growing populations and developing economies, climate change, incompatible land use, rising pressures on lands and forests for food production, and unsustainable exploitation of natural resources threaten the very landscapes on which we depend (Diamond, 2005; FAO, 2021; Howe et al., 2014; OECD, 2020; Olsson et al., 2019; Vlek et al., 2017). Historically, conservation efforts tend to focus on the management of protected areas, yet most of the world's biodiversity occurs outside those areas, primarily in fragmented landscape mosaics with a variety of different land uses (FTA, 2021; IUCN, 2021; Lele et al., 2010). Formal land-use planning traditionally excludes sustainable forest use and agroforestry. The institutional dichotomy between forest and non-forest land therefore poses a central challenge for integrated landscape management, and has environmental and social consequences (Chazdon et al., 2016; Fischer, 2018; FTA, 2021; Reed et al., 2020). FTA works globally, supporting research across Latin America, Africa, and Asia to address the following drivers of unsustainable land use and mismanagement:

1. Poor governance, weak and siloed institutions, and poor forest management;
2. Informal encroachment and settlement on public lands;
3. Agricultural expansion into wetland or forested areas;
4. Lack of market oversight leading to illegal logging;
5. Anthropogenic burning and natural forest fires; and
6. Lack of knowledge, capacity, and training on sustainable land use practices at the industrial and small-scale levels.

FTA's research also addresses the following compounding effects of unsustainable land use and mismanaged landscapes:

1. Resulting damage to ecosystem services (e.g., regulating services, supporting services, provisioning services, cultural services);
2. Resulting effects of climate change;
3. Resulting haze and health impacts from fires; and
4. Resulting sustenance and livelihood impacts from natural resource scarcity.

FTA addresses these inter-related aspects of unsustainable landscape management by:

- Providing knowledge that frames issues (i.e., consequences of unsustainable practices, contextual barriers and opportunities for landscape governance, etc.);
- Generating data on land and forest use to understand current conditions and trends over time (e.g., baseline data and maps on changing land and forest use, etc.);
- Developing tools and methods (e.g., REDD+ monitoring tools, approach to set reference emission levels (REL), real-time monitoring systems, landscape monitoring tools and protocols, online watershed monitoring tools, genetic testing methods, tree growth measurement tools, ecosystem service assessment and monitoring tools, zoning methods, land use planning tools, etc.);
- Proposing policy solutions and innovations (e.g., landscape governance frameworks, incentive schemes, co-investment models, climate-smart business models, performance-based finance models, options for formal timber market integration, options for agroforestry value chains, fire prevention, etc.);
- Providing training (e.g., workshops and curricula on climate-smart approaches, agroforestry, soil and water management, forest management, etc.); as well as
- Offering guidance and support for policy operationalization and implementation (e.g., options-by-context approach (OxC)¹⁵, REDD+ implementation and monitoring, FLEGT implementation and monitoring, forest monitoring, tenure reform, community forest management, the establishment of community forest enterprises, agroforestry concession implementation, scaling agroforestry, scaling dryland management, scaling wetland management, etc.).

FTA also makes social process contributions via strategic and targeted engagements with stakeholders throughout the research process and provides training and workshops to support capacity-building. Collectively, FTA's activities and outputs aim to:

- Improve governance and top-down management by identifying, informing the development of, and promoting policy options and legal frameworks (e.g., FLEGT, fire prevention, commodity-specific regulations, tenure/concession schemes, rewards schemes, etc.) that create a conducive enabling environment (including incentives) to stimulate the uptake of sustainable management practices;
- Improve mechanisms for climate mitigation (e.g., REDD+, wetlands, agroforestry, PFES) and support alignment with the climate change agenda;
- Garner support from local and international non-governmental organizations (NGO) and other organizations with similarly aligned objectives to promote integrated landscape planning approaches;
- Improve community-driven institutions, planning processes, and local agency;
- Improve bottom-up management by influencing and supporting private sector and community practices to become more sustainable (i.e., via education, capacity-building, extension services, etc.); and
- Devise and scale more sustainable land use practices (e.g., agroforestry, agro-ecological approaches, soil conservation, water conservation, etc.).

¹⁵ The OxC approach describes a new paradigm in agronomy (which FTA's Livelihood Systems Flagship has been instrumental in developing) that appreciates fine-scale variation in-context to enable the scaling up of appropriate landscape approaches and agroforestry practices. Application of an OxC approach in research aims to improve agricultural system performance by developing new options and matching appropriate options (i.e., things that smallholders can do differently) with specific contexts (affected by political, social, environmental, and economic conditions) (Coe, Sinclair, & Barrios, 2014; Nelson, Coe, & Haussmann, 2019; Sinclair & Coe, 2019).

There are multiple pathways to these goals, which involves the engagement of diverse actor groups and multiple processes. FTA's research and engagement aim to influence the following actors/action arenas (Figure 3):

- Researchers (e.g., graduate students, partner universities, national research institutes, etc.) improving the knowledge based to advance issues and the research agenda on the topics of sustainable land and forest management (via collective academic efforts, publishing, engaging in academic debates, engaging research funders, equipping the next generation of researchers);
- Donors' and international organizations' governance frameworks, commitments, action plans, coordination, investments, oversight, and monitoring (via issue framing, empirical data, monitoring tools, proposed policy frameworks and recommendations, capacity-building, and operational guidance);
- Government policy-makers developing and revising national and sub-national policy (via framing issues to garner attention for action, and improving data access and technical capacity) and equipping government agencies tasked with policy implementation for better governance, monitoring, and management through integrated landscape approaches (via proposed governance frameworks, improved monitoring tools, capacity-building, and operational guidance and recommendations);
- NGOs', (boundary) partners', and allies' advocacy for policy and practice change, promotion of evidence-based knowledge, and support in top-down and bottom-up land and forest management processes (via framing issues, improving access to quality data, and capacity-building);
- The public becoming better informed to hold governments and large corporations accountable for more sustainable policies and practices (via issue and solutions framing);
- Practitioners' implementation of action plans, landscape monitoring, and technical and extension support to large-scale and small-scale practices (via tool and method development and training);
- Corporate-scale private sector (i.e., large industrial-scale companies) changing practices, via:
 - Compliance with national regulations and adherence to international commitments and certification schemes;
 - Investments in and development of sustainable management plans;
 - Capacity-building in sustainable land use practices; and
 - Supply chain transparency and management;
- Small-scale private sector (i.e., smallholders and small and medium enterprises (SME)) changing practices, via:
 - Capacity-building in sustainable land use and agroforestry practices that are context-appropriate;
 - Awareness-building for available policy mechanisms and certification schemes;
 - Eligibility identification and support for compliance with available policy mechanisms and certification schemes;
 - Piloting and long-term compliance support with available policy mechanisms, rewards schemes, and certification schemes; and
 - Formalization, tenure rights, and market access.

Through the realization of the above outcomes, it is expected that FTA's research will contribute to improved governance and sustainable management of different landscapes through:

- The effective implementation of REDD+ policies and low emissions strategies to mitigate climate change (globally, with a focus in Peru, Bolivia, Guyana, Brazil, Mexico, Tanzania, the Democratic Republic of Congo (DRC), Cameroon, Burkina Faso, Ethiopia, Mozambique, Myanmar, Thailand, Vietnam, Indonesia, and the Philippines);
- Enhanced forest protection through the establishment of better regulated conservation areas and SFM (in Peru, Nicaragua, Guatemala, DRC, Cameroon, Central African Republic, Equatorial Guinea, Sao Tomé and Príncipe, Chad, Congo, Gabon, Uganda, Rwanda, Mozambique, Burundi, and Indonesia);
- Improved forest monitoring systems (e.g., FLEGT/Voluntary Partnership Agreements (VPA)) and market function to reduce instances of illegal logging globally, with a particular focus in Central and West Africa

(Cameroon, DRC, Ghana, Gabon, Côte d'Ivoire, Liberia, Mozambique, Zambia, Uganda, Tanzania, and Kenya);

- Expanded market options and rewards schemes that incentivize sustainable management practices, with a particular focus in South Asia and Southeast Asia (India, Nepal, Bhutan, China, Vietnam, the Philippines, Indonesia, and Malaysia);
- Modifying policy frameworks and institutional arrangements to manage and reduce instances of forest fires (in Indonesia);
- Promoting sustainable agroforestry alternatives and incentive mechanisms to reduce agricultural expansion into natural forests and watersheds for cash crop production (in Peru, Nicaragua, Honduras, Indonesia, and the Philippines); and
- Encouraging uptake of sustainable land use practices and management in dryland areas (in Mali, Niger, Burkina Faso, Kenya, and Ethiopia).

As a guide, FTA set an impact target in which a portion of 31 million farm households are expected to adopt improved management practices. Though not explicitly documented as a target, it is expected that FTA will contribute to several million hectares of land and forests being more sustainably managed.

Key assumptions underpinning FTA's contributions to sustainable land and forest management:

- FTA holds a credible position in the academic and research-for-development realms, and is therefore able to exert influence over the way research agendas and policies advance;
- The policies to which the research contributed are effectively implemented and enforced to reach intended targets (i.e., policy changes are sufficient to influence practice change and support sustainable land and forest management);
- NGOs, partners, and organizations with sustainability objectives are actively seeking out evidence to support their campaigns and programmes to continue to work with policy-makers, communities, and the private sector in efforts to enhance governance and address unsustainable use of land and forests;
- The public is aware and informed of possible ways to support top-down and bottom-up landscape management, and is actively demanding changes in policy and private sector practice;
- Large companies uphold commitments to climate action and international certification standards as a result of policy, market pressures, and consumer demand;
- As smallholders and SMEs gain access to formal markets and tenure via enabling policies that reduce barriers, these groups are better equipped to comply with sustainability requirements, change practices, and manage the land and forests in which they live; and
- All individuals of relevant actor groups who receive training from FTA interventions, either directly or indirectly from FTA-supported training programmes, benefit and obtain new knowledge, skills, and relationships as a result, and are motivated and capable of leveraging and applying these in their work.

Detailed cluster-level sub-ToCs for Challenge 3 can be found Appendix 1.

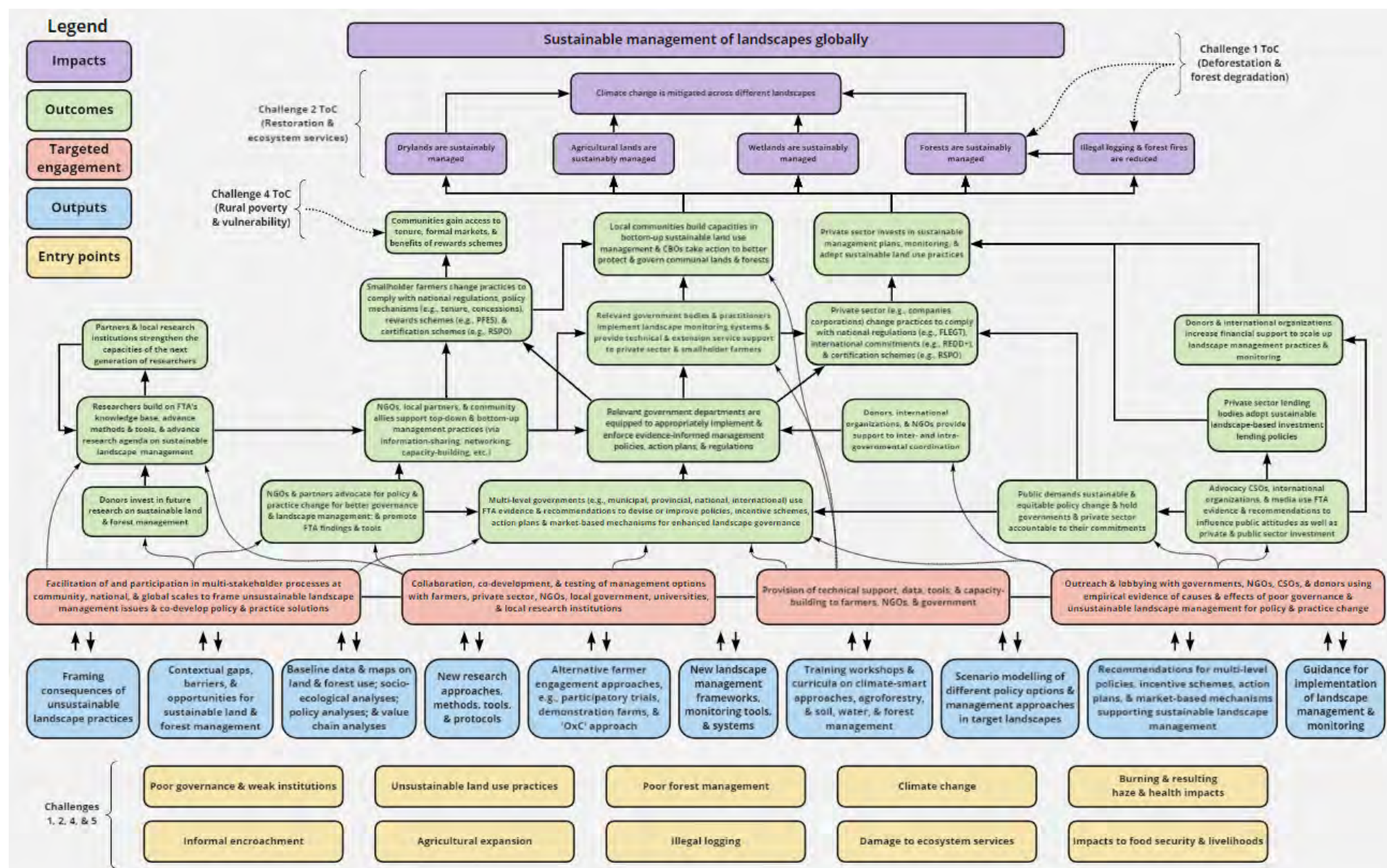


Figure 3. Overarching ToC outlining FTA contributions to Challenge 3 (Widespread Unsustainable Land Use Practices).

For those that wish to read the figure more in depth, the overarching ToC for Challenge 3 can be viewed on [Miro](#).



FTA conducts research in a variety of landscapes to support improved management and address unsustainable land use; forested areas in the Congo Basin are one such example. FORETS pilot farm in Yangambi, DRC. (Photo: Fiston Wasanga/[CIFOR](#))

Results

Overall, between **59.5 million ha** (low-end estimate) and **204 million ha** (high-end estimate) of landscapes globally are under improved management or have the potential to be as a result of policy mechanisms, monitoring systems, and changes in on-the-ground management and land use practices influenced by FTA.

The results presented in this report answer the guiding evaluation question for the FTA integrative studies: *To what extent and how did FTA's research portfolio realize outcomes in each of the five challenges?* In this section, we summarize the extent to which there is reliable evidence that outcomes and impacts in the overarching Challenge 3 ToC (Figure 3) and the respective cluster-level sub-ToCs (see Figures 7-25 in Appendix 1) were realized. This section presents outcome and impact narratives for each cluster, as well as a deep dive case study of one cluster (e.g., Agroforestry Concessions in Peru) (Box 1).

Overall, FTA influenced numerous changes in policy, practice, and research to support pathways to impact for improved landscape governance and management. FTA contributed to over 300 policies, action plans, and governance arrangements at multiple levels and supported the enabling environment for enhanced governance and landscape management across 29 countries in Latin America, Africa, and Asia. FTA helped equip close to 40,000 government officers, extensionists, and NGO staff to deliver more effective technical assistance and extension services for natural resource management (NRM) and monitoring in different landscapes across 18 countries. FTA influenced the practices of at least 34 companies, 178 SMEs, 1,500 private sector actors, and 282,365 farmers across 18 countries to more sustainably manage the landscapes on which they depend for their production, consumption, and livelihoods. Support for policy implementation, private sector and smallholder capacities to comply with policy change, and barriers to the adoption of sustainable, context-appropriate landscape management practices are of utmost importance for research-for-development programmes to address more systematically in the future. Lastly, FTA's influence on the research pathway was achieved through its contributions to new knowledge and advancing research agendas, broad and far-reaching research networks, mutually beneficial research partnerships, and opportunities for local research capacity-building.

Despite difficulties to report against FTA's contribution target of 31 million households adopting improved management practices, the evidence shows that FTA made promising progress towards greater influence over the number of hectares of landscapes that are better managed and monitored across Latin America, Africa, and Asia. However, barriers do remain. By conducting research on and engaging in relevant topics for landscape management, FTA positioned itself as a valued and trusted source of evidence-based information and policy recommendations that would support more equitable governance and sustainable landscape management. Yet, the realization of expected impacts depends upon the perfect implementation and enforcement of such policies, which are largely outside of FTA's sphere of control. FTA also engaged and collaborated with a wide range of relevant stakeholders to ensure ownership of research outputs, contribute to capacity-building, and ensure future focus on the topic. Progress towards improved landscape management in the countries assessed to date rely on collective action by a range of actors, including national and international governments, practitioners, NGOs, communities and smallholders, the private sector, and researchers. However, conflicting policy agendas and differing private sector compliance/commitments have affected the degree to which FTA has contributed to on-the-ground impact.

Outcome Evaluation

The majority of FTA's contributions to intended outcomes for each research cluster were either partially or fully realized. For outcomes that have not yet been realized, it is likely that many will be realized in the future though others may remain unrealized because of political, regulatory, economic, or social barriers. Government, NGO/partner, researcher, and smallholder pathways were the most prevalent and strongest impact pathways through which FTA influenced change. FTA did succeed in influencing some international organization, practitioner, private sector, and public impact pathways in different countries, but to a lesser degree. Evidence suggests that FTA's contributions to outcomes are likely to continue post-FTA, as much of FTA's influence on change processes in the respective research clusters helped build momentum for ongoing commitment by FTA centres, partners, and NGO allies to advance progress on intended outcomes and impacts (Figure 4).

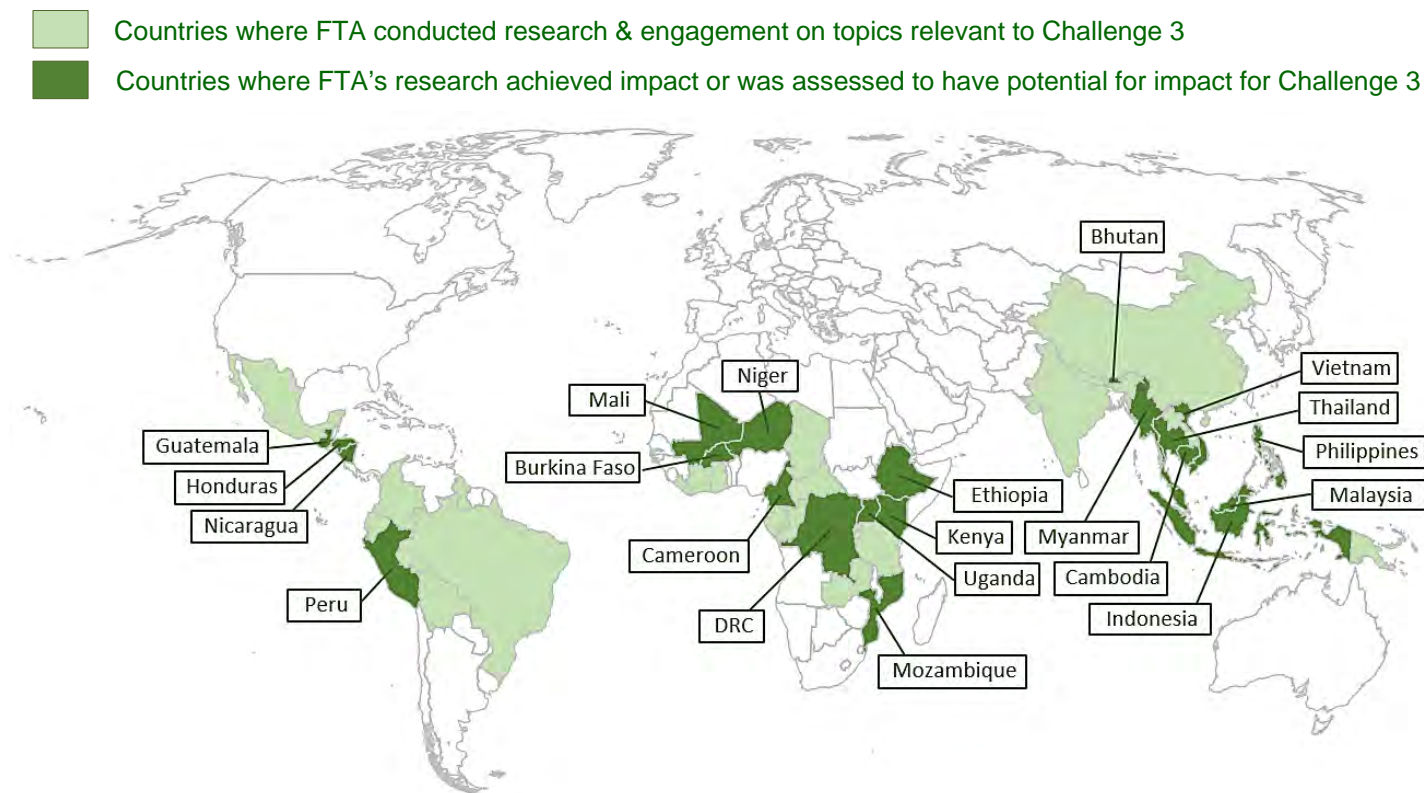


Figure 4. Countries where FTA carried out research on topics mapped to Challenge 3. The range of impact estimates correspond to the countries coloured in dark green.

The following section presents the evidence in terms of FTA's main contributions to outcomes in terms of policy¹⁶ influence, practice influence, and research influence that have been realized for each cluster of research mapped to Challenge 3. Results are differentiated at the global and country level as appropriate. The assessments are based on available evaluation evidence (i.e., theory-based outcome evaluation reports, outcome stories, final reports, FTA and centre annual reports, interviews with key scientists, etc.). The tables that accompany each narrative (Tables 4-22) aim to provide evidence of outcomes that support the realization of impact targets, impacts achieved to date, and future impact potential.

REDD+ Global Policy Mechanism Cluster Results:

To support the effective implementation of climate change policy mechanisms at both the international and national levels, FTA recognized that reliable data were needed to inform sustainable forest and land management decisions and monitoring. FTA conducted a range of global comparative studies on the REDD+ policy mechanism, involving the development and testing of methods that aimed to estimate REL, inform land use planning and emissions reduction strategies, and improve monitoring, measurement, reporting, and verification (MMRV) systems. FTA also investigated the enabling conditions for REDD+ governance within international and national REDD+ policy arenas and governance frameworks, exploring incentives and trade-offs for benefit-sharing mechanisms. FTA developed training and support for REDD+ design, implementation, and communication, helped established a REDD+ learning community, as well as provided technical support and guidance for the implementation and monitoring of REDD+ policies, instruments, and projects. Key results of the REDD+ cluster are summarized in Table 4. For a list of projects in this cluster, see Table 25 in Appendix 1.

Policy Influence

FTA engaged in numerous policy spaces to share findings on REDD+ in efforts to influence policy at the international, national, and sub-national levels. At the global level, FTA's recommendations informed international climate negotiations for a global REDD+ agreement to govern and support the effectiveness, efficiency, and equity of national-level REDD+ policies (e.g., Indonesia, Vietnam, Tanzania, Peru, Brazil, Cameroon). FTA produced findings that demonstrated the scientific merits and intersection of REDD+ and tenure issues (i.e., tenure being a major determinant of equity in REDD+ schemes), which were taken up by decision-makers for the United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD), influencing the inclusion of land tenure as a priority area of the Programme's strategy framework.

At the national level, FTA provided national policy-makers with new information and tools to enable them to make better informed decisions on REDD+. FTA had extensive policy influence across Asia, most notably in Indonesia. CIFOR provided data and other technical inputs on peatland emission factors that informed Indonesia's Forest Moratorium (Inpres No.10/2011). FTA collaborated with and assisted the Ministry of Environment and Forestry (KHLK) and the Forestry and Environmental Research Development and Innovation Agency (FOERDIA) to develop the national REDD+ strategy, including direct support in the establishment of the Indonesian National Carbon Accounting System (INCAS) and revised forest reference emission levels (FREL)¹⁷. FTA also supported the convening of and negotiations between the Government of Indonesia and the Government of Norway to implement the REDD+ partnership agreement's results-based payments emissions reduction scheme outlined in the Letter of Intent (LoI). More detail on these contributions can be found in the Indonesian deep dive case study in the Challenge 1 report (Box 1). Other policy influence includes governmental adoption of a tool as a national standard as part of the Intended Nationally Determined Contributions (INDC). More specifically, through successful sensitization of FTA's Land Use Planning for Low Emission Development Strategy (LUWES) tool, the National Development Planning Agency (BAPPENAS) formally adopted and adapted the tool, recommending local governments utilize LUWES to plan and inform local GHG emissions reduction action plans. To date, 33 provincial governments have applied LUWES to plan actions to reduce GHG

¹⁶ This study uses a broad definition of policy, which is defined as a decision or commitment to a particular course of action (adapted from Pielke, 2007).

¹⁷ Currently, CIFOR supports the improvement of Indonesia's FREL through refined GHG accounting in wetlands.

emissions and estimate the province's contributions to realizing national targets. In Jambi, FTA supported district-level participatory mapping exercises using LUWES that fed into the development of sustainable land use plans for 714 ha of community forests (HKm) in Tanjabar. FTA also influenced a change in company policy in Jambi. In efforts to model and support public-private partnerships (PPP), FTA calculated a company's REL and shared this data, which the company subsequently used to define mitigation actions as part of the spatial planning of the company's concessions that were integrated into the company's annual work plan. Vietnam was another country where FTA achieved high policy influence, contributing to and influencing multiple levels of decision-making processes and policy documents under the national Payment for Forest Environmental Services (PFES) programme. These include the national REDD+ strategy, the 2017 Forestry Law, the Financial Incentive Mechanism (FIM) for PFES, and the national PFES monitoring and evaluation (M&E) system (successfully implemented in four provinces to date, monitoring over one million ha of forests); more detail can be found in the Vietnamese deep dive case study in the Challenge 1 report (Box 2). Much of this influence can be linked to the fostering of trust- and relationship-building with different government agencies, such as the Ministry of Agriculture and Rural Development (MARD) and the Vietnam Forest Protection and Development Fund (VNFF), which enabled FTA to gain better insights into governmental priorities and respond to these needs with evidence-based research and tailored assistance. For example, the VNFF approached CIFOR to assess the existing PFES system to inform the REDD+ Benefit-sharing Strategy; these findings were reported back to the national government, which led to the decentralization of benefit-sharing decision-making from the federal to district level and greater emphasis on tracking monetary flows alongside carbon flows. FTA researchers and government stakeholders co-developed a manual for PFES revenue management, which was endorsed by the Vietnam Forestry Administration (VNFOREST) and MARD, serving as a national guideline that all provinces must adopt and follow (Decision 455/QĐ-TCLN-KHTC). Through ongoing engagement in policy meetings and workshops, the Vietnamese government indicated willingness to integrate FTA's recommendations on PFES and lessons from similar programmes implemented in neighbouring countries. Such engagements stimulated MARD to submit a proposal for PFES policy revisions. In addition, CIFOR was invited to join the National Task Force to help develop Vietnam's Forestry Development Strategy (2020-2030). As in Indonesia, sub-national governments in Vietnam took up and applied the LUWES tool to inform the development of low emissions development strategies, one clear example being in Ba Be district (though these plans have yet to be enacted). In Lao PDR, CIFOR was invited to join a national technical working group mandated to design key elements of the national REDD+ strategy, particularly the country's REDD+ benefit-sharing mechanism and the Safeguards Information System (SIS). FTA researchers shared findings, provided technical inputs, and hosted training on effective, efficient, and equitable (3E) benefit-sharing mechanisms and how benefits could be distributed. While there is no evidence of policy change at this stage (possibly owing to the loss of institutional memory as some stakeholders left the process), there were indications of changes in governmental knowledge and attitudes in favour of 3E approaches. While FTA did not engage directly in REDD+ processes in the Philippines, an International Center for Tropical Agriculture (CIAT) researcher was closely involved in the drafting of the Philippine National REDD-Plus Strategy (PNRPS), drawing on CIFOR research to inform their inputs to the strategy. The researcher was also a key boundary partner in disseminating relevant findings produced by FTA to stakeholders supporting REDD+ implementation (e.g., Manuel et al., 2013). There is no evidence of policy change in Myanmar.

In Latin America, FTA primarily focused its REDD+ research and engagements in Peru, though activities were also conducted in Brazil, Bolivia, and Mexico (there is no evidence of management-related policy influence in these countries). In Peru, FTA provided technical support to the Ministry of Environment (MINAM), sharing data on land use change and ecosystem services, which fed into the Peruvian National Strategy on Forest and Climate Change (ENBCC) (Supreme Decree N.007-2016-MINAM). This policy document cites several FTA outputs. FTA's contributions served to reframe how ecosystem-based adaptation and adaptation-mitigation synergies were addressed in the ENBCC. In another example, FTA's MMRV activities and peatland data stimulated the initiation of a national cross-sectoral process for the legal recognition of peatlands (palm swamps/*aguajales*). This led to and informed the update of Peru's National Wetland Conservation Plan to factor peatland emissions into the country's REDD+ targets. FTA also informed the Concerted Regional Development Plan of Loreto (PDRC),

which now includes concrete actions to improve the conservation and sustainable management of peatlands. Interest for FTA's expertise in this area is growing. One FTA scientist collaborated closely with national actors at the request of the government to adopt a definition of peatlands, identify classification criteria, and develop peatland maps. Influence can also be traced to the 2020 Law on Multisectoral and Decentralized Management of Wetlands (Supreme Decree No.006-2021-MINAM), which formally recognizes and protects 3.56 million ha of Amazonian peatlands. At the sub-national level, FTA provided technical support to stakeholders in Padre Abad to develop a sustainable land use management plan for Irazola district.

FTA also influenced REDD+ policy in Africa. In Ghana, FTA's research helped shape stakeholders' understanding of the existing national REDD+ architecture and advance the REDD+ agenda in-country. FTA researchers assisted the preparation of Ghana's Readiness Plan Idea Notes (R-PIN), providing technical inputs and feedback to its development. There are several examples of local research institutes and international organizations promoting and using FTA's findings on land use, tenure, and PFES in REDD+ decision-making and implementation, such as the Centre for Remote Sensing and Geographical Information Services (CERSGIS) based out of University of Ghana, the International Union for Conservation of Nature (IUCN), and A Rocha Ghana. In DRC, CIFOR received an invitation in 2020 from the national REDD+ coordinator to support assessment of the DRC's national REDD+ strategy and build national and provincial capacities in MMRV. In Cameroon, policy-makers promoted and incorporated learning and recommendations from FTA's research into the REDD+ Readiness Preparation Proposal (RPP). In Ethiopia, governments acknowledged and appreciated CIFOR's role as a convener and facilitator of critical debate on REDD+ issues. Through these engagements, FTA shared technical knowledge that contributed to the development of Ethiopia's national REDD+ strategy. In 2018, FTA researchers were involved in and supported the revisions of the 2007 Forest Law, including the development of the REDD+ Measurement, Reporting and Verification (MRV) system, FREL, and a SIS for the country. This law governs over 17 million ha of forest in Ethiopia. FTA also provided information relevant to the development of the benefit-sharing mechanism implemented as part of the Oromia Forested Landscape Programme (OFLP). In Tanzania, FTA hosted a REDD+ workshop that catalyzed discussions on the interpretation of land rights, leading to a policy change to make the law more inclusive of communities. By sharing findings on the trade-offs of centralized governance, officials from different ministries gained a better understanding of village land and community-led governance arrangements, which led to uptake of new inclusive interpretations in land rights policy documents.

Practice Influence

There is substantial evidence of FTA's influence on both global and national REDD+ practice. In recognition of countries' differing capacities to collect and monitor forest emissions, FTA researchers developed and shared relevant and applicable methods and tools for MRV through active engagement and participation in global negotiations and arenas. For example, following FTA's promotion of the step-wise approach – which guides countries on how to set FREL, measure and monitor data, and improve the quality of their data and reporting – the United Nations Framework Convention on Climate Change (UNFCCC) adopted the approach in 2011 at the Conference of Parties (COP17) in Durban (Decision 12/CP.17). In 2013, the UNFCCC reaffirmed their endorsement of the step-wise approach during COP19 in Warsaw, which is referenced in the Warsaw Framework for REDD+. All member states are expected to use the approach to support their REDD+ processes; already, there is observed uptake of the step-wise approach by governments in Guyana, Ethiopia, and Indonesia. Uptake was reinforced by donors' promotion of FTA's recommendations and CIFOR's direct technical and capacity-building support to national actors in forest monitoring, carbon measurement, and MRV GHG mitigation. FTA also influenced other international actors, such as the European Commission and the Green Climate Fund (GCF). In the first example, FTA provided technical support on Transparent Monitoring and REDD+ Finance. In the second, FTA researchers informed the GCF's sectoral guidance for ecosystems, land use, and forestry, and contributed to the Learning-Oriented Real-Time Impact Assessment (LORTA) initiative.

Other key foci of FTA's REDD+ engagements include the improvement of MMRV systems and capacity-building, and there are several examples of enhanced national practice as a result (e.g., Indonesia, Vietnam,

Guyana, Ethiopia, Cameroon, and Peru). In Indonesia, CIFOR helped equip the Peatland Restoration Agency (BRG) to set REL for peatland restoration, refining GHG accounting in wetlands; more detail can be found in the Indonesian deep dive case study in the Challenge 1 report (Box 1). In Vietnam, as part of the development of the PFES monitoring system, FTA trained 26 officials from various government agencies (e.g., MARD, VNFOREST, VNFF), research institutes, NGOs, and civil society organizations (CSO) in PFES methods and forest monitoring; more detail can be found in the Vietnamese deep dive case study in the Challenge 1 report (Box 2). In Guyana, FTA provided technical inputs for national forest monitoring and the SIS, helping to build the Forestry Commission's capacities to improve forest and natural resource monitoring (e.g., direct forest monitoring, forest area assessment, biomass estimation, and carbon measurement) using new technologies and methods. In Ethiopia, FTA helped develop and install the REDD+ MRV system and SIS, and equip national actors to set and monitor FREL. In Cameroon, ICRAF provided LUWES training to the Ministry of Environment, Nature Protection and Sustainable Development (MINEPDED) to support the national REDD+ strategy and MRV activities. Similarly in Peru, FTA built governmental capacities in the use and scaling of the LUWES tool, helped develop a deforestation monitoring system, provided technical support for MRV, and participated in a technical working group for REDD+ safeguards, all of which have informed the implementation of MINAM's Forest Programme.

Further practice change was observed at the national level throughout Asia, Latin America, and Africa. In Vietnam, the provincial government of Son La piloted a M&E system for the PFES programme in direct response to CIFOR's recommendations, which is in the process of being scaled to other provinces. In Bac Kan province, FTA assisted the piloting of two community-based management schemes – one which placed 212 ha of naturally regenerated forest under a community forest management (CFM) regime, and the other which established 85 ha of community forest under a land use rights certificate incentive scheme informed by FTA's findings on local preferences of REDD+ benefits. There is potential that this incentive scheme pilot could feed into the province's REDD+ Action Plan as well as the design of the national REDD+ benefit distribution system (BDS) (i.e., based on tailored incentives opposed to a flat rate cash payment). In Peru, FTA piloted a reflexive learning tool for multi-stakeholder fora with the management committee of protected areas in two regions (San Martín, Madre de Diós), which was subsequently taken up by the National Service of Natural Protected Areas (SERNAP) to use in independent evaluations of participatory management processes by 75 co-management committees. FTA collaborated with an indigenous women's organization (i.e., the National Organization of Andean and Amazonian Indigenous Women of Peru (ONAMIAP)) to co-develop an adapted version of the tool which takes into account gender considerations for land governance. There are preliminary indications of private sector interest in watershed management for REDD+ in Peru, as well. Notably, SEDAPAL, a water supply company based in Lima, sought CIFOR's expertise to teach different department staff about ecosystem services and the implications of climate change for watersheds. In Brazil, the state government of Acre used FTA data and methods to inform the design of a socio-environmental monitoring system for the Acre State System of Environmental Services Programme. Similarly, The Nature Conservancy (TNC) applied data, tools, and learning from FTA to develop a monitoring system for their Sustainable Landscapes Pilot Programme in São Félix do Xingu. In Mexico, CSOs endorsed a blog written by CIFOR which advocated for greater focus on tenure and involvement of NGOs in the REDD+ benefit-sharing decision-making process. The blog drew political attention to the issue, particularly among policy-makers and National Forestry Commission officials. In Ethiopia, there are indications that technical experts have taken up and used FTA's findings on exclusion, benefit-sharing, and gender in forestry to inform the implementation of the country's Climate Resilient Green Growth Strategy. In DRC, FTA piloted landscape management practices as part of an incentive mechanism for the sustainable intensification of cocoa agroforestry systems in five villages in Efoulan municipality. Following the pilot, over 600 farmers indicated their intent to adopt cocoa management models on 3,000 ha of new farms established on fallow land and secondary forests.

Research Influence

FTA's influence on the REDD+ research agenda has been extensive, both in terms of publications and citations as well as their facilitation of learning platforms and research capacity-building to promote 3E approaches. Through collaborative research partnerships, researchers from local universities, national research agencies, research companies, and international research institutes built capacity for REDD+ research as well as policy

engagement. Notable examples include researchers from FOERDIA and the Indonesian Centre for Environmental Law (ICEL) in Indonesia; MINAM, Bosques Amazónicos (BAM), and SilvaCarbon in Peru; Instituto Centro de Vida (ICV), the Amazon Environmental Research Institute (IPAM), and TNC in Brazil; Earth Innovation Institute (EII); Governor's Forests and Climate Task Force; and the Climate, Community and Biodiversity Alliance (CCBA). As a result, CIFOR is widely recognized as a REDD+ expert, receiving awards and formal recognition for their technical research contributions to global and national REDD+ processes and forestry policy (e.g., Vietnam). Moreover, by actively engaging in, contributing to, and raising the profile of different REDD+ issues (e.g., gender, tenure, climate change), CIFOR became a trusted source for data, tools, and REDD+ training. Gaining the attention of UN bodies through the development of a gender inclusiveness indicator tool, UNDP and UN Women engaged CIFOR to explore future gender and financing research initiatives for the tool.

Potential Impact

As a result of collective influence on REDD+ policy and practice, FTA contributed to the improved management and monitoring of upwards of 90 million ha of forest and peatlands globally. In Indonesia, 22.5 million ha of forest are newly managed under the Forest Moratorium, bringing the total area under protection to 66 million ha. FTA's policy contributions to the Forest Moratorium served to reinforce the protection and management of 43.5 million ha already governed under existing national and sub-national policies. FTA's support in the development of sustainable land use plans throughout Jambi province has potential to place 500,000 ha under improved management. To date, implemented sustainable land use plans in Tanjabar cover an additional 714 ha. In Vietnam, out of the 6.57 million ha of national forest eligible for PFES, over 1 million ha in Son La, Cat Tien, Dak Lak, and Thua Thien Hue provinces are monitored by the PFES M&E system that FTA helped implement. FTA also supported the development of low emissions development strategies for 68,000 ha in Ba Be district, piloted a CFM scheme over 212 ha in Bac Kan province, and supported the management of 85 ha of community forest in Na Thau village. In Peru, 3.56 million ha of Amazonian peatlands are protected under a new law that governs the management of wetlands, and 6,000 ha of forested area in Padre Abad were placed under a sustainable land use management plan with the support of FTA. In Ethiopia, 17 million ha of forest are governed by Ethiopia's recently revised Forest Law. In Cameroon, FTA set a target for the uptake of improved cocoa and forest management practices across 76,000 ha; to date, 3,000 ha of farms adopted cocoa management models. In DRC, FTA piloted sustainable landscape management practices across 10,000 ha.

Table 4. REDD+ Global Policy Mechanism Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<p>Global:</p> <ul style="list-style-type: none"> • FTA recommendations informed international climate negotiations for a global REDD+ agreement • Influenced inclusion of tenure as part of UN-REDD's strategy framework <p>Indonesia:</p> <ul style="list-style-type: none"> • Provided input to the 2011 Forest Moratorium (through Inpres No.10/2011) • Assisted development of the national REDD+ strategy <ul style="list-style-type: none"> • Supported establishment of the INCAS • Supported development of revised FREL • Supported LoI with Government of Norway for REDD+ implementation • BAPPENAS adopted LUWES as a national standard for INDC <ul style="list-style-type: none"> • Applied by 33 provinces to inform GHG reduction action plans • Sustainable land use plans for community forest developed in Jambi province • Company in Jambi defined mitigation actions in annual work plan using FTA's REL calculations <p>Vietnam:</p> <ul style="list-style-type: none"> • Influenced the national PFES programme <ul style="list-style-type: none"> • Influenced national REDD+ strategy, 2017 Forestry Law, FIM, and the PFES M&E system • Informed the REDD+ Benefit-sharing Strategy • Manual on PFES revenue management endorsed by government • Stimulated MARD's proposal for PFES policy revisions • CIFOR joined the National Task Force to develop Vietnam's Forestry Development Strategy (2020-2030) • LUWES tool applied in low emissions development strategy for Ba Be district
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	<p>Lao PDR:</p> <ul style="list-style-type: none"> • CIFOR invited to join the national technical working group to inform the national REDD+ strategy <p>Philippines:</p> <ul style="list-style-type: none"> • Involved in drafting of the PNRPS <p>Peru:</p> <ul style="list-style-type: none"> • Referenced in the ENBCC, providing data on land use change and ecosystem services • Stimulated the initiation of a national cross-sectoral process for legal recognition of peatlands <ul style="list-style-type: none"> • Informed update of the National Wetland Conservation Plan • Informed Loreto's PDRC • Influenced the 2020 Law on Multisectoral and Decentralized Management of Wetlands • Supported development of a sustainable land use management plan for Irazola district in Padre Abad <p>Ghana:</p> <ul style="list-style-type: none"> • Assisted development of R-PIN <ul style="list-style-type: none"> • Promotion of FTA findings in Ghana's REDD+ processes <p>DRC:</p> <ul style="list-style-type: none"> • CIFOR invited to evaluate and support national REDD+ policy development and implementation <p>Cameroon:</p> <ul style="list-style-type: none"> • Used FTA research in the REDD+ RPP <p>Ethiopia:</p> <ul style="list-style-type: none"> • Contributed to development of the national REDD+ strategy • Supported revisions of the 2007 Ethiopian Forest Law in 2018 <ul style="list-style-type: none"> • Assisted development of the MRV system, FREL, and the SIS • Informed the benefit-sharing mechanism of the OFLP <p>Tanzania:</p> <ul style="list-style-type: none"> • Influenced a change in a national law on land rights
Practice Influence	<p>Global:</p> <ul style="list-style-type: none"> • Step-wise approach adopted by UNFCCC for setting, measuring, and reporting REL <ul style="list-style-type: none"> • Referenced in Warsaw Framework for REDD+ • Uptake for MRV GHG mitigation in Guyana, Ethiopia, and Indonesia • FTA provided support to the European Commission on Transparent Monitoring and REDD+ Finance • Supported GCF's sectoral guidance for ecosystems, land use, and forestry and contributed to the LORTA initiative • Supported improvement of MMRV systems and capacity-building in Indonesia, Vietnam, Guyana, Ethiopia, Cameroon, and Peru <p>Vietnam:</p> <ul style="list-style-type: none"> • Son La provincial government piloted a M&E system for PFES based on FTA's recommendations <ul style="list-style-type: none"> • Community forestry management schemes implemented in pilots <p>Peru:</p> <ul style="list-style-type: none"> • Uptake of CIFOR's reflexive learning tool for multi-stakeholder fora by SERNANP for use with 75 co-management committees <ul style="list-style-type: none"> • Adaptation of tool by ONAMIAP for gender • Indications of private sector interest in watershed management <p>Brazil:</p> <ul style="list-style-type: none"> • Uptake of FTA data and methods to inform socio-environmental monitoring systems for 2 jurisdictional programmes (e.g., Government of Acre, TNC) <p>Mexico:</p> <ul style="list-style-type: none"> • CSOs endorsed FTA blog advocating for focus on tenure and involvement of NGOs in the REDD+ benefit-sharing decision-making process <p>Ethiopia:</p> <ul style="list-style-type: none"> • Indications of uptake of FTA research on exclusion, benefit-sharing, and gender in forestry by technical experts for implementation of Ethiopia's Climate Resilient Green Growth Strategy <p>DRC:</p> <ul style="list-style-type: none"> • Sustainable practices and landscape management implemented in 5 village pilots <ul style="list-style-type: none"> • 600 farmers adopt cocoa management models
Research Influence	<ul style="list-style-type: none"> • 1,316 outputs, 38,134 citations, 4,935,356 downloads • Facilitated learning platforms for REDD to achieve the 3Es • Supported capacity-building of research partners for REDD+ research and policy engagement (e.g., FOERDIA, ICEL, MINAM, BAM, SilvaCarbon, ICV, IPAM, TNC, EII, CCBA, etc.)

	<ul style="list-style-type: none"> • CIFOR is recognized as a REDD+ expert and raised profile of gender, tenure, and climate change issues <ul style="list-style-type: none"> • Received award for technical research inputs from Vietnamese government • UNDP and UN Women engaged CIFOR to explore additional initiatives for gender inclusiveness indicator tool
Potential Impact	<ul style="list-style-type: none"> • The 2011 Indonesian Forest Moratorium policy provides protection for a total area of 66 million ha of forest (22.5 million ha newly covered) <ul style="list-style-type: none"> • 500,000 ha in Jambi have potential to be placed under sustainable management plans • Sustainable land use plans developed for 714 ha in Tanjabar district • 6.57 million ha of national forest are eligible for Vietnam's PFES; FTA supported implementation of PFES M&E system across 1,015,760 ha (Son La, Cat Tien, Dak Lak, and Thua Thien Hue provinces) <ul style="list-style-type: none"> • Low emissions development strategies developed for 68,000 ha in Ba Be district • 212 ha piloted under a CFM scheme in Bac Kan province • 85 ha of community forest managed by Na Thau village in Bac Kan province • 3.56 million ha of Amazonian peatlands are protected under the 2020 Law of Multisectoral and Decentralized Management of Wetlands <ul style="list-style-type: none"> • 6,000 ha of forested area in Padre Abad managed under a sustainable land use management plan • 17 million ha of forest are governed by Ethiopia's revised Forest law • Project targeted 76,000 ha in Cameroon for improved cocoa and forest management <ul style="list-style-type: none"> • 3,000 ha of farms adopted cocoa management models • 10,000 ha of sustainable landscape management pilots were implemented in DRC

Global Forest Tenure Management Cluster Results:

In order to mobilize community and women's participation in forest governance, decision-making, and on-the-ground management, FTA collected gender-differentiated data on forest use, tenure, and participation in governance, investigated the socio-ecological benefits of tenure arrangements, conducted policy analyses in case studies across Africa, Latin America, and Asia to raise the profile of forest-based tenure and present recommendations for equitable tenure reform amongst decision-makers and policy-makers. FTA developed resources and provided training to governments, NGOs, and communities on participatory forest governance processes and approaches (e.g., Prospective Participatory Analysis (PPA), Adaptive Collaborative Management (ACM)) to secure and strengthen forest-dependent people's tenure rights, guide equitable reform, and enhance representation and participation in forest governance and management. Key results of the Global Forest Tenure Management cluster are summarized in Table 5. For a list of projects in this cluster, see Table 26 in Appendix 1.

Policy Influence

With successful uptake of learning and capacity-building by government actors, FTA contributed to policy processes in Uganda, Peru, and Indonesia. FTA's involvement in Ugandan policy dialogues, roundtables, and stakeholder fora were extensive, exerting notable policy influence, starting with endorsement of ACM by relevant representatives in parliament (e.g., Natural Resources and Environment Committee, Women Parliamentarian Association) as well as government agencies like the Forest Sector Support Department (FSSD), a forest inspection division of the Ministry of Water and Environment (MWE). Alongside this endorsement, legislators began to advocate for budget increases for tree-planting and forest management, and the National Forestry Authority (NFA) shortened the community registration process by a year. There are also indications of roll-out of ACM at the district-level by the FSSD's integration of the approach into the second phase of the government's Farm Income Enhancement and Forest Conservation Project. Moreover, the Ugandan government invited CIFOR to inform revisions of the national participatory forestry guidelines based on lessons learned from practical application of ACM to ensure gender considerations are reflected. By sharing knowledge on gendered forest use among policy-makers and fostering interest in more inclusive policy, FTA's contributions supported the legal recognition and registration of 279 people (128 men, 151 women) under six community groups. Two of these groups were allocated a total of 70 ha. By being part of a formally recognized group, community members – particularly women – had more opportunities to participate in decision-making processes. FTA also supported these groups to negotiate with the NFA on land allocation, resulting in successful tenure of degraded forest land for 40 years in the Central Forest Reserve (CFR). With this tenure security, community groups established their own rules of engagement for sustainable forest use and management, which have begun to reduce pressures on forest resources and restore degraded areas. The NFA also approved a new collaborative forest management

(ColFM) partnership with Mbazzi Village in Mpigi district, allocating the community additional land to use for reforestation and income generation (e.g., replanted with eucalyptus to produce firewood and wooden poles).

In terms of general influence on policy processes, FTA projects fostered opportunities for forest-dependent communities and multiple levels of governments (i.e., local, sub-national, national) to engage in constructive dialogue using PPA, share perspectives and challenges, and co-develop solutions for tenure by providing them with relevant data and tools. This has served to both enhance awareness amongst stakeholders and facilitate better representation of women, youth, and minority groups in policy reform processes. This will ultimately reflect the interests of communities in forest tenure policy, redressing former policies' land use and access rules that failed to account for their needs.

In Uganda, FTA ran PPA in review of the CFM gender guidelines, which national policy-makers found to be a useful process to improve cross-sectoral problem-solving and generally helped them to identify actions to strengthen tenure security in future action plans. While no policy change has manifested yet, several Ugandan PPA participants hoped these experiences would catalyze uptake of PPA processes in other regions of the country.

In Peru, FTA researchers took advantage of a policy window for a national-level tenure reform process by facilitating participatory scenario-building exercises using PPA with over one hundred governmental, forest community, and NGO stakeholders in Loreto and Madre de Diós. During these exchanges, stakeholders gained a better understanding of other actors' perspectives and barriers and learned lessons on how to improve the implementation of forest tenure reform. Both national and sub-national governments acknowledged the value of PPA and FTA's outputs to help redefine priorities and inform their work, such as clarify the land titling process in policy and draft implementation guidelines, though such changes have not yet occurred. With time, it is likely that Peru's forest tenure reform will happen and reflect FTA's influence.

In Indonesia, PPA activities and training increased governments' knowledge on the intersection of gender and tenure rights for forest-adjacent communities and stimulated reflection on the implications for forest management. FTA also secured the attention of the KHLK regarding evidence-informed policy development and related conflict resolution on the issue, provoking debate for inclusive planning for better implementation of tenure reform in the country. As governmental actors are more aware of tenure issues that affect communities, they are more likely to involve communities in policy decision-making and planning development. Through PPA scenario-building, Indonesian PPA participants indicated that the process of co-identifying prioritized actions will inform regional governmental programmes and coordination on forest tenure, and has increased their capacities to incorporate gender considerations into tenure policy in the future. For example, PPA outputs, such as tenure reform scenarios and co-developed action plans, fed into the KHLK's regulation on social forestry (PP No.83/2016), which established a Working Group of Social Forestry to improve multi-level governmental coordination and accelerate the implementation of forest tenure reform. The social forestry approach is one avenue for Indonesia to tackle large-scale forest reform and related tenure issues. A KHLK participant of FTA's South-South exchange events on forest tenure reform was promoted to director of social forestry, and began to promote gender and the role of women in social forestry regulation and practice, drawing on discussions raised in the exchange. Through these and other supports to the social forestry programme, FTA created opportunities for forest-adjacent communities to advocate for local interests, tenure rights, and SFM. The KHLK later issued a new policy on social forestry that outlines the involvement of local governments and forest-dependent communities to support the realization of the 2015-2019 National Medium-term Development Plan's (RPJMN) targets to allocate 12.7 million ha for forest estate and 9 million ha for agrarian reform. The social forestry programme continues to be a regional priority in Maluku, being included in the 2019-2024 regional medium-term development plan (RPJMD) and the 2019 Work Plan for Social Forestry and Environmental Partnership Center for Maluku-Papua Region (RENJA BPSKL Maluku-Papua 2019). In Lampung, PPA-identified actions were synergized with the 2014-2023 Long-term Forest Management Plan (RPHJP) of the Batulegi Forest Management Unit (FMU) and the 2015-2019 Strategic Plan of the Lampung Provincial Forestry Service (RENSTRA DKP). By integrating and synergizing co-identified priorities from PPA into these action plans and programmes, regional governments are better positioned to implement more effective and context-appropriate actions for social forestry and tenure management.

FTA also conducted policy analyses on Indonesian regulations that have bearing on the governance of mangrove forests, identifying 21 pieces of legislation that involve a crowded and complex regulatory space. While intended to inform more efficient and evidence-based policy implementation of mangrove management, there is no evidence of policy influence through this work. Other national governments are interested in developing tenure mechanisms to govern mangrove forests, such as Tanzania, but there is no evidence of policy influence apart from increased awareness of governance issues in mangrove conservation by Tanzanian stakeholders.

Practice Influence

Through the establishment of formal and informal spaces for multi-stakeholder dialogue, co-learning, knowledge-sharing, and networking, FTA contributed to both global and national practice change. These fora brought diverse actors to discuss forest tenure issues and build professional networks in-country for collective action – some of which continue to be used post-project (e.g., Uganda, Indonesia). Other South-South networks enabled hundreds of government actors, practitioners, and researchers to learn from and share experiences, successes, and failures on forest tenure and reform. Globally, FTA's PPA activities enhanced stakeholder engagement and communication, especially between sub-national governments and forest-adjacent communities, to co-identify feasible and desirable solutions for tenure insecurity and coordinate action. Communities were also given a space to advocate for and voice their needs, reaching mutual understanding and having built trust with governmental decision-makers that served to strengthen their relationships and reinforce their shared goals. Stakeholders were also empowered through these processes as there was joint ownership over the collectively identified solutions for equitable tenure reform.

Globally, FTA supported the capacity-building of at least one thousand government officials, community members, NGOs, and journalists in topics such as gendered aspects of tenure reform and implementation, gender reporting on forestry and natural resource issues, community forest tenure rights, leadership and governance training, and conflict management, among others. In Peru, over 500 people received training in these areas. In Uganda, FTA trained nearly 250 community members in similar areas as well as tree grafting, tree planting assessment, resource analysis, micro-finance schemes, and ACM. This training helped build the knowledge, skills, and confidence of women to increase their participation in and lead forest user groups, taking up ACM practices and other technical skills to dually restore degraded forest areas and improve their incomes. Successful adoption of ACM in Uganda enhanced horizontal and vertical interactions between communities, sub-national and national governmental agencies, and NGOs, which has resulted in greater technical support for community initiatives. With increased participation of women in leadership and decision-making processes in FTA's six study sites, rising from two women in leadership positions before FTA to 36 five years after the first project phase, women gained stronger and a greater breadth of rights and control in forest management, land ownership and tenure, and forest-based income. As of 2017, communities replanted and managed 82 acres (~33ha) of degraded forests in Uganda. In Nicaragua, FTA training in ACM and gender helped communities learn how to foster women's inclusion and leadership in forest governance and resource management. FTA's workshops and trainings in forest monitoring built over 400 people's skills to develop a participatory monitoring tool, identify indicators, implement the tool, and build analytical capacity to use monitoring data to inform community and governmental decisions on forest management. While some resistance remains, Nicaraguan women occupy a more prominent space in discussions on land and forest governance (where they previously were excluded) and there are two cases of sub-national governmental championship for women's leadership in these issues. In Fruta de Pan, one male participant (who later became a member of the territorial government) advocated for women's election into leadership opportunities. In Saupuka, another male member of the territorial government called for a new role for women in government, encouraging younger women to apply.

In Indonesia, FTA and partners (e.g., Lampung Mangrove Center, Samdhana Institute) supported awareness-raising of the political, social, and ecological dimensions of forest tenure reform and implementation. Stakeholders also built capacities in tools for PPA, gender and leadership, legal literacy in forest tenure reform, and conflict management (e.g., Rapid Land Tenure Assessment Dispute Analysis (RaTA AGATA) method). Local governments expressed their appreciation for the training in conflict management, as they found it useful

to reflect on land tenure conflicts, foster participatory involvement of communities, and devise appropriate solutions for conflict resolution. There is also evidence of uptake of the PPA method by local government staff in their day-to-day work on forest governance, in recognition of the value of engaging relevant stakeholders and fostering opportunities for collaboration and coordination. The Samdhana Institute also shared FTA's guidelines for the practical application of social forestry policy that outline the legal and logistical aspects of forest tenure reform and promote recognition of community rights over traditional territories and customary forests. By sharing these guidelines through the Institute's networks in Indonesia and Southeast Asia, other tenure-focused organizations in the United States and Europe adopted the guidelines in their advocacy work. This also served to draw international attention to forest tenure and reform issues.

Research Influence

FTA's research influence was also substantial, as FTA centres continue to fill knowledge gaps on the importance of equitable governance arrangements and tenure for SFM and expand the debate to include mangrove forests. FTA participated in several international conferences and fora, sharing findings to advance the global debate on forest tenure reform and promote gender and tenure-based forest management, such as the World Bank's annual Land and Poverty Conference, the Forest and Livelihoods: Assessment, Research, and Engagement (FLARE) Conference, International Fund for Agricultural Development's (IFAD) Global Call to Action for Indigenous and Community Land Rights, Rights and Resources Initiative's (RRI) Global Coalition, and the International Association for the Study of the Commons (IASC), among others.

Through research partnerships in Peru, FTA enhanced the research capacities of national researchers, academic consultants, and students from the Universidad Agraria la Molina in PPA, forest tenure, and project management, expanding their career prospects. Some professors integrated FTA's findings on forest tenure into their teaching, curricula, and research. Partners designed new research projects on tenure following a similar methodology, and FTA centres continue to collaborate with the German Society for International Cooperation (GIZ) to apply methods and collect data for two other regions in the Peruvian Amazon. Owing to their experience on the topic, several FTA researchers were invited by international organizations to join expert committees on tenure and provide technical advice (e.g., World Bank project, Peru-Norway agreement). In Nicaragua, collaboration with local universities (e.g., Bluefields Indian and Caribbean University (BICU), University of the Autonomous Regions of the Nicaraguan Caribbean Coast (URACCAN)) strengthened working relationships and helped build research capacities in ethnographic methods, gender and masculinity, community forest governance, and more, particularly for graduate students. FTA's research collaborations in Indonesia also enhanced the research capacities of local partners and students from the University of Indonesia (UI), Bogor Agricultural Institute (IPB), University of Lampung (UNILA), Pattimura University (UNPATTI), and the Regional Community Forestry Training Center (RECOFTC), adopting learning and participatory methods into their teaching and research.

Potential Impact

As a result of FTA's contributions to policy, practice, and research on forest tenure reform globally, there is preliminary impact evidence. In Uganda, FTA clearly contributed to participating communities' replanting and management of 103 ha of degraded forest reserves allocated by the NFA, with potential for future expansion. In Indonesia, supporting evidence of FTA's contributions to social forestry programme indicate potential to have influenced the 2015-2019 RPJMN's land allocation targets of 12.7 million ha of forest estate and 9 million ha for agrarian reform, and indirectly contributed to the implementation various social forestry schemes. In another project in Indonesia, the study sites covered 1,142 ha of mangrove forests, where project reach and stakeholder influence have potential to improve management of these areas though there is no evidence to support this achievement to date.

Table 5. Global Forest Tenure Management Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<p>Global:</p> <ul style="list-style-type: none"> • Better representation of women and youth in tenure reform policy processes <p>Uganda:</p> <ul style="list-style-type: none"> • Endorsement of ACM by government <ul style="list-style-type: none"> • FSSD of MWE integrated ACM into second phase of government project • CIFOR invited to inform revision of the national participatory forestry guidelines • Supported registration of 6 community groups to obtain legal recognition <ul style="list-style-type: none"> • Enhanced women's participation in decision-making • Supported negotiation with NFA on land allocation (groups established own rules of engagement) <ul style="list-style-type: none"> • NFA approved new CFM partnership • PPA helped identify actions to strengthen tenure security in future action plans <p>Peru:</p> <ul style="list-style-type: none"> • Facilitated multi-stakeholder fora to design action plans for tenure reform using PPA <p>Indonesia:</p> <ul style="list-style-type: none"> • Informed establishment of the Working Group of Social Forestry • PPA identified prioritized actions to inform regional governmental programmes and existing social forestry schemes <ul style="list-style-type: none"> • Social forestry programme becomes a regional priority in Maluku province (e.g., 2019-2024 RPJMD, RENJA BPSKL Maluku-Papua 2019) • PPA outputs synergized with action plans in Lampung province (e.g., 2014-2023 RPHJP of Batulegi FMU, 2015-2019 RENSTRA DKP)
Practice Influence	<p>Global:</p> <ul style="list-style-type: none"> • Supported national and international networking and knowledge-sharing <ul style="list-style-type: none"> • e.g., South-South exchange on forest-based tenure rights • Enhanced stakeholder engagement, coordination, advocacy, and empowerment on tenure issues • Stakeholder capacity-building in forest tenure reform and gender <p>Uganda:</p> <ul style="list-style-type: none"> • Capacity-building and uptake of ACM by communities <ul style="list-style-type: none"> • Enhanced interaction between stakeholders (e.g., horizontal and vertical linkages) • Increased participation of women in leadership positions and decision-making processes • Enhanced women's empowerment, land ownership, and management <p>Nicaragua:</p> <ul style="list-style-type: none"> • Capacity-building in ACM and gender <ul style="list-style-type: none"> • Community monitoring of self-identified governance issues • Increased participation of women in land and forest governance • 2 government champions advocating for women's leadership <p>Indonesia:</p> <ul style="list-style-type: none"> • FTA and partners (e.g., Lampung Mangrove Center, Samdhana Institute) raised awareness and built capacities <ul style="list-style-type: none"> • Uptake of PPA in practice • Uptake of FTA guidelines
Research Influence	<ul style="list-style-type: none"> • Produced 158 outputs <ul style="list-style-type: none"> • 61 publications (articles, book chapters, working papers, briefs, etc.), 214 citations, 40,615 downloads • 31 tailored products (infographics, manuals, brochures, flyers, etc.), 57 citations, 30,077 downloads • 16 presentations (16,118 downloads, 4,347 views) • 31 blogs (22,267 views) • 15 videos (11,454views) • Filled knowledge gaps on importance of governance arrangements and tenure for SFM • Promotion of tenure-based forest management via international conferences • Enhanced research capacities and career prospects of partners and students <ul style="list-style-type: none"> • Application in teaching, new research on tenure, ongoing research collaborations (e.g., GIZ), invitations to join expert committees on tenure
Potential Impact	<ul style="list-style-type: none"> • 82 acres of degraded forest reserves in Uganda replanted (~33 ha) and 175 acres (~70 ha) under the management of two community groups • KHLK's social forestry policy set a target to allocate 12.7 million ha of forest estate and 9 million ha of land for agrarian reform • Potential project reach in Indonesian study sites (covering 1,142 ha of mangrove forest area)

Agroforestry Concessions in Peru Cluster Results:

To support the implementation of agroforestry concessions (AFC) in Peru, FTA identified and quantified areas eligible for the mechanism, investigated implementation challenges and opportunities (particularly for smallholders), and positioned the mechanism as a solution for climate mitigation and tenure insecurity. Using an OxC approach, FTA researchers generated solutions and tailored recommendations to the specific political, social, environmental, and economic conditions of Peru's AFC issue. Through stakeholder engagement and ongoing research, FTA contributed to the advancement of AFC discussions, technical knowledge, and progress for AFC implementation. Positive changes in Peru's forestry practice are expected to result with greater advocacy for and promotion of AFCs, action taken to improve policy and implementation, and the combination of top-down governance and bottom-up management of agroforestry systems. Key results of the cluster are summarized in Table 6. See Box 1 for the deep dive case study. For a list of projects in this cluster, see Table 27 in Appendix 1.

Box 1. Agroforestry Concessions in Peru, a deep dive case study



ICRAF's technical modules on agroforestry concessions captured the attention of national authorities and farmers alike. San Martín, Peru. (Photo: [ICRAF](#))

Background

On average, close to 120,000 ha of Peru's Amazon rainforest are lost annually from informal and small-scale agricultural expansion (MINAM, 2016). In 2011, the Government of Peru introduced AFCs as an innovative regulatory mechanism with built-in incentives to address illegal encroachment and promote the management of sustainable agroforestry systems. Under the Forest and Wildlife Law of 2011 (No°29763), smallholders residing on public forest land prior to 2011 are eligible to obtain an enabling title (*derecho de aprovechamiento*) in the form of a 40-year renewable lease. Formalization and tenure aimed to incentivize smallholders to establish and manage agroforestry systems in the concession area to promote restoration (e.g., through soil and water conservation, reforestation, etc.), and simultaneously facilitate access to formal markets for their products and services (e.g., timber, NTFP, ecosystem services, carbon sequestration, etc.) to improve livelihoods.

In 2016, the government initiated multi-stakeholder consultations to draft the technical guidelines governing the implementation of the AFC mechanism. FTA researchers participated in these discussions to provide information and support processes that would contribute to better governance and management of AFCs.

Policy Influence

FTA plays an instrumental role in informing ongoing AFC-related processes at multiple levels and with different actors in the system. Through bilateral discussions and knowledge-sharing with regional and national government actors from relevant agencies and ministries (e.g., the National Forest and Wildlife Service (SERFOR), MINAM, the Ministry of Agriculture and Irrigation (MINAGRI), regional governments in San Martín and Ucayali), policy-makers gained understanding to inform future policy and technical guideline development, particularly in terms of smallholder heterogeneity and differing capacities to comply with regulations. By raising governments' awareness to the regulatory gaps and feasibility of AFC implementation, as well as offering practical recommendations, FTA made AFC dialogue spaces more productive and provided actors in decision-making positions with a roadmap to take AFC implementation forward. Moreover, FTA successfully drew attention to AFCs as a multi-issue solution, as findings demonstrated both the mitigative carbon emissions potential and socio-economic potential (e.g., tenure, livelihoods, economy) of the mechanism if effectively implemented. This knowledge enabled MINAM to place the mechanism on the agenda for national forestry and climate change strategies (e.g., NDC, Green Growth Strategy). The Loreto government used FTA's projections to establish AFC targets in a proposal to the Ministry of Economy and Finance (MEF) for resources to fund AFC implementation. The national government is also promoting AFCs as part of the economic recovery and reactivation plan for COVID-19.

Positioning AFCs with issues high on the political agenda, such as climate change, sustainable development, and tenure, succeeded in gaining government and NGOs' interest. NGOs like Mecanismo de Desarrollo Alternos (MDA) successfully lobbied the regional government in San Martín for AFC pilots using FTA's findings. Quantifying AFC's carbon emissions reduction potential and potential recipient impact in each study region provided stakeholders with data-driven evidence to draw support for AFCs based on the mechanism's ecological and socio-economic potential. As a result, local and international NGOs have greater interest in and commitment to promote and support AFC implementation, entering into official collaborations with FTA centres. For example, ICRAF was invited to join a consulting committee formed by the regional government in San Martín, EII, and other entities working on the AFC issue. FTA continues to engage and provide technical inputs to national government agencies (e.g., SERFOR, Supervisory Agency of Forest Resources and Wild Fauna (OSINFOR)), regional authorities, and partners (e.g., GGGI) in meetings and through a partner consortium to support better AFC implementation and scaling. Enhancing data information systems, capacity for coordination and alignment, and extension services for holistic AFC governance are core foci of FTA's follow-up projects. For example, the current system for AFC implementation is siloed, highly bureaucratic, and processed manually. FTA aims to assist the government to develop a more effective, transparent, consistent, and aligned system that integrates the processing, monitoring, and appraisal functions necessary to grant a concession contract.

During the drafting of the technical guidelines, FTA researchers provided detailed inputs to improve the guidelines; unfortunately, this feedback was not integrated into the published set of guidelines. However, modifications have been proposed and there are indications that SERFOR plans to improve the guidelines based on scientific knowledge. SERFOR made a request to the Peruvian Society of Environmental Law (SPDA) – a local NGO partner – to prepare recommendations for revisions based on FTA's findings. SPDA completed the first review, and has begun to devise recommendations. FTA researchers continue to support this process, bringing field insights and empirical learning from granted AFCs and pilots.

Practice Influence

FTA convened actors with shared goals of reducing deforestation, improving landscape governance and management, and benefitting smallholder livelihoods to enhance coordination and collaboration for AFCs. This was accomplished through a variety of workshops, meetings, and presentations with government officials, NGOs, and partner organizations. Informants lauded FTA's knowledge contributions and evidence-based recommendations, as these stimulated collective dialogue for enhanced AFC implementation, noting

that “There would have been a public conversation, but there would not have been data to back it” (GIZ partner). Regional governments and SERFOR continue to invite FTA researchers to meetings on AFC implementation. In recognition of FTA's expertise in AFCs and zoning approaches, the regional government in San Martín established a technical group, inviting ICRAF and other NGOs to join. This technical group advances discussions on AFC issues, advises the technical teams responsible for AFC implementation, and is tasked with forest zoning to move progress on AFC implementation forward. FTA also supported multi-level coordination between government and NGO partners (e.g., SERFOR, Global Green Growth Institute (GGGI), SPDA) and succeeded in securing follow-up funding to implement and scale the AFC mechanism in pilots and as part of follow-up projects with FTA.

As a result of FTA's sharing of zoning approaches through workshops and trainings, NGOs came to recognize the value of and gained an interest in providing technical support for micro-zoning to governments. For example, MDA facilitated training for regional governments, supported by FTA researchers, to enable governments to accurately zone and identify eligible areas for concessions. As a result of this training, regional governments built upon existing skills to apply the government's meso-zoning approach required by the technical guidelines, as well as built governments' capacities in the new micro-zoning method developed by FTA. This training prepared regional governments to produce more accurate land suitability maps that would be an empirical basis upon which to make informed decisions for AFC implementation. MDA has since taken up the micro-zoning approach in other projects. In addition, MDA applied the micro-zoning approach as part of the pilots run in cooperation with the regional government in San Martín. With this successful trial, government and NGO informants remarked on the utility and precision of the land suitability maps produced using the micro-zoning method (1:25,000 scale), which was deemed useful to improve zoning accuracy to delineate at the farm-level, compared with the governments' meso-level maps (1:100,000 scale).

At the community level, FTA's engagement and participatory activities with 200 smallholders across study sites in San Martín and Ucayali increased the utility of the research process and outputs for smallholders. For example, through workshops with community members, participants learned about the AFC mechanism and its requirements, how to register, and obtained know-how for more sustainable agroforestry-based practices. FTA also co-produced maps of each participant's farm using participatory geographic information systems (PGIS), which were shared back with participants to be used for AFC registration. The PGIS activities helped increase smallholders' awareness, understanding of, and therefore interest in the registration process. Assuming subsequent policy change reflects a better understanding of the challenges smallholders face to comply with existing regulations, locally appropriate incentives will enhance smallholder interest and capacity to register and comply with the regulations.

Several AFC pilots have been launched since 2018. Many pilots were informed by FTA's technical knowledge, methods, data, and field experiences. For example, as part of a pilot co-implemented by MDA and regional governmental authorities in San Martín, FTA's smallholder data, the micro-zoning approach, and technical inputs were taken up and used to inform the design of the pilots. These pilots trialed the AFC registration and implementation process, awarding 14 concessions to smallholders in late 2018. In a follow-up project, additional pilots will be implemented across three departments in the Peruvian Amazon (i.e., San Martín, Loreto, and Amazonas) with approximately 150 farmers to test how the technical regulations are implemented in practice, identify regulatory and process gaps, and make adjustments to improve the implementation process. The aim is to devise a field-tested, cost-effective, and optimal method that will be taken up by regional governments to support scaling of the AFC mechanism. To date, 33 AFC contracts have been granted in San Martín, with an additional 12 concessions recently approved. Key informants noted that progress would have been much slower in the absence of FTA, especially with respect to the launch and implementation of AFC contracts.

Research Influence

FTA built and enhanced research capacities, advancing young researchers' careers into government positions in NRM/climate divisions and academia. FTA researchers also strengthened their working relationships with government and NGOs, as well as their research partnerships, which have enabled FTA and partners to continue to advance and build momentum for research on AFCs. FTA findings were used to develop two additional research proposals, which were successfully funded. These follow-up projects involve close



Two new holders of agroforestry concessions in Marisol and Lamas, San Martín, Peru. (Photo: [ICRAF](#))

ongoing collaboration between FTA researchers, government, and NGO partners, and support the future realization of policy and practice outcomes.

Potential Impact

With effective implementation and successful scaling of AFCs across eligible areas in Peru, 452,000 ha of forests and 1 million ha of land are projected to become more sustainably managed by an estimated 123,000 concession beneficiaries. The 33 concessions granted to date cover 193 ha.

Assumptions

Ensuring the sustainable management of agroforestry systems in Peru requires the integration of incentives and supporting infrastructure for smallholders to be able to comply with regulations and maintain their AFCs, such that they are feasible, economically profitable, and ecologically sustainable in the long-term. This support requires effective governance of the concessions by relevant ministries, as top-down governance will affect the sustainable management of agroforestry systems on the ground. It is presumed that more integrated and better-informed approaches taken by governments in decision-making for policy development and implementation will result in more effective governance, in part because intra-governmental cooperation maximizes the utility of resources (i.e., financial, knowledge, human capital, etc.) to align and streamline activities. Coordination between different ministries also necessitates clearly defined responsibilities, alignment and interoperability of policies at the centralized and de-centralized levels, and political will. There is high potential for AFCs to simultaneously address priority issues on the political agendas of ministries like MINAM, SERFOR, MINAGRI, and MEF, such as the mitigation of climate change, deforestation, land degradation, unsustainable land use practices, and livelihoods.

Strengthening bottom-up management is also necessary. Smallholders' adherence to the requirements is a major determining factor, and rests on the assumption that smallholders have capacity to comply with the regulations. The legal security provided by the enabling title gives smallholders responsibility for and a sense of ownership over their concession so that they are more likely to sustainably manage the land. Moreover, smallholders can be supported to limit land, water, and forest degradation on their concession and enhance their productivity through regulatory provisions that offer technical assistance and credit

access. With extension services, smallholders would be able to produce a greater quantity of higher quality products using techniques that are less environmentally damaging. Concession areas would also be monitored and thus degradation can be more efficiently mitigated. However, smallholders have not yet accessed technical assistance, likely as the responsibilities for the provision of extension services remain unclear and the technical infrastructure is not yet in place. Furthermore, the regulations do not currently account for smallholder heterogeneity, which limits who is able to apply for, receive, and maintain a concession. FTA succeeded in spreading understanding amongst relevant policy-makers of the need to accommodate different typologies of smallholders within policy, though this remains a policy gap and an obstacle for smallholders who would otherwise be eligible for an AFC. Creating structures to support smallholders to comply and benefit the most from the mechanism is a next step for deliberation.

Table 6. Agroforestry Concessions in Peru Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<ul style="list-style-type: none"> • Regional governments (San Martín and Ucayali) better understand AFC implementation options and compliance barriers to smallholders • SERFOR understands the need to distinguish smallholders in policy (i.e., smallholder heterogeneity) • AFC issue is on the agenda of national forestry, climate change, and economic recovery strategies • Indications of multi-level coordination • NGOs successfully lobby government for AFC pilots
Practice Influence	<ul style="list-style-type: none"> • Enhanced interest in, commitment to, and action on AFCs among NGOs • New relationship and mutual interest recognized between ICRAF, GGGI, and SPDA for ongoing collaboration in follow-up projects • Governments have capacity to identify areas eligible for AFCs using the meso-zoning approach detailed in the technical guidelines <ul style="list-style-type: none"> • San Martín regional government proceeds with a technical group on zoning • NGOs built capacities in micro-zoning (from FTA training) <ul style="list-style-type: none"> • NGOs adopted micro-zoning in projects and AFC pilots in San Martín (in cooperation with regional government) • 200 participating smallholders learned about AFCs, registration opportunities, and agroforestry practices via FTA • San Martín regional government ran 14 AFC registration pilots in late 2018 <ul style="list-style-type: none"> • 14 smallholders in San Martín received AFCs as part of the pilot, adopting agroforestry practices • Follow-up project carrying out 3 additional pilots in San Martín, Loreto, and Amazonas • To date, 33 AFCs contracts have been registered in San Martín (12 more recently approved)
Research Influence	<ul style="list-style-type: none"> • Produced 143 outputs <ul style="list-style-type: none"> • 7 publications (articles, reports, etc.), 45 citations • 129 tailored products (farm maps, infographics, modules, datasets, presentations, etc.), no view/download data • 6 blogs (no view data) • 1 video (98 views) • Enhanced research partnerships • Strengthened research capacities and career advancement into government and academia • SUCCESS findings used to develop 2 new research proposals to pursue further gaps <ul style="list-style-type: none"> • Follow-up projects involve close ongoing collaboration with government and NGO partners
Potential Impact	<ul style="list-style-type: none"> • 123,000 AFC beneficiaries (estimation of the potential number of smallholder households) • 1 million ha of land and 452,000 ha of forest eligible for AFC (potential eligibility estimation) <ul style="list-style-type: none"> • 33 concessions cover 193 ha

Sustainable Resource Management of Non-Timber Forest Products in Peru Cluster Results:

To promote multi-use and sustainable resource management of tree and forest species in Peru, FTA conducted research to estimate the optimum allowable timber harvest that would not negatively affect Brazil nut production. Data analyses found that selective logging of one or two trees per hectare had little influence on Brazil nut production as larger trees were able to grow and produce more fruits; however, more intensive logging affected both fruit count and size. Key results of the Sustainable Resource Management of NTFP cluster are summarized in Table 7. For a list of projects in this cluster, see Table 28 in Appendix 1.

Policy Influence

Upon discovery that Brazil nut concessions function as *de facto* timber concessions or are also being granted titles for non-forest use (e.g., agriculture, mining) owing to regulatory loopholes, FTA and SPDA (a NGO partner) produced a report on overlapping land use in the Peruvian Amazon to raise local and national awareness of the need to revise and harmonize existing regulations for Brazil nut concessions. Using their findings, FTA liaised with national and regional governments and NGOs to integrate scientific evidence into national policy guidelines that were under review (Forestry Law No.29763, Article 57). Initially, FTA's policy influence was successful as the guidelines published FTA's recommended limit (2 trees/ha); however, upon lobbying from concessionaires against this more restrictive figure, the government reinstated the original limit (5m³/ha) and instead referenced FTA's research in a footnote as a non-compulsory recommendation. Regardless, this marked the first time science-based information was used to draft policy guidelines in Peru, setting a precedent for future policy-making in the country. There are indications that other government agencies have referred to FTA's research and Brazil nut data to inform governance decisions and operationalize the findings in their work, such as MINAM, SERFOR, and regional governments in Madre de Diós.

Practice Influence

FTA influenced the learning and knowledge of NGOs, practitioners, and participating concessionaires on sustainable resource management in Brazil nut concessions, and stimulated wider debate on sustainable multi-use management amongst these stakeholders. Practitioners built capacities in multi-use management practices through FTA training to enhance the quality of technical support and extension services given to concessionaires. Local NGOs, practitioners, and university partners continue to translate FTA findings on multi-use practices to concessionaires to encourage grassroots changes in concession management practices.

Research Influence

Through this project, FTA strengthened research collaborations with a local university – Universidad Nacional Amazónica de Madre de Diós (UNAMAD) – and built students' capacities in research methods (e.g., field measuring techniques), fieldwork, and project management. UNAMAD researchers have taken up the methods and findings in teaching, and other researchers have applied similar approaches in new research projects on Brazil nut management (e.g., projects led by the Swiss Federal Institute of Technology (ETHZ), the Research Institute of the Peruvian Amazon (IIAP), and Wageningen University), one of which CIFOR researchers were invited to co-develop the proposal for the European Union (EU).

Potential Impact

FTA's study sites included five Brazil nut concessions, covering 4,000 ha. It is possible that the direct involvement of these five concessions and their respective stakeholders in the project would have more influence on application of learning to sustainably manage these areas. Overall, 2.6 million ha in Madre de Diós, Peru are rich with Brazil nut forests, with an estimated 1 million ha under concessions (Perales & Guariguata, 2015). With effective implementation and enforcement of the policy guidelines, there is potential for 1 million ha of Brazil nut concessions to become more sustainably managed. However, this also requires voluntary adherence by concessionaires to change to selective logging practices based on FTA's recommended logging limit and in recognition of the negative effects that timber extraction has on both Brazil nut productivity and the sustainability of their livelihoods.

Table 7. Sustainable Resource Management of NTFP in Peru Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<ul style="list-style-type: none"> • FTA and NGO partner raised awareness on need to revise and harmonize regulations for timber and Brazil nut management • Project set a precedent for use of science-based information in policy • Initially, FTA findings informed limit in Brazil nut concession management guidelines (can log up to 2 trees/ha) <ul style="list-style-type: none"> • However, original limit (5m³/ha) was reinstated following lobbying by concessionaires; findings moved to a footnote as an optional recommendation
Practice Influence	<ul style="list-style-type: none"> • NGOs, practitioners, and concessionaires learned about negative impacts of timber extraction on Brazil nut production • FTA stimulated debate on sustainable multi-use management in Brazil nut concessions • NGO (e.g., SPDA) promoted FTA findings during policy drafting process • Technical capacity development of practitioners (<i>regentes</i>, extensionists) • Local NGOs, practitioners, and university partners translate FTA findings on multi-use practices to concessionaires
Research Influence	<ul style="list-style-type: none"> • Produced 5 outputs <ul style="list-style-type: none"> • 5 publications (articles, working papers, briefs, etc.), 102 citations • 6 blogs (no view info) • 2 videos (47,357 views) • Research collaboration established with UNAMAD to support field activities • 9 UNAMAD students built research capacities • Uptake of findings in teaching by UNAMAD professor • FTA method and findings used in external research projects (e.g., ETHZ, IIAP, Wageningen University) • EU-funded project is being developed in partnership with NGOs and regional government to advance sustainable multi-use of Brazil nut concessions
Potential Impact	<ul style="list-style-type: none"> • Potential for sustainable management of 1 million ha of Brazil nut concessions in Madre de Diós, Peru

Community Forest Management in Mesoamerica Cluster Results:

To ensure continued sustainable management of forested land in Mesoamerica, FTA supported a project that investigated the socio-economic benefits and governance-related constraints and opportunities of community forestry in the Guatemalan and Nicaraguan contexts. Key results of the Community Forest Management in Mesoamerica cluster are summarized in Table 8. For a list of projects in this cluster, see Table 29 in Appendix 1.

Policy Influence

In Guatemala, in preparation for the renewal of concessions which were granted in the 1990s, FTA prepared and shared findings with governments demonstrating communities' successful and sustainable management of community forest concessions and the viability of the model for forest governance. These findings were subsequently used by the National Council of Protected Areas (CONAP) in September 2019 to inform the technical norms for the renewal process of community forestry concessions. In December 2019, the first of nine eligible concession contracts in the Maya Biosphere Reserve was renewed for another 25-year period, giving continued rights to members of the Carmelita Cooperative to sustainably manage the forest resources within the concession area. FTA's evidence of the socio-economic performance of community forest concessions was used to obtain Carmelita Cooperative's renewed concession contract (benefiting ~380 people). The successful renewal of the Carmelita concession sets an encouraging precedent for the remaining eight concessions, which will be up for extended renewal between 2022 and 2027. There are promising indications of governmental support, notably CONAP, to implement a roadmap to renew other active community forest concessions. There is no evidence of policy influence in Nicaragua.

Practice Influence

In terms of practice influence, 180 community members in Petén, Guatemala learned about CFM through FTA's experiential training, germination trials, and workshops. Community organizations like the Association of Forest Communities of Petén (ACOFOP) continue to support communities to manage their concessions by building community capacities, acting as an intermediary in discussions with government, and advocating for concession

renewal and women's participation in forest governance. With this support, more women and young people in Petén are participating in and holding leadership roles in community organizations involved in CFM.

Research Influence

Research influence includes successful research collaborations with the Centro Universitario del Petén, graduate student research capacity-building, and uptake of methods by a research partner. In a continuation of the research in a new study in 2017, the Rainforest Alliance adopted the same methodology to collect data for the remaining unstudied active concessions (i.e., Yaloch, San Andrés, La Unión), serving to complete the dataset for active concessions within the Maya Biosphere Reserve. A pilot led by another CRP (i.e., Policies, Institutions, and Markets (PIM)) also built on the knowledge base and engagement processes initiated by FTA in the Maya Biosphere Reserve, investigating the underlying reasons for the failure of three concessions that were either cancelled or suspended (i.e., San Miguel, La Colorada, La Pasadita) and options for their rehabilitation. FTA researchers received invitations to contribute their expertise to the United Nations Development Programme's (UNDP) 2020 Human Development Report for Guatemala.

Potential Impact

Over 50,000 ha will be managed under the Carmelita Cooperative's concession contracted for the next 25 years. Potential impacts are projected in terms of future concession contract renewal for a total of 352,807 ha across nine community forestry concessions in Guatemala's Maya Biosphere Reserve. FTA's influence on policy and practice in Nicaragua is unclear. There is potential for 1.5 million ha in Nicaragua to be better managed within the North Atlantic Autonomous Region (RAAN) if improved CFM practices are effectively implemented, but there is no evidence of outcomes in Nicaragua to date.

Table 8. Community Forest Management in Mesoamerica Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<ul style="list-style-type: none"> FTA findings informed technical norms for CONAP's community forest concession renewal <ul style="list-style-type: none"> First community forest concession contract renewed in December 2019 (e.g., Carmelita) using FTA findings 8 other community forest concessions are up for renewal in the coming years (2023-2027) Anticipated adoption of FTA's tree ring analysis method by CONAP's team responsible for forest management in the Maya Biosphere Reserve to monitor growth rates
Practice Influence	<ul style="list-style-type: none"> Petén communities learned about and built capacities in community forestry governance and management Community organizations (e.g., ACOFOP) continued to support community forestry processes <ul style="list-style-type: none"> Community capacity development Intermediary between community and government Advocacy for women's participation Advocacy for concession renewal Petén community built relationships through dialogue with government Enhanced participation and leadership of women in community organizations in Petén Indication of Petén community involving young people in community organizations for future leadership of community forestry
Research Influence	<ul style="list-style-type: none"> 9 outputs <ul style="list-style-type: none"> 7 publications (articles, working papers, briefs, etc.), 37 citations, 123 downloads 5 tailored products (posters, etc.), 141 downloads, 160 views 4 blogs (no view info) Research collaboration established with Centro Universitario del Petén (6 students involved) to assess impact of governance and policy on community forestry benefits 6 graduate students (5 masters, 1 doctoral) and 6 undergraduate students built research capacities Continuation of a research pilot by Rainforest Alliance using FTA's method in 3 inactive concessions post-project (to collect a complete database of the Maya Biosphere Reserve) FTA researchers invited to contribute to the UNDP's 2020 Human Development Report for Guatemala
Potential Impact	<ul style="list-style-type: none"> 53,597 ha in Guatemala renewed under community forestry concession contract (potential for 352,807 ha in total) Potential for 1.5 million ha under community-owned area in Nicaragua (no evidence of outcomes in Nicaragua to support impact realization)

Management of Trees on Farms in Mesoamerica Cluster Results:

In 2012, FTA established a network of sentinel sites to conduct long-term research on the temporal and spatial dynamics of trees and forests in different landscapes around the globe. In the Nicaragua-Honduras Sentinel Landscape (NHSL), which is part of the Mesoamerican Biological Corridor, FTA investigated issues around the forest transition curve, conducted biophysical and socio-economic studies on the use of trees on farms (TonF), and co-identified indicators to monitor these landscapes. TonF are a prevalent feature in the NHSL and play an integral ecological and economic role in agricultural, silvopastoral, and agroforestry systems, but remain invisible in regulatory, extensionist, and educational agendas – in part because data are limited and not typically monitored by national MRV systems (Somarriba et al., 2017; Suber et al., 2020). Moreover, the omission of TonF training for rural extension agents is excluded in the technical advice given to farmers as a consequence. To bring visibility to TonF and fill these gaps, FTA generated land use maps, inventories, and datasets of TonF, produced recommendations and guidance for the incorporation and management of TonF into policy and practice, and provided training for extensionists and farmers through field schools. Key results of the Management of Trees on Farms cluster are summarized in Table 9. Information about this cluster can be found in Table 30 in Appendix 1.

Policy Influence

FTA had notable policy influence in Honduras. Through participation in technical dialogues and knowledge-sharing via webinars and workshops, FTA provided governmental decision-makers from different ministries with evidence-based knowledge on the extent, benefits, and potential of TonF. Governments learned that TonF provide similar ecosystem services as forests, such as connectivity between fragmented habitats, in situ conservation, agrobiodiversity, soil and water cycling, and carbon sequestration for climate change mitigation. As a result of these engagements, there appears to be growing recognition of the role TonF can play to meet national goals and uphold international commitments. For example, TonF are now included and reflected in Honduras' National Biodiversity Strategy as part of the national mandate to assimilate the United Nations Convention on Biological Diversity (UNCBD). FTA partners continue to support governmental stakeholders to incorporate the potential of TonF as part of the implementation of the National Biodiversity Strategy. Government staff from the General Directorate of Biodiversity (DIBIO) took up indicators of TonF contributions to biodiversity conservation as well as FTA's data from the pilot in the Catacamas Landscape to include in national reporting to the UNCBD. Building on DIBIO's uptake, there are indications of similar processes to include Catacamas Landscape data in reporting to the UNFCCC and the national Forest Landscape Restoration Programme. Through the pilot in Catacamas, FTA also targeted the National Platform for Sustainable Livestock Production (MNGS) as an avenue to influence, as it is a pivotal space for decision-making and negotiation for the livestock sector and is embraced by the National Federation of Agricultural and Livestock Producers of Honduras (FENAGH). Through the MNGS, FTA's findings catalyzed FENAGH's advocacy for the introduction of TonF as a part of sustainable livestock management practices. This advocacy served to reinforce FTA's knowledge-sharing with MNGS stakeholders on live fences as an innovative fencing alternative using trees that could provide additional income (e.g., augment profits from livestock, new income from tree products) and reduce the carbon footprint of livestock production. As a result, FTA influenced and contributed to the MNGS' recognition and inclusion of live fences (notably promising live fence designs and TonF management) as a best practice in the Nationally Appropriate Mitigation Actions (NAMA) Livestock Initiative. Moreover, the MNGS also committed to carry out a five-year pilot testing the implementation of various on-farm innovations, including live fences and TonF, across 1,200 farms.

Practice Influence

In terms of practice influence, FTA helped establish multi-stakeholder platforms and held workshops with representatives from government, the private sector, NGOs, farmers, and academia to foster knowledge-sharing. These spaces created opportunities for dialogue between decision-makers and other system actors on topics related to biodiversity, environmental management of protected areas, forest management, livestock management, cocoa, and coffee. There are indications that the networking and knowledge-sharing facilitated in these spaces have enabled the coordination of activities among participants. In Honduras, FTA provided technical support and training to government agencies like the Forest Conservation Institute (ICF) to develop software to collect, store,

and report TonF data as part of the Information System for Forest Management and Monitoring (SIGMOF). As a result of this engagement and successful uptake in Catacamas in the livestock sector, other government agencies like DIBIO, the Ministry of Natural Resources and the Environment (MiAmbiente), and the Honduras Coffee Institute (IHCAFE) have expressed interest to adopt FTA's monitoring tools for TonF in other regions and sectors. For example, deliberation is underway with regards to replication of TonF monitoring in the dry corridor and coffee-producing areas in southern Honduras. FTA also helped equip over one thousand practitioners and farmers to use shade-modelling software to enhance their decision-making and TonF management practices; see Box 2 to learn more about FTA's contributions to extensionist and smallholder capacity-building in ShadeMotion. In addition to training and workshops, FTA also established a farmer field school programme to encourage farmers and smallholders to adopt science-based agroforestry and agro-ecological innovations across one thousand farms in the NHSL. With the aim of attitudinal change, the field school programme taught farmers to view TonF as a crop requiring proactive management – opposed to a provision of nature that does not need management – so that farmers could reap the full advantage of their agroforestry systems. The field school exposed farmers to modelling tools, such as ShadeMotion and TonFanalyzer, to re-design and optimize the use of TonF and the shade they provide for the management of their plots. Participating Honduran cocoa farmers have found success with the combination of these tools to visually model, re-design, and plan for the management of shade-grown cacao.

Research Influence

Through the work on TonF, FTA was able to influence partner organizations, students, and future research on the topic. Building research capacity was a predominant focal area of this influence. For example, through training on participatory and biophysical field methodologies, 42 people from partnering government institutes (e.g., ICF in Honduras), NGOs (e.g., Fundación Madera Verde (FMV)), and universities (e.g., Universidad Nacional de Agricultura (UNA), URACCAN) built new skills in research approaches and methods to support their future work. Partnering with universities in Nicaragua, Honduras, Colombia, and France, FTA's research initiatives in the NHSL also fostered opportunities for 42 students to build upon existing and develop new research skills through field work and university exchanges. Many more students gained new skills in the ShadeMotion software; learn more about student capacity-building in and uptake of ShadeMotion in research curricula in Box 2. Through the NHSL research initiative, FTA has been able to mobilize connections with local organizations established through Territorial Learning Alliances and strengthen collaborations and synergies with other ongoing FTA, CGIAR, and external projects, such as the Mesoamerican Agri-environmental Programme (MAP), Forests and Forest Management in Central America, the Central American Program for the Comprehensive Management of Coffee Rust (PROCAGICA), the International Model Forest Network, and Initiative 20x20, among others. Consultations through these alliances helped focus and built continuity for research in the region. In addition to supporting existing research, FTA also supported the preparation of new project proposals in alliance with colleagues from Bioversity International, CIRAD, CATIE, ICRAF, and other research institutions to continue to build the momentum for research on TonF in the NHSL.

Box 2. FTA Innovation Showcase: ShadeMotion

Agroforestry development and management require understanding of how to optimize the benefits of light and shade for crops like coffee and cocoa. Sophisticated modelling systems for light and tree growth dynamics are available (e.g., plant-geometry physiology models), but these often require intensive and complex field data for calibration, which may act as a barrier for uptake.

Over thirty years, CATIE developed and advanced the ShadeMotion innovation, which is an open-source technology that models tree shade and can inform tree-planting practices to improve crop yields, enhance agroforest sustainability, and support climate adaptation of both farm and agro-ecosystems. Users can explore different tree-planting configurations, mixtures of tree species, and optimal shade canopies for a specific location for one moment in time or a full planting cycle. When combined with knowledge of a crop's shade tolerance, ShadeMotion can be used to guide the design and management of an agroforestry system's biological and financial productivity.

To influence agroforestry practices, CATIE engages practitioners (e.g., extension staff, technicians) and farmers in capacity-building activities across several projects in Latin America via farmer field schools, demonstration farms, and training workshops. At the practitioner-level, CATIE engages extension staff and technicians to share learning about shade management and climate-smart agricultural practices and build practitioners' technical skills in ShadeMotion. Over FTA's lifespan, 372

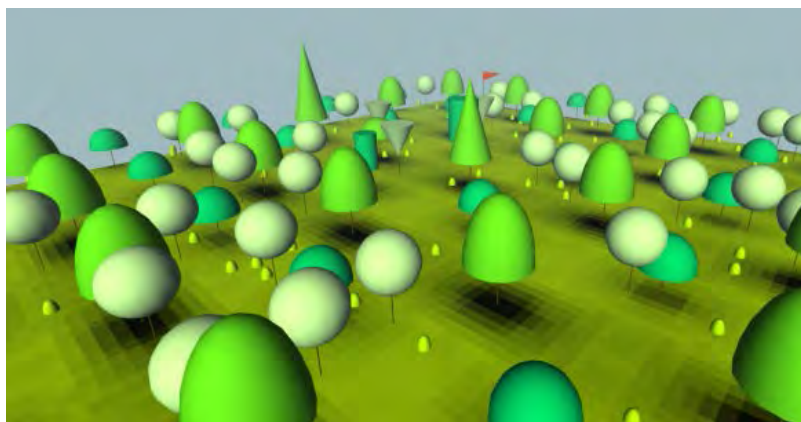


Figure 5. Example of ShadeMotion modelling. (Photo: [CATIE](#))

practitioners participated in ShadeMotion training from CATIE's Cacao Technical team. Through partnership with the Korean-Latin American Food and Agriculture Cooperation Initiative (KoLFACI), 44 extension staff received training in ShadeMotion since 2016. In 2019, ShadeMotion was taught to 54 extensionists to support a project led by the Nicaraguan Ministry of Family, Community, Cooperatives and Associative Economy (MEFCCA) (e.g., *El Proyecto Adaptación a Cambios en los Mercados y a los Efectos del Cambio Climático en Nicaragua* (NICADAPTA)). In 2020, the *Maximando Oportunidades en Café y Cacao en las Américas* (MOCCA) Project trained 125 extension staff from across Latin America to use ShadeMotion to manage cocoa agroforestry systems. As more practitioners are exposed to, see value in, and build technical skills in ShadeMotion, the more likely they are to share the innovation with other actors and apply the software to inform the technical assistance they provide to farmers.

At the community-level, farmers learned about agroforestry systems, climate change, and shade management and built technical skills using ShadeMotion. Farmers were then expected to apply this learning and use ShadeMotion to inform their management of TonF. To date, approximately 650 farmers in Honduras have learned about and used ShadeMotion through the Chocolate4All Project (~500 farmers) and the International Climate Initiative Trees on Farms (IKI-TonF-Honduras) Project (~150 livestock farmers). As more farmers learn about, acquire skills in, and utilize ShadeMotion to inform their TonF management decisions, it is expected that farm management and agroforestry practice will become more sustainable, climate-resilient, and more productive. Over time, widespread adoption of ShadeMotion as part of farmers' and practitioners' agroforestry and TonF management practices is expected to lead to improved crop quality, yields, and livelihoods.

To influence education and research, CATIE offers ShadeMotion training in postgraduate courses (e.g., Masters in Agroforestry and Sustainable Agriculture) and short-term trainings (e.g., specialized courses on cocoa/coffee and agroforestry). Over 150 students have received training to date through CATIE's programmes and built skills in the ShadeMotion software. Programme graduates are expected to apply learning and use the tool in their future careers. Several graduates, now professors at Colombian universities (e.g., Universidad de Nariño (UDENAR), Universidad del Tolima (UTOLIMA)), have integrated ShadeMotion into their curricula on agronomy and forestry, expanding student capacities in the tool. At UDENAR, ShadeMotion is taught to approximately 240 students in courses on agroforestry and agrisilvicultural systems each year. Over the past 12 years, ShadeMotion has been taught to over 500 UTOLIMA students in courses on plant physiology, agroforestry, and silvopastoral systems. In alliance with Universidad Escuela de Agricultura de la Región Tropical Húmeda (EARTH), the MOCCA Project supported training for 40 students in Costa Rica. Collective exposure is expected to build awareness of ShadeMotion among wider academic audiences and support uptake of the tool in new research areas.

Potential Impact

With high potential for continued influence on policy, monitoring, and practice uptake of TonF in the NHSL, it is likely that the 6.8 million ha of forests, agricultural lands, cattle ranches, and agroforestry systems that constitute this landscape will become more sustainably managed over time as a result of enhanced top-down and bottom-up governance.

Table 9. Management of Trees on Farms in Mesoamerica Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<p>Honduras:</p> <ul style="list-style-type: none"> • Growing recognition of role TonF can play to meet national goals and international commitments • Supported inclusion and reflection of TonF in National Biodiversity Strategy <ul style="list-style-type: none"> • Uptake of TonF indicators and Catacamas Landscape data by DIBIO in national reporting to UNCBD • Indications of intentions to report Catacamas Landscape data to UNFCCC and the national Forest Landscape Restoration Programme • Influenced MNGS decision-making and FENAGH advocacy <ul style="list-style-type: none"> • Inclusion of live fences in the national NAMA-Livestock Initiative • MNGS committed to pilot implementation of on-farm innovations across 1,200 farms over the next five years
Practice Influence	<ul style="list-style-type: none"> • Established multi-stakeholder platforms and workshops for knowledge-sharing and coordination across the region <p>Honduras:</p> <ul style="list-style-type: none"> • Supported ICF to develop software and report on TonF in SIGMOF <ul style="list-style-type: none"> • Indications of government interest to adopt FTA's monitoring tools for TonF and replicate in other regions • 595 extensionists built capacities in ShadeMotion (via KoLFACI, MEFCCA, and MOCCA initiatives) • ~650 farmers built capacities in ShadeMotion (e.g., Chocolate4All, IKI-TonF-Honduras) • Established farmer field school programme to encourage adoption of agroforestry and agro-ecological innovations across 1,000 farms in NHSL
Research Influence	<ul style="list-style-type: none"> • 115 outputs <ul style="list-style-type: none"> • 27 publications (articles, working papers, briefs, etc.), 196 citations • 37 theses, 91 citations • 17 tailored products (manuals, field guides, brochures, presentations, posters, etc.), 58 downloads, 394 views • 9 datasets (1,143 downloads) • 16 blogs (7,538 views) • 9 videos (4,462 views) • Enhanced research capacities of partner organizations <ul style="list-style-type: none"> • 42 representatives from government institutes, NGOs, and universities were trained in participatory and biophysical field methodologies • Enhanced research capacities of graduate students <ul style="list-style-type: none"> • 42 students (41 Masters, 1 post-doc) learned from field work and exchange • >150 students built research capacities in ShadeMotion through CATIE's postgraduate courses • Uptake of ShadeMotion in university curricula in Colombia and Costa Rica <ul style="list-style-type: none"> • ~240 UDENAR students build technical skills in ShadeMotion each year • >500 UTOLIMA students built technical skills in ShadeMotion since 2013 • 40 Universidad EARTH students built technical skills in ShadeMotion (via MOCCA Project) • Enhanced collaborations and synergies with other FTA, CGIAR, and external projects <ul style="list-style-type: none"> • Supported development of new research proposals in the NHSL
Potential Impact	<ul style="list-style-type: none"> • The target NHSL covers 6.8 million ha, supporting 822,175 smallholder households <ul style="list-style-type: none"> • The Catacamas Landscape covers 62,500 ha in Honduras

Sustainable Conservation and Management of Protected Areas in Mozambique Cluster Results:

To influence sustainable management and enhance the conservation of miombo woodlands in Mozambique, FTA supported a project that investigated the damaging effects of fire and honey harvesting practices on important tree species in the Niassa National Reserve. FTA developed recommendations for reserve managers and communities on how to more sustainably manage and conserve lands and forests within the Reserve. Key results of the Sustainable Conservation and Management of Protected Areas in Mozambique cluster are summarized in Table 10. For a list of projects in this cluster, see Table 31 in Appendix 1.

Policy Influence

Despite limited evidence of policy influence to date, there are indications that district governments learned from project findings. As part of FTA's assistance to guide policy for the Reserve, traditional hive management practices were integrated into the Reserve's management strategy and action plan for community development based on co-developed recommendations.

Practice Influence

Seven reserve managers gained knowledge of and capacities to improve conservation practices within the Reserve, such as the monitoring of communities' logging and honey harvesting activities. However, the uptake and translation of recommendations into conservation actions were interrupted nearing the end of the project by the unexpected dissolution of the partner organization, the Society for the Management and Development of the Niassa Reserve (SGDRN), who was responsible for management of the Reserve and its natural resources. In response, FTA engaged and shared research findings with the new Reserve management organization, Wildlife Conservation Society, who now co-manages the Niassa National Reserve with the Mozambican government. It is unclear as to whether FTA's engagements during this transition period were able to influence the management decisions and practices of the Wildlife Conservation Society. Yet, further promising practice changes have been observed at the community-level, such as the revival and uptake of traditional honey harvesting methods by nine groups comprising 65 honey gatherers.

Research Influence

Research capacities were also built in efforts to stimulate a critical mass of Mozambican researchers in SFM. FTA's findings were taken up by a local researcher who established an Environmental Education Centre in the Niassa National Reserve. The researcher integrated lessons on traditional sustainable honey harvesting practices and tree conservation in local educational materials (e.g., environmental activity books) distributed to school teachers and visiting student groups.

Potential Impact

While FTA's contributions have potential implications for improved management practices across the Niassa National Reserve, which covers 4.2 million ha of land, it is unclear to what extent FTA's influence on policy and practice has supported impacts on-the-ground to date though there is potential for future impacts to be realized.

Table 10. Sustainable Conservation and Management of Protected Areas in Mozambique Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<ul style="list-style-type: none"> • Indication of district government learning from FTA results • Indication that traditional hive management practices were integrated into the Niassa National Reserve's community development and management strategy
Practice Influence	<ul style="list-style-type: none"> • 7 reserve managers learned about unsustainable honey harvesting practices and solutions using alternative traditional methods • Community monitoring agents increased capacities to monitor logging and honey harvesting • Changeover of actors in charge of management of the Niassa National Reserve (now co-managed by Wildlife Conservation Society and the Mozambican government) <ul style="list-style-type: none"> • Wildlife Conservation Society requested access to research results to share with other organizations • Uptake of traditional honey harvesting practices by 9 groups of honey gatherers (65 people)
Research Influence	<ul style="list-style-type: none"> • 9 outputs <ul style="list-style-type: none"> • 3 publications (articles, conference papers, etc.), 8 citations, 363 downloads • 4 tailored products (posters, presentations, etc.), 75 downloads, 133 views • 2 blogs (no view info) • 15 researchers built research capacities (including 4 local and 1 international graduate students) • 9 local participants gained ethnobotanical and socio-economic training • Integration of FTA findings on traditional honey hunting and tree conservation practices in local educational materials
Potential Impact	No target listed, no impacts reported

Sustainable Forest Management in the Congo Basin Cluster Results:

To promote SFM in the Congo Basin, FTA applied pressure for both policy and market changes through their projects in DRC and Cameroon. To do so, FTA raised the profile of forest management planning and reform, produced maps tracking changes in land use, and generated recommendations for governance frameworks as well as market-based solutions to sustainably manage forested areas. Key results of the Sustainable Forest Management in the Congo Basin cluster are summarized in Table 11. For a list of projects in this cluster, see Table 32 in Appendix 1.

Policy Influence

Though policy influence is still nascent, there are indications that FTA and partners contributed to the integrated development plan for the Yangambi Biosphere Reserve through engagement with the DRC's Ministry of Environment, Nature Conservation and Tourism (MECNT), the National Institute of Agronomic Studies and Research (INERA), and representatives from the United Nations Educational, Scientific and Cultural Organization's (UNESCO) Man and Biosphere Programme (MAB). Typically, development plans for national parks require inventories of landscape resources (e.g., flora, fauna) within demarcated boundaries; yet, in consideration of community land uses and the restrictive implications of imposed boundaries, FTA encouraged the adoption of micro-zoning approaches to inform a development plan that would support more fluid and integrated land management. In support of the preparation of local development plans, FTA engaged stakeholders to lay the foundations for a PPP to reinforce local governance and enable joint management of the Yangambi Landscape and its resources. FTA and INERA continue to advance discussions on a PPP and options for future investment; to date, two investment funds (e.g., Blue Orchard, Calvert Impact Capital) have expressed interest to support interventions in the Yangambi Landscape. There are indications that FTA also initiated discussions with 19 village committees to co-identify suitable instruments that would serve as simplified management plans; as these management plans are still in development, the results of this policy influence are still to materialize.

Practice Influence

FTA's influence on practice stemmed from their support to multi-stakeholder processes, participatory knowledge co-development, capacity-building and training, networking, and public outreach. FTA offered over 30 ad hoc training sessions on conservation and forest management, involving more than 600 people from the government, local governance units, the private sector, CSOs, and extensionists operating within the Yangambi Landscape. Many of these trainings were part of the South-South cooperation and exchange programmes offered through the University of Kisangani (UNIKIS), which enabled regional officers in charge of timber imports and exports as well as extensionists to receive training and transfer learning from other contexts to inform their own practices.

To strengthen the involvement of private sector stakeholders, FTA created a network of local SMEs, introduced micro-financing schemes, and provided technical assistance to individual businesses and producer associations to ensure adoption of sustainable business models that also sustainably manage forest resources. Moreover, FTA helped establish two nurseries (e.g., Isalowe Nursery, North Nursery); 21 ha of pilot farms to demonstrate good agricultural practices and agroforestry-based management; three wood-fuel producer associations (e.g., Yanonge Wood Energy Producers Association (APBEYA), Farmer Organization of Wood Energy Producers of Yawenda (OPPBYA), and Acacia Planters Association for the production of MAKALA in Yelongo (APAMY)); and governance platforms for artisanal logging. FTA also provided training to over 800 households, local entrepreneurs, wood energy producers (e.g., charcoal producers), and carpentry students, building capacities in soil fertility, agroforestry practices, sustainable timber harvesting practices, the legal requirements of timber production, timber processing and value-addition, sustainable management of wood energy value chains, and/or timber marketing, among others. Moreover, FTA supported the erection of a joint-stock company, the African Ladies and Renewables (ALAR), to act as a business incubator for SMEs owned by women.

To promote FTA's projects and research on SFM, partners (e.g., INERA) and CSOs (e.g., Parish of our Lady of the Assumption (PNDA), Kisangani CPE) supported outreach, awareness-raising, and sensitization of community forestry arrangements to over 15,000 people in the region, as well as multi-stakeholder consultations and training

in the administrative procedures necessary to apply for a local community forest concession (CFCL). A variety of movies, games, and radio programmes are also underway to expand FTA's reach. In partnership with Kisangani CPE, these engagements have set the stage to introduce CFCL arrangements in five villages to support local governance and forest management for 11,000 ha of customary land. As a result of FTA's training and pilot farms, there is evidence that communities and local associations have taken up and applied agroforestry practices. As of 2020, eleven management committees and brigadier units are now operational in the makala sector to improve the management of bushfires and 1,500 ha of customary lands, where they aim to plant agroforestry systems. Moreover, over 270 households adopted community agroforestry systems across 262 ha, introducing rotating models of fast-growing species (e.g., acacias) in fallow plots and improved soil carbonization techniques.

There are indications that FTA also influenced the practices of at least four public institutions and four construction companies in DRC and Cameroon to source legal timber supply, increasing buyers' sensitivity to and consideration of timber origin. As more public sector and private companies utilize their purchasing power to support legal timber markets, forests are more likely to be sustainably managed to ensure profitability and longevity of the sector.

Research Influence

FTA's research influence in the Congo Basin was extensive. In DRC, FTA supported multidisciplinary training and forest research at UNIKIS in the faculties of science and agronomy to improve the quality of teaching and research to equip the next generation of Congolese policy-makers, forest practitioners, and researchers to sustainably manage and conserve forest ecosystems in the Congo Basin. As part of this support, FTA organized training for university staff to enhance supervisory capacities (e.g., pairing with Global South and Global North trainers/mentors), geomatics skills (e.g., geographic information system (GIS), remote sensing), statistics applied to scientific research, and database and project management. FTA assisted in the development and integration of SFM and climate change-related topics in the Masters curricula, exposing students to interdisciplinary environmental issues such as public policy for sustainable development, natural production forest management, community relationships with forests and forest resources, and rehabilitation of degraded areas. With several successful cohorts, to date, over 220 graduate students completed the programme and many continue to work as government officials, private sector practitioners, scientists, and university professors in the field of SFM. In addition, six applied research and exchange programmes (e.g., South-South, South-North) in forest management and biodiversity conservation were initiated in partnership with Congolese and international institutions, such as the University of Antananarivo in Madagascar, the University of Stellenbosch in South Africa, the Namibia University of Science and Technologies, the University of Makerere in Uganda, and the University of Nairobi in Kenya.

Through UNIKIS, FTA hosted numerous events and seminars for professors, students, and researchers across the continent, such as Science Week and the first international scientific conference on African Forest Policies and Politics (AFORPOLIS) in 2018. This has boosted research exchange and knowledge-sharing, and made UNIKIS a hub for forest science. FTA also helped establish the National Continuing Education Forum in Kinshasa, which is open to universities, CSOs, and the private sector to exchange knowledge and collaborate on forest atlases, forest inventories, forest management, forest zoning and development planning, and agroforestry, among other topics. FTA's collaborative efforts expanded intra-regional and international research networks, fostering new partnerships, mutual benefits, and synergies between research institutions like UNIKIS, the Congolese Institute for Nature Conservation (ICCN), INERA, the Biodiversity Monitoring Centre (CSB), the Royal Museum of Central Africa (MRAC), University of Liège (ULg), and the Meise Botanical Garden (JBM) that continue to be active post-project. Several of these relationships led to successful co-financing of research in the Yangambi Landscape (e.g., co-financing of the climate trail by MRAC in the GeForCo Project, JBM's cooperation with the Regional Postgraduate School for Integrated Planning and Management of Forests and Tropical Territories (ERAIFT) to digitize plant collections in the Yangambi Biosphere Reserve), scholarships (e.g., awarded by ERAIFT), as well as project extensions (e.g., EU costed extension of the YPS).

At the secondary level, FTA and partners implemented an Environmental Education and Awareness Programme

in local schools to host environment days, share messages of the importance of the Yangambi Biosphere Reserve for forest conservation and rural development, and provide science-based education sessions on forests, carbon, and biodiversity. To date, the programme has reached over 8,650 students across 63 schools.

Potential Impact

With a target landscape of 4 million ha in Tshopo province (235,000 ha of which is contained within the Yangambi Biosphere Reserve), 1,714 ha are now more sustainably managed under pilot farms, agroforestry plantations, and community agroforestry systems supported by FTA's projects. There is potential for an additional 11,000 ha of customary lands to be managed by five village communities with the successful approval of CFCL by the DRC government. 1,500 ha of customary lands will be planted with agroforestry systems by 2022.

Table 11. Sustainable Forest Management in the Congo Basin Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<p>DRC:</p> <ul style="list-style-type: none"> Contributed to integrated development plan for Yangambi Biosphere Reserve Supported preparation of local development plans <ul style="list-style-type: none"> Preparation of PPP for Yangambi Landscape Attracted interest of two investment funds to support landscape interventions Initiated discussions on simplified management plans with 19 participating village committees
Practice Influence	<ul style="list-style-type: none"> Capacity-building of >600 stakeholders (government, CSOs, private sector, practitioners) Created network of local SMEs <ul style="list-style-type: none"> Provided micro-financing and technical assistance Established 2 nurseries, several pilot farms, 3 producer associations, & governance platforms for artisanal loggers Provided timber harvesting, processing, and marketing training to >800 people Supported creation of a business incubator (e.g., ALAR) Partners and CSOs supported outreach and publicized FTA's projects of up to 15,000 people (e.g., INERA, PNDA, Kisangani CPE) <ul style="list-style-type: none"> Sensitization of and training in CFCL in 5 villages Communities and local associations take up agroforestry practices <ul style="list-style-type: none"> 11 village management committees and brigadier units became operational 270 households adopted community agroforestry systems and carbonization techniques Public and private sector commitment to source legal timber supply
Research Influence	<ul style="list-style-type: none"> Produced 182 outputs <ul style="list-style-type: none"> 25 publications (articles, working papers, briefs, etc.), 219 citations 35 tailored products (infographics, manuals, brochures, flyers, etc.), 7,454 downloads 7 presentations (1,226 views) 54 blogs (38,559 views) 61 videos (41,599 views) Support training and forest research at UNIKIS <ul style="list-style-type: none"> Capacity-building of university staff (e.g., supervisory capacities, GIS, remote sensing, statistics, database management, project management, etc.) Integration of SFM and climate change topics in Masters curricula >220 graduate students built research capacities 6 applied research and exchange programmes established Hosting of events and seminars National Continuing Education Forum established in Kinshasa Expanded network of research institutions <ul style="list-style-type: none"> Successful co-financing of research in Yangambi Landscape, scholarships, and project extensions Implemented Environmental Education and Awareness Programme in local schools (reaching >8,650 students)
Potential Impact	<ul style="list-style-type: none"> 4 million ha target landscape in Tshopo province <ul style="list-style-type: none"> Yangambi Biosphere Reserve covers 235,000 ha of land 10 ha of FORETS pilot farms established; 11 ha of YPS pilot farms established Successful CFCL arrangements will place 11,000 ha under community management 11 management committees aim to plant 1,500 ha of customary lands with agroforestry systems by 2022 NPC targeted 2,100 ha to adopt agroforestry management practices <ul style="list-style-type: none"> 1,693 ha agroforestry plantations planted (262 ha of which are community agroforestry systems)

Landscape Management in Dryland Areas in Sub-Saharan Africa Cluster Results:

To encourage and support the transition to contextually-appropriate dryland management practices in five countries across the Sahel and Horn of Africa, FTA focused on influencing policy environments and capacity-building. Collaborating with 22 partners across Ethiopia, Kenya, Mali, Niger, and Burkina Faso, FTA facilitated inter-regional knowledge-sharing and learning on drylands agriculture amongst government, practitioner, and farmer stakeholders; promoted the OxC approach to ensure appropriate technologies and practices are used in each respective community or sub-catchment context; built on and improved existing technologies and management practices; and provided extensive training to farmers and extensionists in water and soil management as well as value chain development. Key results of the Landscape Management in Dryland Areas cluster are summarized in Table 12. For a list of projects in this cluster, see Table 33 in Appendix 1.

Policy Influence

FTA's policy influence includes successful policy lobbying and advocacy efforts at community and county levels, enhanced governance capacity of sub-national government representatives, the establishment and strengthening of several NRM bodies and local management committees, and the co-development of 110 community action plans (including county integrated development plans in Kenya and communal development plans in both Mali and Burkina Faso). FTA's alignment with governmental policy and existing initiatives supported policy uptake and influence. As a result, countries developed and implemented sub-catchment management plans, the strongest example being Ethiopia's watershed management plan (Proclamation No.1223/2020) which adopted FTA's sub-catchment approach. Close alignment with Ethiopia's National Regreening Programme enabled resource-leveraging and coordination for dryland management. For example, the Natural Resource Management Directorate (NRMD) of the Ministry of Agriculture and Natural Resources (MoANR) financed dialogues and expert meetings through the National Watershed and Agroforestry Multi-stakeholders Platform (NWAMP) – a venue for government, NGOs, community-based organizations (CBOs), donors, and research organizations to convene and exchange knowledge, experiences, and lessons. Through the NWAMP, ICRAF and implementing partners shared guidance and learning from the Drylands Development Programme (DryDev). Likely NWAMP stakeholders have gained better understanding of dryland management as a result, and transferred some of this knowledge to their own work and action plans. FTA also influenced Kenya's Irrigation Act (2019), which led to the establishment of a water harvesting authority and governmental commitment to construct 125,000 farm ponds. In Mali, successful policy influence led to the recognition of '*terroirs*' and '*territoires*' as geographic entities in the Land Act (2017).

Practice Influence

In terms of practice influence, FTA supported stronger collaborations between stakeholders at the local level, which enhanced the extent and quality of technical assistance and agricultural extension services offered by governments, practitioners, and extensionists. Through training, 3,668 sub-national government staff, technical experts, extensionists, and farmer representatives became better equipped to support good governance, farmer-to-farmer extension, and improved service delivery to farmers. Reaching nearly 220,000 farmers, FTA's training enabled farmers to build capacities in dryland management on- and off-farm, enhance access to technical supports and farmer-to-farmer extension, and adopt new and improved technologies (e.g., soil erosion control, water harvesting and conservation, soil fertility, agroforestry, conservation agriculture, etc.). Close to 1,500 farmers groups were supported through the programme, enhancing local governance capacity and participation of women, youth, and minorities in management decisions and sustainable practices. FTA also engaged 8,500 people in multi-stakeholder learning platforms to support adoption and scaling within and beyond the programme. In June 2021, Energy Globe Foundation announced World Vision Ethiopia, a partner organization leading programme implementation in Ethiopia, as the winner of the 21st Energy Globe World Award in the Earth category – a renowned environmental prize – for on-the-ground results achieved through DryDev activities in Ethiopia.

Research Influence

There was limited influence on research. FTA's approach influenced the design of a World Bank project in Mali

(e.g., Mali Drylands Development Project (PDAZAM)). Lessons shared at the 2019 World Water Week event were taken up in the Stockholm International Water Institute's Transforming Investments in African Rainfed Agriculture (TIARA) initiative.

Potential Impact

Through DryDev, FTA set a target to improve 227,000 farmers' land use management practices across Ethiopia, Kenya, Mali, Niger, and Burkina Faso. As a result of FTA's engagements, over 100,000 farmers now practice landscape-level NRM on 163,745 ha of land off-farm. Moreover, over 143,000 people have applied FTA's promoted soil and water conservation (SWC) management options on 105,592 ha on-farm, along with nearly 105,000 farmers practicing climate-smart management on 60,835 ha on-farm.

Table 12. Landscape Management in Dryland Areas Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<ul style="list-style-type: none"> Enhanced governance capacity of sub-national government leaders 110 community action plans were co-developed by local government, farmers, and other stakeholders across the five study countries DryDev aligned with and influenced governmental policy and initiatives: <ul style="list-style-type: none"> Sub-catchment management plans Ethiopia's watershed management approach; adopted DryDev's sub-catchment approach Ethiopia's Regreening Programme <ul style="list-style-type: none"> Contributed DryDev learning to the NWAMP Kenya Irrigation Act (2019); established water harvesting authority and committed to construct 125,000 farm ponds Mali's Land Act (2017); recognition of '<i>terroirs</i>' and '<i>territoires</i>' as geographic entities
Practice Influence	<ul style="list-style-type: none"> Stronger local-level collaboration (between farmers, development practitioners, scientists, extensionists, governments, etc.) <ul style="list-style-type: none"> Intensive cooperation supported technical assistance and agricultural extension services Capacity-building of >3,650 government staff, technical experts, extensionists, and farmer representatives for improved dryland management 219,694 farmers reached by the DryDev Programme <ul style="list-style-type: none"> Received training in dryland management, new technologies, and farming practices Increased access to technical support and farmer-to-farmer extension Accelerated technology uptake (e.g., soil erosion controls, water harvesting/conservation, soil fertility management practices, agroforestry practices, etc.) 1,489 farmers groups supported and registered as formal cooperatives or associations Enhanced local capacity for good governance and lobbying by farmers organizations <ul style="list-style-type: none"> Leaders trained in conflict resolution and legislative issues (e.g., pastoralism law, land tenure, land transaction) Increased participation of women, youth, and minorities 8,500 people engaged in participatory multi-stakeholder learning platforms to support adoption and scaling World Vision Ethiopia (partner) won Energy Globe World Award - Earth category for DryDev successes in Ethiopia
Research Influence	<ul style="list-style-type: none"> Produced 66 outputs <ul style="list-style-type: none"> 1 publication (articles, etc.), 3 citations 14 tailored products (progress reports, etc.) 15 blogs (no view data) 36 videos (1,726 views) Uptake of approach and lessons: <ul style="list-style-type: none"> World Bank's PDAZAM Stockholm International Water Institute's TIARA Initiative
Potential Impact	<p>Off-farm:</p> <ul style="list-style-type: none"> >100,000 farmers practice landscape-level NRM <ul style="list-style-type: none"> 163,745 ha under improved NRM <p>On-farm:</p> <ul style="list-style-type: none"> 143,067 farmers applying promoted SWC management options <ul style="list-style-type: none"> 105,592 ha under improved SWC 105,481 farmers applying promoted climate-smart production options <ul style="list-style-type: none"> 60,835 ha under climate-smart management

Forest Monitoring in Central Africa Cluster Results:

To strengthen forest monitoring systems in Central Africa, notably that of the Central African Forestry Observatory (OFAC), FTA assisted in the consolidation of and technical capacity in online databases, maps, resources, and tools for SFM and forest monitoring. Key results of the Forest Monitoring in Central Africa cluster are summarized in Table 13. For a list of projects in this cluster, see Table 34 in Appendix 1.

Policy Influence

Policy influence was not the primary focus of this work, though FTA fed into the process whereby memoranda of understanding (MoU) were signed between the Central African Forest Commission (COMIFAC), OFAC, the Network of Protected Areas of Central Africa (RAPAC), and three national agencies from DRC (e.g., the ICCN), Congo (e.g., the Congolese Agency for Fauna and Protected Areas (ACFAP)), and Gabon (e.g., the National Agency for National Parks (ANPN)) to establish a monitoring framework for protected areas in the region. Following ratification of these agreements and installation of the monitoring framework to support local, national, and regional data collection and analyses, ANPN officials were the first to use the system to collect and transfer data on 14 protected areas in Gabon to OFAC. FTA also supported the drafting of several policy documents for the EU and COMIFAC that will govern the Congo Basin Forest Partnership (CBFP). In particular, FTA provided technical assistance to the roadmap for facilitation of the CBFP, outlining governance reforms (e.g., organization of partners into stakeholder colleges, establishment of the college council), implementation (e.g., consultation facilitation, management of the partnership), and recommendations on thematic priorities, as well as the CBFP partner cooperation framework. Both documents were adopted by CBFP partners at the 16th Meeting of CBFP Parties in 2016.

Practice Influence

In terms of practice influence, FTA supported networking and multi-stakeholder fora for the CBFP, bringing together over 500 stakeholders to discuss, strategize, and collaborate on the sustainable management of forested areas in the Congo Basin. FTA's involvement also contributed to the strengthening of relationships and consolidation of institutional linkages between OFAC regional and national teams, COMIFAC, CBFP, and external partners (e.g., World Resources Institute (WRI), Food and Agriculture Organization (FAO), UNESCO, Gabonese Space Observation Agency (AGEOS), The Central Africa Marine Turtle Network (RASTOMA)). Through FTA's capacity-building activities, government officials built technical skills in data collection, analytical, and monitoring tools (e.g., Integrated Management Effectiveness Tool (IMET)), satellite image acquisition and processing, forest map development, COMIFAC indicators, etc.) to support national and regional monitoring. These skills equipped national government agencies to launch data collection campaigns in Cameroon, Chad, Central African Republic, DRC, Congo, Gabon, and Burundi. Government actors were also equipped to monitor emerging themes and harmonize COMIFAC indicators to accommodate data requests from other international initiatives involving Central African countries (e.g., FAO Global Forest Resources Assessment (FRA), International Tropical Timber Organization (ITTO)). Throughout 2021, FTA continued to engage and provide support to national governments to strengthen capacities for data campaigns, data collection systems, and OFAC data sharing. There is evidence that other stakeholders took up tools produced by FTA. For example, the International Technical Association of Tropical Woods (ATIBT) adopted an OFAC form developed by FTA to collect company and concession information, using the form to support ATIBT's FLEGT/VPA activities in Congo.

Research Influence

FTA exerted the most influence for this cluster through the research pathway. Within the first year of its launch in 2016, OFAC Geoportals had over 38,000 unique visitors making nearly 60,000 visits, indicating high returning usership. FTA and partners like the European Commission for International Cooperation and Development (DEVCO) assisted in the structuring of the CBFP's international and regional research networks with scientific and academic colleges and research organizations across Africa, Europe, and North America. FTA researchers were also tasked with establishing a scientific unit within COMIFAC, requiring support to institutionalize and

strengthen ownership of OFAC within the Commission and incorporate resources (e.g., website integration). FTA helped organize and was a lead contributor to thematic sessions on forestry sector monitoring at several international and regional fora (e.g., 53rd Association for Tropical Biology and Conservation (ATBC) Conference, 16th Meeting of CBFP Parties, the IUCN World Conservation Congress), sharing tools, data, and publications with broader academic, governmental, and practitioner audiences. FTA also promoted the exchange of forest monitoring data to support ongoing climate change initiatives in the region (e.g., Central African Forest Initiative (CAFI), REDD+, national action plans (NAP), nationally determined contributions (NDC), etc.). Lastly, owing to FTA's prominent involvement in the topic of forest monitoring, FTA formed new collaborations with other research organizations. Notably, FTA provided inputs to the IUCN's Biodiversity and Protected Areas Management (BIOPAMA) Programme to develop and test monitoring tools (e.g., IMET, Coach Mission Observatory Information Toolkit (COMIT)); then partnered again with BIOPAMA to support programming of the 2016 State of Protected Areas in Central Africa; collaborated with GIZ in a joint publication of the *Atlas of New Ruralities* for the African Union's New Partnership for Africa's Development (NEPAD) economic programme; and teamed up with the World Conservation Monitoring Centre (WCMC) to update the World Database of Protected Areas. These collaborations opened opportunities to coordinate and harmonize partners' activities to enhance the integrity of OFAC's information systems.

Potential Impact

As this cluster of FTA's work focuses on enhancing political dialogue, data monitoring systems and capacity, and knowledge management in the Congo Basin – all being institutional precursors necessary for evidence-based decision-making that inform how forests are managed – the pathway to impacts is too distant to link to the evidence that is currently available. While no impacts are reported, it is likely that FTA's contributions to outcomes through COMIFAC, OFAC, and partners will continue to positively influence forest management across Central Africa, which will eventually manifest as tangible impacts on-the-ground in the future.

Table 13. Forest Monitoring in Central Africa Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<ul style="list-style-type: none"> MoUs signed with RAPAC and 3 national agencies (e.g., ICCN, ACFAP, ANPN) <ul style="list-style-type: none"> Ratified 3 agreements to establish a monitoring framework for protected areas in Central Africa Supported drafting of CBFP policy documents (e.g., roadmap for facilitation of the CBFP, CBFP partner cooperation framework)
Practice Influence	<ul style="list-style-type: none"> Supported multi-stakeholder fora for CBFP and SFM Consolidation of institutional links between OFAC, COMIFAC, CBFP, and external partners Technical capacity-building of government officials to support launch of data collection campaigns <ul style="list-style-type: none"> Equipped to monitor emerging themes and harmonize indicators with data requests from other initiatives (e.g., FRA, ITTO) ATIBT adopted a company data collection tool developed by FTA
Research Influence	<ul style="list-style-type: none"> Produced 9 outputs <ul style="list-style-type: none"> 5 publications (articles, working papers, briefs, etc.), no citations to date, 2,283 downloads 4 blogs (2,283 views) Usage of OFAC Geoportals in 2016 (e.g., Land Use Atlas) <ul style="list-style-type: none"> >38,000 visitors making >59,500 visits Supported structuring of research network for CBFP Institutionalization of OFAC within COMIFAC Contributed to thematic sessions on forestry sector monitoring (e.g., 53rd ATBC Conference, 16th Meeting of CBFP Parties, IUCN World Conservation Congress) Promoted exchange of data with ongoing climate change initiatives in region (e.g., CAFI, REDD+, NAP, NDC, etc.) New collaborations established <ul style="list-style-type: none"> Inputs to IUCN's BIOPAMA Programme to develop and test monitoring tools (e.g., IMET, COMIT) Programming of 2016 State of Protected Areas in Central Africa with BIOPAMA Joint contribution to the <i>Atlas of New Ruralities</i> with GIZ for NEPAD Supporting update of the World Database of Protected Areas with WCMC
Potential Impact	No targets listed, no impacts reported

FLEGT Mechanism for Illegal Logging in Sub-Saharan Africa Cluster Results:

FTA's research targeted governmental policy and informal markets in Africa¹⁸ to promote and incentivize FLEGT compliance as a SFM strategy against illegal logging¹⁹. FTA generated findings on countries' FLEGT progress, value chain dynamics, wood-fuel flow maps, and policy options for domestic timber markets and conservation strategies. FTA's impact assessments of countries' VPA helped establish country baselines for future monitoring. FTA's findings were acknowledged in FLEGT discussion fora organized by global stakeholder organizations like Chatham House, FAO, and the European Forests Institute, among others. FTA also contributed to events held by the European Commission, such as the annual FLEGT Week, and the World Bank to advance discussions and expand reach to governments and advocacy groups. Key results of the FLEGT cluster are summarized in Table 14. For a list of projects in this cluster, see Table 35 in Appendix 1.

Policy Influence

FTA offered inputs to support the development and implementation of FLEGT policy measures and monitoring systems. As a result, FTA contributed to and influenced several national policies. In Cameroon, FTA's technical assistance enabled the Ministry of Forestry and Wildlife (MINFOF) to develop a VPA website for forest sector transparency to EU markets as part of the government's implementation of Annex VII. FTA centres are listed as key partners of the country's VPA Implementation Framework. FTA raised attention to FLEGT and domestic timber market issues through invitations to support various national and regional fora, such as the Consultation Circle of Partners of MINFOF/MINEPDED (CCPM), the Cameroon Network of Parliamentarians for Sustainable Management of Forest Ecosystems in Central Africa (REPAR), two working groups (e.g., wood-fuel value chain governance, anti-corruption), and the Lake Chad Basin Commission (LCBC). Findings were taken up in MINFOF's 2013 timber sector industrialization plan, giving prominence to small-scale logging and chainsaw milling. In support of the integration of the domestic timber market into the government's SFM agenda, FTA helped MINFOF draft and implement a policy manual to better organize and manage the national timber market. FTA's policy engagement also supported the development of a conjoint draft national decree by three ministries promoting use of legal timber on public contracts, which was submitted to the prime minister and adopted in late 2020. This process inspired COMIFAC to extend the approach to other countries in Central Africa. FTA's policy briefs and recommendations on chainsaw milling and domestic timber markets were shared with the Cameroonian government, the EU, and DEVCO, directly contributing to the drafting of a new Forest Law; however, this law has yet to be enacted.

In Gabon, the Ministry of Water and Forests (MINEF) revised its Forest Control Strategy based on FTA's data, putting in place fixed and mobile forest patrols to prevent illegal logging. Dialogue with the EU also recommenced on FLEGT, with indications of potential adoption of FTA recommendations in the future.

In Ghana, FTA influenced the creation, mandate, and work plan of the Atewa Landscape platform, outlining development and landscape management priorities. FTA also provided technical inputs to the Ghanaian Forestry Commission to nest landscape initiatives in and inform national processes on zero deforestation, which influenced deployment of the national climate change strategy and the Cocoa-Forest REDD+ Programme. The relationship fostered with the Commission enabled FTA centres to better navigate and contribute to national processes, garner endorsement of co-developed land use maps, and replicate FTA's approach in other jurisdictions.

In Kenya, FTA's participation in multi-stakeholder processes fed into the development of the Forestry and Agroforestry policy and charcoal roadmap to lift the ban on charcoal trade. FTA also supported the integration of sustainable wood-fuel value chain options into county environmental management plans, bolstered by NGO

¹⁸ FTA has worked on FLEGT/VPA across countries in other continents, most notably in Indonesia and Ecuador; however, only evidence of FTA's influence in Sub-Saharan Africa is presented for Challenge 3.

¹⁹ In 2003, the EU launched the FLEGT Action Plan outlining various measures to counter the systemic causes of illegal logging, such as corruption, conflicting regulations, ambiguous land use rights, poor forest governance and enforcement, and the lack of monitoring, among others. Timber-producing countries can sign legally-binding trade agreements with the EU through a VPA. Through this mechanism, the EU aims to ensure that all timber imports are legally sourced, sustainable, and transparent.

partners' advocacy and capacity-building support for charcoal producer associations.

In Zambia, FTA and NGO partners supported district- and national-level policy dialogues to engage strategic partners in cross-border areas and production hotspots to formulate a new regulation on charcoal. While FTA intended to help develop participatory forestry action plans with Zambian stakeholders, these activities have been postponed. Similarly, FTA planned to support a roadmap for sustainable wood-fuel management in the DRC, but there is no evidence that this has happened. There is no evidence of FLEGT policy influence in Côte d'Ivoire.

Practice Influence

FTA's research and engagement activities also influenced practice, supporting the formalization of the informal SME sector across target countries by increasing their capacities to comply with FLEGT legality requirements and improving the quality of their management skills. Through multi-stakeholder engagement in Cameroon, FTA enhanced learning and perceptions on systemic factors contributing to illegality within the sector, the role of SMEs, and the importance of informal small-scale chainsaw loggers to the economy (i.e., comparable to the export industry). These engagements also gave voice and agency to SMEs and producer associations through facilitated dialogues and negotiations with governments. Through legal timber campaigns by FTA and partners (e.g., National Association of Wood Sellers and Related Workers (ANCOVA)), over 381,685 people were reached, learning about legal origin supply chains, fast-growing timber agroforestry systems, sustainable timber extraction management, sustainable charcoal production, and business model and marketing strategies. FTA also influenced the traceability contracts of several supply chain management software companies (e.g., SGS, Helveta) contracted by the Cameroonian government, which now integrate smallholders, chainsaw millers, and traders as part of the formal supply chain. FTA shared knowledge and resources to 17 construction companies, enhancing their understanding of legal timber supply. In 2021, with support of MINFOF, CIFOR launched a reforestation campaign to plant 100,000 trees in the municipalities of Okola and Evodoula.

In Ghana, FTA helped establish a multi-stakeholder learning platform and piloted different business models and independent monitoring and traceability systems with three companies (e.g., Ghana Oil Palm Development Company, Serendipalm, Rubber Plantations Limited) to improve management, supply chain monitoring, and good agricultural practices. Through engagement with the National Cocoa Board (COCOBOD), a new collaboration arose to support the National Cocoa Replanting and Agroforestry Programme, where FTA will help identify and test innovations to attract farmer buy-in (e.g., replanting cocoa stands, introducing tree species).

In DRC, one NGO (e.g., Ocean) liaised with FTA researchers and drew upon findings to inform their sensitization programme on FLEGT. Community pilots and capacity-building activities in DRC and Kenya supported awareness-raising, farmer-to-farmer knowledge transfer and skills-building (e.g., farmer-managed natural regeneration (FMNR), sustainable wood and charcoal production, etc.), and participatory land use mapping and management planning.

In Zambia, FTA piloted assisted natural regeneration (ANR) trials and restoration options in forest reserves with government departments. In an online forum co-organized by FTA centres and the United Nations High Commission for Refugees (UNHCR), awareness-raising on multi-functional landscapes and the role of sustainable management of natural resources as part of humanitarian responses catalyzed the call for a joint effort by the IUCN, UNDP, FAO, the African Forest Landscape Restoration Initiative (AFR100), and Sustainable Development Engineering (I2D) to integrate NRM and trade into short- and long-term development planning in crisis areas.

Research Influence

Enhanced research capacities of local graduate students in Cameroon, Gabon, and DRC as well as European students constitute the main research influence through partnership arrangements, university training programmes, and sub-contracts with NGO partners. FTA findings were referenced by the United Nations Environment Programme's (UNEP) Combat Corruption Project and the Rapid Results Initiative, and also influenced the development of one NGO's (e.g., Forêts et Développement Rurale (FODER)) proposal for livelihood studies of chainsaw operators.

Potential Impact

As FTA's engagement in FLEGT supports the technical and policy decisions taken on FLEGT/VPA issues by the EU and member states (e.g., conducting baseline assessments, installing monitoring systems), rather than the direct implementation of countries' FLEGT programmes, there are no associated impacts on the hectareage under improved management that can be reported at this stage.

Table 14. FLEGT Mechanism for Illegal Logging in Sub-Saharan Africa Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<p>Cameroon:</p> <ul style="list-style-type: none"> • MINFOF implemented VPA website • FTA invited to support various fora • Contributed to 2013 Timber Sector Industrialization Plan • Conjoint draft promoting use of legal timber in public contracts submitted to prime minister • Influenced development of new Forest Law and revisions (e.g., implementing decree on small-scale sub-sector) <p>Gabon:</p> <ul style="list-style-type: none"> • Influenced revisions to Forest Control Strategy <p>Ghana:</p> <ul style="list-style-type: none"> • Influenced creation and mandate of the Atewa Landscape platform • Provision of technical input to the Climate Change Strategy and the Cocoa-Forest REDD+ Programme <p>Kenya:</p> <ul style="list-style-type: none"> • Supported Forestry and Agroforestry Policy and charcoal roadmap • Support integration of sustainable wood-fuel value chain options into county plans <p>Zambia:</p> <ul style="list-style-type: none"> • Contributed to policy dialogue on new charcoal regulation
Practice Influence	<p>Across the region:</p> <ul style="list-style-type: none"> • Formalization of previously informal SMEs <ul style="list-style-type: none"> • Improved compliance capacity and quality of management • Catalyzed call for joint effort by international organizations working in Central Africa to support sustainable management of natural resources as part of humanitarian responses through UNHCR <p>Cameroon:</p> <ul style="list-style-type: none"> • Influenced multi-stakeholder learning and perceptions • Facilitated dialogue between SMEs and government • Campaigns on legal timber <ul style="list-style-type: none"> • FTA film reached 381,685 people • ANCOVA led promotional campaigns in 15 urban markets • 17 construction companies enhance understanding of legal timber supply • Influenced companies' traceability contracts • Launch of reforestation campaign in Okola and Evodoula <p>Ghana:</p> <ul style="list-style-type: none"> • Learning platform established • Business model pilots with 3 companies to improve management and adoption of good agricultural practices • New collaboration to support COCOBOD's National Cocoa Replanting and Agroforestry Programme <p>DRC:</p> <ul style="list-style-type: none"> • NGO liaised with FTA researchers, using findings to inform their sensitization programme • Community pilots and capacity-building <p>Kenya:</p> <ul style="list-style-type: none"> • Community pilots and capacity-building <p>Zambia:</p> <ul style="list-style-type: none"> • Piloted ANR trials and restoration options in forest reserves
Research Influence	<ul style="list-style-type: none"> • 112 outputs, 1,474 citations, 145,020 downloads • Built graduate student capacities (10 across Cameroon, Gabon, and DRC) • Referenced by UNEP's Combat Corruption project and Rapid Results Initiative • Influenced FODER proposal on studies of chainsaw operators and community livelihoods
Potential Impact	No targets listed, no impacts reported

Sustainable Forest Enterprises in Cameroon Cluster Results:

Across community forests in Cameroon where communities have struggled to attract investment, FTA helped establish community forest enterprises (CFE) and a community-based Field Monitoring System (FMS). FTA also developed a performance-based financing approach to address weak monitoring by conditioning the receipt of investments based on environmental, social development, and enterprise performance. Key results of the Sustainable Forest Enterprises cluster are summarized in Table 15. For a list of projects in this cluster, see Table 36 in Appendix 1.

Policy Influence

Through FTA's engagement in policy discussions, there are indications that governments gained a better understanding of issues facing CFEs, such as their lack of status as social enterprises, taxation, and centralized administrative processes (e.g., issuance of permits, waybills, etc). As a result, ICRAF and the Ministry of Small and Medium Size Enterprises, Social Economy and Handicrafts (MINPMEESA) drafted a MoU, proposing inclusion of CFEs in the national definition of social enterprises. Through the DRYAD Congress, CFEs and governmental representatives had an opportunity to engage in dialogue, which built mutual understanding regarding their respective perspectives (e.g., community challenges, reasons for imposing strict regulations on communities in efforts to prevent exploitation). These dialogues also enhanced community access to governments (e.g., access to an official government phone number to report or follow up on issues), and resulted in more and better provision of technical advice and administrative assistance to community stakeholders (e.g., MINEPDED helped CFEs obtain environmental impact notice certificates).

Practice Influence

In terms of practice influence, FTA established 34 CFEs from initial business ideas to fully functioning enterprises – 29 of which reported growth after two years of operation – with an additional 84 business cases prepared for investment. The CFEs fall into three main categories: sustainable timber harvesting; NTFP harvesting; and sustainable reforestation programmes. With upwards of 100 training workshops offered, 1,195 people from CFEs and implementing organizations (i.e., NGOs, producer associations) built capacities in technical agricultural skills, business management, and forest governance and monitoring. As a result, FTA enabled women and minorities to become more involved in CFM and better equipped to apply more sustainable practices in the forested areas surrounding their community and linked to their enterprise. Moreover, CFEs successfully used the FMS to track, monitor, and report on performance and receive subsequent financing.

Potential Impact

With a target of 105,000 ha, the combined FMS system and CFE approach enhanced community participation in the management of 85,250.5 ha of community forests in Cameroon to date.

Table 15. Sustainable Forest Enterprises in Cameroon Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<ul style="list-style-type: none"> Initiated policy discussions on relevant issues (e.g., CFEs as a social enterprise, community forestry taxation, decentralization of permit processes, etc.) <ul style="list-style-type: none"> MoU drafted between MINPMEESA and ICRAF to include CFEs in national definition of social enterprise Enhanced dialogue between CFEs and governments via DRYAD Congress MINEPDED provided technical advice and assisted CFEs to obtain environmental impact notice certificates
Practice Influence	<ul style="list-style-type: none"> 34 CFEs established (84 additional business cases ready for investment) <ul style="list-style-type: none"> 29 of 34 CFEs reported growth after 2 years of operation 1,955 individuals from CFEs and implementing organizations received training from FTA Successful uptake and use of cost-efficient community-based FMS by participating CFEs Enhanced community participation in CFM and decision-making (including women and minorities)
Research Influence	<ul style="list-style-type: none"> Produced 20 outputs <ul style="list-style-type: none"> 13 publications (articles, working papers, technical papers, etc.), 145 citations 4 blogs (no view data) 3 videos (77 views)
Potential Impact	<ul style="list-style-type: none"> Project targeted 105,000 ha of forested land in Cameroon <ul style="list-style-type: none"> 85,250.5 ha under CFE management

Support to Landscape Restoration and Management in Asia Cluster Results:

To incentivize restoration and sustainable management of forested, sloping, and protected landscapes across countries such as Malaysia, Indonesia, Philippines, Vietnam, China, India, Nepal, and Bhutan, FTA assessed the economic and environmental service benefits of existing landscape intervention schemes. Key results of the Landscape Restoration and Management in Asia cluster are summarized in Table 16. For a list of projects in this cluster, see Table 37 in Appendix 1.

Policy Influence

By participating in multi-stakeholder consultations, FTA raised the profile of appropriate intervention schemes and management options, provided policy recommendations, and helped multi-level governments to identify priorities, targets, and opportunities to institutionalize these in national and sub-national policy. FTA's influence on policy is considerable as a result. For example, involvement in and facilitation of a public forum and expert workshop in Malaysia with 170 government, private sector, and local university representatives enabled co-development of the Strategy and Action Plan for Forest and Landscape Restoration in Sarawak, which outlined recommendations to improve and expand restoration. The Sarawak government followed through with the implementation of the strategy's recommendations by establishing a Forest and Landscape Restoration programme and issuing several new directives, such as compulsive replanting in licensed Planted Forest Areas (DF Circular No.2/2019), increased timber levies for swamp and hilled areas to fund restoration (DF Circular No.10/2018), and requirements for forest certification (DF Circular No.4/2018). The new requirements necessitate all long-term forest timber licensees (FTL) in Sarawak obtain a forest management certification by 2022, which was previously voluntary. As of May 2020, 14 FMUs have been certified under the Malaysia Timber Certification Scheme (MTCS), covering 1,319,057 ha. The government also identified 200,000 ha as priority areas for restoration across Sarawak and embarked on an initiative to employ communities in restoration activities.

In other countries, FTA influenced policy-makers and NGOs to design and implement national policy to support poor communities and environmental management objectives through a rewards for environmental services (RES) approach; four schemes have been developed to date across Indonesia, the Philippines, Vietnam, and China. In Indonesia, FTA researchers provided inputs and project lessons to the KHLK that influenced the drafting of the National RES Protocol (Law 32/2009), reflecting both PFES and RES as economic instruments. In the Philippines, FTA assisted the National RES Technical Working Group to solicit viable policy options for RES that fed into the drafting of the Climate Change Act and review of the Sustainable Forest Management Act. In Vietnam, FTA findings informed the Decree for the Payments of Forest Environmental Services (Decision No.99/2010) and its guidelines, which regulate the types of environmental services, the rights and responsibilities of providers and users, and management and use of payments. FTA researchers also developed a proposal to implement Decree 99 as a pilot on 100 ha in Bac Kan province. Country-wide implementation of RES began in January 2011. In China, national and sub-national governments adopted FTA's lessons on RES to design an ecological land use plan for grasslands in Xishuangbanna Prefecture.

While FTA also engaged stakeholders in India, Nepal, and Bhutan, there is no evidence of policy change to date through this portfolio of work. In India, a partner (e.g., Wetland International India) presented three of FTA's wetland management scenarios to stakeholders of India's National Environment Policy, with the intent to influence inclusion of economic incentives for environmental consideration. While PFES or RES have not have been incorporated into policy, the Loktak Development Authority of India expressed interest to use the scenarios to inform the short- and long-term management of wetlands in Manipur state. Any action spurred by this interest has yet to be observed. Similarly, FTA's policy engagement in Nepal only served to influence a shift in attitudes regarding the recognition of PFES in Hindu Kush Himalayan countries through a partner (e.g., International Center for Integrated Mountain Development). However, through other engagements with the Government of Nepal, FTA supported a national consultation process that resulted in a National Agroforestry Policy; learn more about this policy contribution in Box 3.

Box 3. FTA Showcase: Assisting the Development of an Agroforestry Policy in Nepal

Background

With mounting vulnerability to the many effects of climate change, such as droughts, soil erosion, storms, landslides, and avalanches, Nepalese farmers have relied on agroforestry systems to shelter their croplands and diversify their incomes. Yet, existing policy frameworks prior to 2018 provided unclear and conflicting regulations for the governance of agroforestry and imposed restrictions on the trade and transport of timber and NTFPs from farms.

Supporting the Policy Process

Dialogue for an overarching policy dedicated to the management of agroforestry in Nepal first began as part of a national consultation held in 2015, which was jointly organized by the Government of Nepal, ICRAF, and the Asia Network for Sustainable Agriculture and Bio-resources (ANSAB). In recognition of the successes from India's experience (see discussion in the Challenge 4 report) and the need to devise a national agroforestry policy for Nepal, the Ministries of Agricultural Development (MOAD) and Forest and Soil Conservation (MFSC) signed the 2015 Kathmandu Declaration on Agroforestry. Following, the government formed an inter-ministerial coordination committee to organize a series of multi-stakeholder consultations with representatives from the government, research institutes, universities, farmers associations, and NGOs involved in forestry, agriculture, and rural development. ICRAF was invited to join as a member of the committee, co-facilitate the consultations, and provide technical support throughout the process. As part of this support, ICRAF analyzed 32 policies, laws, and strategic plans regulating agroforestry in the country to identify gaps, incongruities, and opportunities for alignment (e.g., Nepal's NDC and Climate Change Policy). ICRAF also drew upon knowledge and experience from contributions to India's National Agroforestry Policy process.

Over the course of seven consultations held between 2016 and 2018, the committee gathered perspectives on how the policy could address regulatory barriers restricting the adoption of agroforestry systems from over 550 stakeholders to incorporate and reflect in the draft policy. The draft policy was submitted in September 2018, receiving approval from the Cabinet and Prime Minister in July 2019.



Figure 6. Launch of the policy by the Minister and Secretary of Agriculture; a member of the Planning Commission of Nepal; and Dr. Javed Rizvi (left to right). (Photo: Mohammad Abiar/[ICRAF](#))

Supporting Policy Implementation

The policy development process also served to strengthen the capacity of relevant governmental agencies to implement the policy. Yet, support is still needed to target suitable areas for agroforestry as part of implementation, and often the data needed to inform such decision-making is not available. ICRAF continues to provide science-based evidence and advice to the government to advance agroforestry governance and practice. A scientist from ICRAF remains the only non-governmental member of the inter-ministerial coordination committee overseeing the implementation of the policy.

Implications of the Policy

Nepal's National Agroforestry Policy is expected to promote the uptake of agroforestry by smallholders; strengthen and reinforce an enabling regulatory environment; enhance the governments' technical assistance and extensions services for agroforestry; invest in and develop markets and sources of income; and ultimately support more climate-resilient and sustainably managed agroforestry systems.

Practice Influence

FTA supported practice change by hosting workshops and training sessions for multi-level governments, practitioners, NGOs, and communities in all eight countries, having notable influence in India. For example, four Joint Forest Management Committees (JFMC) adopted a community-based monitoring system, following FTA's promotion of community-based management, monitoring pilots, and sharing of technical resources produced by FTA (e.g., guidelines, manuals). As a result of FTA's pilots and training workshops in 25 villages in Mandla, Madhya Pradesh and 25 villages in Sirsi, Karnataka, communities gained new knowledge on sustainable harvesting and forest management practices for NTFPs, leading to the adoption of sustainable harvesting practices and fuelwood management by 500 and 200 people, respectively. In Sirsi, 30 CSOs formed and collectively registered as a farmer-producer company focused on NTFP collection. Several of these CSOs have also pursued new business ventures (e.g., tree nurseries, seed and oil processor) and accessed new markets (e.g., fruit, flowers) as they recognize the long-term income potential from NTFPs from joint sales and sustainable management. Using their competitive advantage and proximate location, two nurseries struck a contract to provide saplings to the government-run Narmada River Basin Restoration Program. In Bhutan, over 400 villagers and forest officers learned about ecosystem services and how to apply the Millennium Ecosystem Assessment tool to support decision-making, enabling them to identify ecosystem services in local FMUs and negotiate PFES.

Across all project sites, FTA supported the establishment of independent national networks and communities of practice for RES, enhancing trust-building between stakeholders, coordination, and advocacy for community needs, enabling policies for RES, and co-investment. Approximately 23 companies and 600 smallholders learned about RES schemes, becoming more aware about the causes of ecosystem service degradation, sustainable management measures, and how to strengthen local institutions. FTA also provided technical assistance to local NGOs to equip them to support communities' and companies' business cases, negotiations, and contracts for RES, as well as renegotiate and expand reward schemes to new areas. Such examples in the Philippines include implementation support for the Lantapan Incentive-based Policy Programme and the National Power Corporation's negotiation with local governments to co-fund the rehabilitation and management of the Alanib sub-watershed. In Vietnam, FTA helped facilitate the development of a community contract between the Leo Keo community and Ba Be National Park as part of the Pro-poor Partnerships for Agroforestry Development Project (3PAD) pilot for PFES.

Research Influence

FTA's research influence positively affected partners' capacities, the uptake of FTA methods and outputs, and advanced the research agenda on rewards-based environmental management. In Bhutan, university partners (e.g., Ugyen Wangchuck Institute for Conservation and Environment (UWICE)) gained an appreciation of local knowledge, learned how communities value forests, built research skills through training in participatory action

research (PAR) and ecosystem service assessment, and enhanced relationships with study site communities to continue engagement on the topic. In Vietnam, FTA supported a partner (e.g., Thai Nguyen University of Agriculture and Forestry) to develop an undergraduate curriculum on PFES.

There are at least eight projects – led by international research partners such as UNDP, FAO, Asian Development Bank (ADB), the Canadian International Development Agency (CIDA), and the Danish International Development Agency (DIDA) and government allies like the Government of Vietnam and the KHLK in Indonesia – which have taken up reward scheme concepts and approaches introduced by FTA (e.g., via RUPES 2). Based on the same project, FAO, Forest Trends, and The Economics of Ecosystem and Biodiversity (TEEB) Initiative published best practices for RES. Partnerships fostered between ICRAF and IFAD created opportunities for follow-up activities in Nepal and China, additional technical support, and new projects (e.g., 3PAD). This partnership also influenced the agenda of research and development projects funded by IFAD, setting a target for 20 percent of projects in Asia to incorporate RES into their strategies; at least 6 of 33 new projects have done so to date. Based on their expertise, FTA researchers were invited to collaborate on a Cooperative for Assistance and Relief Everywhere (CARE) and World Wildlife Fund (WWF) global project, focused on equitable PFES for a watershed scheme and provide inputs to partners' existing projects in Kenya and Tanzania.

Potential Impact

With successful certification of 14 FMU in Sarawak, Malaysia, 1,319,057 ha of natural forests are under improved management. In Bhutan, FTA's five FMU study sites cover 34,549 ha, which have potential to be better managed if future negotiations for PFES succeed. In Vietnam, FTA study sites in Ba Be district cover 54,876 ha, and plans to implement the PFES pilot have targeted 100 ha in Bac Kan province. Estimates of impact potential are still to be determined for Indonesia, Philippines, China, India, and Nepal.

Table 16. Support to Landscape Restoration and Management in Asia Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<p>Malaysia:</p> <ul style="list-style-type: none"> Co-developed the 2017 Strategy and Action Plan for Forest and Landscape Restoration in Sarawak <ul style="list-style-type: none"> Forest and Landscape Restoration programme established Issued replanting directive (DF Circular No.2/2019) Revised timber levy (DF Circular No.10/2018) Issued forest certification requirement (DF Circular No.4/2018) <ul style="list-style-type: none"> 14 FMU have been certified under the MTCS Identification of priority areas for restoration Initiative to employ communities in restoration <p>Indonesia:</p> <ul style="list-style-type: none"> Influenced the National RES Protocol for Law 32/2009 <p>Philippines:</p> <ul style="list-style-type: none"> Assisted drafting of Climate Change Act and Sustainable Forest Management Act <p>Vietnam:</p> <ul style="list-style-type: none"> Supported development of Decision No.99/2010 and its guidelines <p>China:</p> <ul style="list-style-type: none"> National and sub-national governments adopted RES lessons to design a land use plan in Xishuangbanna Prefecture <p>India:</p> <ul style="list-style-type: none"> Partner presented FTA wetland management scenarios to inform the National Environmental Policy <p>Nepal:</p> <ul style="list-style-type: none"> Shift in recognition of PFES in Hindu Kush Himalayan region Contributed to the Kathmandu Declaration on Agroforestry (2015) and National Agroforestry Policy (2019)
Practice Influence	<p>India:</p> <ul style="list-style-type: none"> Community-based forest monitoring system adopted by JFMC Piloting and capacity-building in 50 villages in two states <ul style="list-style-type: none"> 500 people adopted sustainable harvesting practices for NTFP 200 people adopted fuelwood management tools and techniques 30 CSOs for NTFP collection established in Sirsi (40 percent of members are women)

	<ul style="list-style-type: none"> Several CSOs embarked on new business ventures (e.g., tree nurseries, seed and oil processor) and accessed new markets (e.g., fruits, flowers) <ul style="list-style-type: none"> Supplied saplings to Narmada River Basin Restoration Program <p>Bhutan:</p> <ul style="list-style-type: none"> 423 people learned about ecosystem services using FTA tool to support decision-making <p>Across the region:</p> <ul style="list-style-type: none"> Supported establishment of independent national networks and communities of practice for RES <ul style="list-style-type: none"> Enhanced trust-building, coordination, and advocacy 23 companies and over 600 smallholders learned about RES schemes across 6 countries FTA provided technical assistance to local NGOs to support business cases for RES Partners equipped to renegotiate and expand reward schemes to new areas <ul style="list-style-type: none"> Philippines: Implementation of Lantapan Incentive-based Policy Programme Philippines: National Power Corporation committed to co-fund rehabilitation and management of watershed in Lantapan Vietnam: Community contract between Leo Keo community and Ba Be National Park as part of 3PAD pilot
Research Influence	<ul style="list-style-type: none"> Produced 162 outputs <ul style="list-style-type: none"> 121 publications (articles, book chapters, working papers, briefs, etc.), 1,384 citations, 9,149 downloads 10 tailored products (infographics, manuals, brochures, flyers, etc.), 1,152 views, no download data 13 blogs (9,883 views) 12 videos (2,990 views) Bhutanese research partner built research skills (e.g., UWICE) Enhanced researcher-community relationships in Bhutan study sites Supported research partner to develop undergraduate curriculum on PFES (e.g., Thai Nguyen University of Agriculture and Forestry) Uptake of reward scheme concepts and approaches introduced by FTA in 8 other projects FAO, Forest Trends, and TEEB produced output on best practices for RES based on RUPES 2 Enhanced partnership between FTA centres (e.g., ICRAF) and IFAD for future collaborations FTA invited to collaborate on and review CARE-WWF projects
Potential Impact	<ul style="list-style-type: none"> 14 certified FMU cover 1,319,057 ha of natural forest in Malaysia 5 FMU study sites cover 34,549 ha in Bhutan (potential for future PFES) Project sites in Vietnam's Ba Be district cover 54,876 ha (potential for future PFES) <ul style="list-style-type: none"> Proposed pilot in Bac Kan planned for 100 ha

Expanding Market Options via Landscape Management in Asia Cluster Results:

In pursuit of green growth and sustainable value chains in Indonesia and Vietnam, FTA engaged multi-level governments, extensionists, and communities to promote agroforestry-based management systems and NTFP market options that are productive, profitable, and ecologically sustainable. Key results of the Expanding Market Options via Landscape Management cluster are summarized in Table 17. For a list of projects in this cluster, see Table 38 in Appendix 1.

Policy Influence

By sharing findings on landscape-appropriate agroforestry options, market suitability assessments, and scenario models with government stakeholders, FTA successfully influenced multiple policies. For example, in Indonesia, effective engagement with stakeholders of the Farm Forestry Consortium led to the integration of NTFP and timber production and trade in the agenda, with a mandate to devise an action plan based on FTA recommendations. FTA's outputs provided a scientific basis for and informed the priority-setting of the Grand Strategy for Integrated Management of Timber and NTFPs at the Landscape Level, outlining viable NTFP commodity options and logistics for suitable market development. These contributions improved community and local government understanding of, and capacity to contribute to, land governance and spatial planning processes. Both provincial governments in West and East Nusa Tenggara released decrees supporting the Grand Strategy and approving the formation of a working group on timber and NTFPs management (No.70/2015; No.1224/2015; No.1286/2015). FTA helped equip local government and village leaders to develop local strategies for integrated NTFP management, with nine villages committing to the Grand Strategy in their RPJMD. Four of these villages were engaged directly by FTA (e.g., Oelekam, Bosen, Bonleu, Fatumnasi), and five others (e.g., Nenas, Kuanoel,

Tutem, Nunbena, Taneotob) followed suit with support of project partners like the Kabupaten government and WWF. FTA's scenarios demonstrating the optimization of economic benefits and environmental land use for the Bantulante watershed were taken up by the Sumbawa District Planning Agency and incorporated into strategic district planning for 2017. FTA's scenarios provided the Agency with a scientific basis for land use planning budget allocation for environmental improvement in Sumbawa, covering an area of 75,566 ha.

Similarly, in Vietnam, FTA's participation in a national agroforestry policy dialogue led to the establishment of the National Technical Working Group on Agroforestry, where FTA centres and partners promoted integrated landscape management via agroforestry systems. Through this engagement, FTA contributed to three inter-related national-level instruments supporting agroforestry and fruit tree solutions to improve livelihoods and climate change resilience (i.e., National Action Plan Framework for Adaptation and Mitigation of Climate Change of the Agriculture and Rural Development Sector (2008-2020); National Decision No.1055/QĐ-TTg; MARD Decision No.156/QĐ-BNN-KHCN). Through knowledge-sharing and involvement in policy dialogues with provincial policy-makers in Yen Bai province, FTA also influenced the enactment of three provincial policies supporting the implementation of son tra (H'mong apple) development (Decision No.2412/QĐ-UBND); a 6 million VND (USD 260) subsidy for households adopting son tra-based agroforestry in Tram Tau and Mu Cang Chai districts (Resolution No.15/2015/NQ-HĐND); and a subsidy of 1 million VND (USD 45) for each hectare where maize-grass cultivation has been planted along contour lines to reduce erosion on sloping lands (Decision No.27/2015/QĐ-UBND). In Lam Dong province, FTA developed green growth scenario models using the Land Use Planning for Multiple Environmental Services (LUMENS) framework and supported Vietnamese stakeholders to co-identify green growth interventions and co-develop green growth action plans. FTA's outputs and engagements informed the 2021-2030 Green Growth Action Plan of Lam Dong province (Decision No.68/QĐ-UBND), which outlines nine areas of targeted green growth development and promote integrated agroforestry systems.

Practice Influence

FTA's influence on practice was also notable. In Indonesia, FTA offered training and field schools for extensionists and 2,436 smallholders on agroforestry, silviculture, apiculture, NTFP management, and value-addition. Communities developed technical skills and capacities to harvest, produce, and market diverse and high-quality commodities for better prices (e.g., *Indigofera* paste, virgin coconut oil, candlenut oil). There is insufficient evidence that extensionists are better equipped to support farmers. However, in Sumbawa, communities and farmer groups can access additional support to improve bee-keeping and honey-harvesting practices from a government-established apiculture learning centre. FTA's support to communities also led to the establishment of various CSOs (e.g., Bamboo Growers Association in Gunungkidul) and community-owned enterprises (e.g., timber and honey production businesses in Sumbawa).

In Vietnam, FTA established numerous farm demonstration trials (FDT) and exemplar landscapes (EL), two of which were established through a co-investment scheme with farmers and government agencies in Son La and Yen Bai provinces. Approximately 1,200 farmers, extensionists, local government officials, and researchers across six districts in Son La, Yen Bai, and Dien Bien provinces learned about context-appropriate agroforestry systems, son tra value chains, and on-farm tree nursery management through FDT, EL, and cross-farm trainings and distributed extension materials produced by FTA. FTA's action research influenced changes in conventional thinking and reliance on mono-cropping systems as both participating and non-participating communities have begun to take up integrated agroforestry-based land use systems and practices. FTA also provided training in LUMENS and Long-range Energy Alternatives Planning (LEAP) tools to 11 provincial and district-level government stakeholders in Lam Dong province, with indications of participants' interest to apply the tools for sustainable land use planning and monitoring of the province's Green Growth Action Plan.

Research Influence

Evidence of research influence is limited. FTA supported capacity-building of AFLI research partners from government research institutions and local universities, including students, via training, internships, and opportunities to participate in the World Agroforestry Congress.

Potential Impact

In Yogyakarta, Indonesia, FTA's demonstration plots covering 1,218 ha showcase sustainable agroforestry, silvicultural, and apicultural practices to communities, which could expand to and be taken up by other districts targeted by FTA-influenced policy. In Sumbawa district, 75,566 ha are now under improved land use planning and environmental management. In Vietnam, a total of 4,420 ha of FDT, EL, and son tra plantations have been placed under better management, with potential for between 123,000 and 247,000 households across Son La, Yen Bai, and Dien Bien provinces to establish and manage 1.4 million ha of son tra-based agroforestry to rehabilitate landscapes, local biodiversity, and other ecosystem services. With growing political will for green growth in Lam Dong province, there is potential for 37,680 ha of agricultural areas and 168,977 ha of forests to be more sustainably managed.

Table 17. Expanding Market Options via Landscape Management in Asia Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<p>Indonesia:</p> <ul style="list-style-type: none"> • Influenced the Farm Forestry Consortium agenda • Informed NTFP priority-setting for Grand Strategy of NTFP Development <ul style="list-style-type: none"> • Supported by provincial decrees • Implemented in 9 villages' RPJMDs • Uptake of findings by Sumbawa District Planning Agency into strategic planning for 2017 <p>Vietnam:</p> <ul style="list-style-type: none"> • Established National Technical Working Group on Agroforestry • Contributed to national-level instruments <ul style="list-style-type: none"> • Reflect support for fruit tree agroforestry development in national action plan on climate change • Influenced enactment of 3 provincial policies <ul style="list-style-type: none"> • Implementation of son tra development • Subsidy for adoption of son tra-based agroforestry • Subsidy for adoption of maize-grass cultivation on sloping lands • FTA's scenarios influenced 2021-2030 Green Growth Action Plan of Lam Dong province
Practice Influence	<p>Indonesia:</p> <ul style="list-style-type: none"> • 2,436 smallholders built capacities in agroforestry, silviculture, apiculture, and NTFP value-addition • Regency government established an apiculture learning centre in Sumbawa to support practice • Established various CSOs and community-owned enterprises <p>Vietnam:</p> <ul style="list-style-type: none"> • 2 EL established through co-investment scheme with government • Capacity-building of ~1,200 people via FDT, EL, and cross-farm trainings <ul style="list-style-type: none"> • Influenced smallholder uptake of agroforestry practices • 11 of government stakeholders trained in LUMENS and LEAP tools <ul style="list-style-type: none"> • Indications of intended uptake of LUMENS and LEAP in Lam Dong province
Research Influence	<ul style="list-style-type: none"> • Produced 54 outputs <ul style="list-style-type: none"> • 14 publications (articles, book chapters, working papers, briefs, etc.), 153 citations, 176 downloads • 7 tailored products (manuals, newsletters, brochures, posters, etc.), 151 downloads • 14 blogs (no view data) • 19 videos (15,203 views) • Research partners participated in the World Agroforestry Congress in 2014 • 7 undergraduate, 8 Masters, and 2 doctoral students built research capacities
Potential Impact	<ul style="list-style-type: none"> • Demonstration plots implemented on 1,218 ha in Yogyakarta in Indonesia • 75,566 ha under improved land use planning and environmental management in Sumbawa district in Indonesia • 300 ha of FDT and 300 ha of EL established across Son La, Yen Bai, and Dien Bien provinces in Vietnam • 3,820 ha of son tra plantations placed under better management in Vietnam <ul style="list-style-type: none"> • Potential for 1.4 million ha to be brought under son tra-based agroforestry management by 123,000-247,000 households • Potential for 37,680 ha of agricultural areas to be put under sustainable farming practices and 169,977 ha of forests to be put under SFM in Vietnam

Community Forest Management in Indonesia Cluster Results:

To expand and bolster community-driven forest governance arrangements for tenure and sustainable management in Indonesia, FTA modelled management scenarios based on priority agroforestry systems and trialed different participatory governance arrangements and environmental service schemes in 21 study sites. Key results of the Community Forest Management in Indonesia cluster are summarized in Table 18. For a list of projects in this cluster, see Table 39 in Appendix 1.

Policy Influence

FTA liaised extensively with local governments and communities to influence policy processes. Notably, FTA contributed to the preparation of a 35-year village forest license (HPHD) for nine villages, accelerating the application process; all nine licenses were approved, strengthening communities' forest management rights for 49,703 ha across Bungo, Merangin, and Batanghari districts in Jambi province. FTA also helped these communities to co-develop village forest management plans (RKHD), seven of which were approved. The RKHD were integrated into the 2015-2021 RPJMD. FTA influenced revisions of a governmental decree to delegate authority for HPHD to a provincial-level body (No.47/2013) and contributed to the establishment of the Community-based Forest Management Working Group (CBFM) to expedite HPHD review and approval (via Regent Decree No.56/Bunhut/2014). Additional policy influence in Jambi province includes invitations to support the design of a provincial low-emissions development plan, which involved participation in the development of a Regional Action Plan for Reducing Greenhouse Gas Emissions (RAD-GRK) and a Provincial Action Plan Strategy (SRAP). FTA also helped establish the Dialogue Forum for Social Forestry (FRPS). To support the expansion of community-led forestry schemes into other districts (e.g., Sarolangun, Kerinci), FTA shared findings at the FRPS identifying areas with potential for HPHD, HKm, and community plantations (HTR).

In Sulawesi, FTA's engagements and participatory mapping with governments built mutual understanding of participatory governance arrangements, which have been mainstreamed into policy. Notably, four districts (e.g., Bantaeng, Bulukumba, Jeneponto, Gowa) implemented a strategy for sustainable livelihoods and conservation promoted by FTA, each stimulating further actions for governance. For example, in Bantaeng, the district government requested FTA and partner organizations help facilitate land use planning for all villages in the district as well as forest management farmers groups (KTPH). Based on this support, the district government in Bulukumba was equipped to draft and submit a regulation to give formal recognition to the forest management rights of the Ammatoa Kajang indigenous people (a process that had failed to come to fruition in the past). Receiving approval from the Regional House of Representatives (DPRD), the regulation was passed in 2015 (PERDA No.9/2015: P3MHA), which gave formal designation to the Kajang people, re-established the boundaries of their customary lands (amounting to nearly 314 ha), and addressed prior land conflicts. FTA's involvement in this process also served to increase stakeholders' understanding and capacities to establish and implement collaborative and participatory governance structures. As the first district regulation protecting indigenous rights, both the President of Indonesia and the KHLK refer to the Kajang customary forest process as an exemplary model that could be used as a guide for other communities seeking to establish CFM rights.

In Jeneponto, the results of the participatory land use planning led by FTA were presented to the Regional Development Planning Agency (BAPPEDA), which led to the creation of a multi-sectoral working group to design the planning vision for the district. Through this working group, FTA contributed to discussions on SWC, sloping land technology, and agroforestry practices for improved upland management, and promoted the idea of drafting a district regulation on environmental services. While a district regulation has not been finalized, BAPPEDA agreed to assume responsibility for the integration of sustainable land use management into Jeneponto's district development planning.

In total, FTA contributed to the development and implementation of six RES schemes and seven governance agreements for sustainable NRM of forests and agroforestry, affecting 73 communities across ten districts in South Sulawesi, Southeast Sulawesi, and Gorontalo (covering approximately 780,000 ha).

Practice Influence

FTA influenced the practices of communities, governments, and NGOs through extensive capacity-building activities. Upwards of 20,000 people learned about sustainable NRM and nearly 8,500 people across 195 institutions gained greater knowledge on participatory governance arrangements. At the community level, over 300 people either received training in HPHD application or RKHD development; nearly 3,500 farmers participated in 562 FDT, where they could apply new knowledge and test management innovations; over 13,500 people learned about and built skills in agroforestry management practices to sustainably manage to their rubber and cacao plantations; and over 15,250 people built capacities in nursery management and tree propagation techniques. FTA also supported the establishment and strengthening of 114 community-based agroforestry enterprises. As a result of FTA's training, participating villagers are more likely to share learning, join farmer groups, and act as independent extensionists within their community. Some communities have already begun to practice tree-based agroforestry by establishing tree nurseries and planting trees on farm or degraded forest lands for SWC management.

In terms of influence on government and NGO practice, FTA's training equipped 21 people with GIS and spatial analytical skills; 38 people with capacities to apply FTA's LUMENS tool for land use planning; and nearly 2,000 people to use FTA's Capacity Strengthening Approach to Vulnerability Assessment (CaSAVA) method and protocols. A further 33 people were trained in carbon stock and biodiversity monitoring; nearly 7,000 people in forest law, governance, conservation, and land use planning; and over 4,300 people in RES schemes. FTA helped establish working groups on low-emission strategies in three districts, where collaborative testing of LUMENS with district governments led to uptake and integration of the tool within existing district spatial and development planning processes (e.g., regional spatial planning (RTRW), RPJMD, RAD-GRK) to monitor environmental services. FTA also contributed to the establishment of a multi-stakeholder participatory forest monitoring forum with CBOs, researchers, and government agencies to support advocacy, lobbying, training, and the development of a social, environmental, and livelihood monitoring system. Monitoring schemes have been piloted in three village forests to date. The Forestry Service in Jambi now provides improved technical assistance to RKHD processes, basing decision-making on scientific results. In 2014, FTA partnered with local governments to launch a tree adoption program in Desa Rantau Kermas, which enables the public to participate in forest conservation; donations raised through the program are reinvested into forest management and community development.

Research Influence

Evidence of research influence is limited. FTA's research collaborations strengthened working relationships with governmental research institutions (e.g., Indonesian Institute of Science (LIPI)) to foster social capital for future research and engagement, as well as implementing partner organizations who continue to intervene and support community forestry processes in the study areas post-project. FTA provided 27 students (19 Indonesian, 8 international) with opportunities to conduct field research in collaboration with FTA, broadening their knowledge of CFM in the Indonesian context, exposing students to new research methods and tools, and expanding students' networks. Methods developed as part of research on CFM in Indonesia have been taken up and tested in other FTA projects (e.g., Climate-smart, Tree-based, Co-investment in Adaptation and Mitigation in Asia (STI)) and beyond; for an example of the latter, a co-funder expressed interest to adopt CaSAVA to apply in a series of IFAD-funded projects in the Philippines.

Potential Impact

FTA's contributions to community-based forest governance arrangements can be linked to 49,703 ha being licensed under HPHD in Jambi, 314 ha under community arrangements in South Sulawesi, and 780,273 ha of forests being placed under improved sustainable NRM in South Sulawesi, Southeast Sulawesi, and Gorontalo.

Table 18. Community Forest Management in Indonesia Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<ul style="list-style-type: none"> • 9 HPHD prepared and approved for 35 years <ul style="list-style-type: none"> • 7 of 9 co-developed RKHD approved • RKHD integrated into RPJMD • Influenced revisions of a governmental decree (No.47/2013) shifting HPHD authority • CBFM Task Force established to expedite the HPHD process (Regent Decree No.56/Bunhut/2014) • FTA invited to support the design of a provincial low-emissions development plan <ul style="list-style-type: none"> • Contributed to RAD-GRK and SRAP • Influenced establishment of FRPS to expand social forestry scheme • 4 districts implemented strategy for sustainable livelihoods and conservation <ul style="list-style-type: none"> • Bantaeng government invited partner organization to support land-use planning for villages and KTPH • Bulukumba government passed regulation (PERDA No.9/2015: P3MHA) formally recognizing forest management of Kajang indigenous people • Jeneponto government presented land-use planning results to BAPPEDA, leading to a new working group • Total influence on 6 RES schemes and 7 governance agreements for NRM
Practice Influence	<ul style="list-style-type: none"> • 21,360 people learned about sustainable NRM • 8,429 people across 195 institutions learned about participatory governance • Extensive community capacities built: <ul style="list-style-type: none"> • 23 people trained in how to apply for a HPHD • 315 people trained in how to develop a RKHD • 562 FDT established with 3,469 farmers • 13,585 people trained in agroforestry management (e.g., rubber, cacao, etc.) • 15,272 people trained in nursery management and tree propagation • 114 community-based agroforestry enterprises established or strengthened • Government and NGO capacities built: <ul style="list-style-type: none"> • 21 people trained in GIS and spatial analysis • 38 people trained in LUMENS for land use planning • 1,978 people trained in CaSAVA method and protocols • 33 people trained in carbon and biodiversity monitoring • 6,967 people trained in forest law, governance, conservation, and land-use planning • 4,323 people trained in RES • Working groups on low-emission strategies established in 3 districts <ul style="list-style-type: none"> • Collaborative testing of LUMENS tool with district governments • Multi-stakeholder participatory forest monitoring forum established • Monitoring schemes piloted in 3 village forests • Forestry Service in Jambi now provides improved technical assistance to RKHD processes • Tree adoption program developed in Desa Rantau Kermas since 2014 (130 trees adopted as of 2016)
Research Influence	<ul style="list-style-type: none"> • Produced 179 outputs <ul style="list-style-type: none"> • 79 publications (articles, working papers, briefs, conference papers, etc.), no citation/download data • 14 tailored products (policy briefs, etc.), no download/view data • 74 blogs (no view data) • 12 videos (24,788 views) • Strengthened research collaborations and working relationships with government (e.g., LIPI) and partners • Built student capacities • CaSAVA method tested in other FTA projects (e.g., STI) <ul style="list-style-type: none"> • Co-funder expressed interest in adopting method in other projects in the Philippines
Potential Impact	<ul style="list-style-type: none"> • KHLK's target for CBFM aims to designate 500,000 ha as village forest in Jambi <ul style="list-style-type: none"> • 49,703 ha of village forest permits have been allocated to date • 314 ha of customary forest allocated to Kajang community • Project targeted 500,000 ha in South Sulawesi, Southeast Sulawesi, and Gorgontalo <ul style="list-style-type: none"> • 780,273 ha placed under improved sustainable NRM in target provinces

Watershed Management in South-east Asia Cluster Results:

To address unsustainable land use practices within watersheds affecting both ecosystems and communities up- and downstream, FTA supported the implementation of public-private governance arrangements and produced recommendations, spatial data, and context-appropriate watershed management approaches to conserve watersheds, surrounding natural resources, and ecosystem services. Key results of the Watershed Management cluster are summarized in Table 19. For a list of projects in this cluster, see Table 40 in Appendix 1.

Policy Influence

In Indonesia, there are clear indications that learning and recommendations have been internalized by local and national governments in the implementation of policy change. At the national level, the KHLK adopted FTA's Integrated Watershed Management Approach (IWMA) to manage 2.5 million ha of degraded forest lands in 108 watersheds. Serving as members of various task forces, CIFOR researchers and NGO collaborators provided information to support the operationalization of the IWMA and other activities for natural resource and ecosystem conservation (SK.380/KSDAE/SET/REN.2/10/2018). Moreover, FTA and NGO partners' engagements, sharing of findings, and lobbying influenced the development of district regulations as well as municipal and regional development plans that govern the implementation of watershed management on-the-ground. For example, FTA's landscape approach and spatial data identifying priority watersheds were operationalized in the Grand Strategy for Integrated Management of Timber and NTFPs at the Landscape Level (which FTA helped produce under the KANOPPI project) in the Sumbawa district. The Grand Strategy was adopted by the FMU as part of its long- and short-term management plans, providing strategic direction to improve coordination and institutional arrangements, promote and support forest-based value chains, and manage and rehabilitate watersheds and buffer zones. FTA and partners helped establish the Working Group of Payment for Environmental Services to draft a local regulation to collect and manage funds under the PFES scheme for the Sumbawa district. Samawa Center, a NGO partner, was invited to support the development of Sumbawa district's 2016-2021 RPJMD and also collaborated with local government and several communities to produce an inter-village agreement to manage the Sumbawa Watershed (covering 20,756 ha). Local government in Kapuas Hulu agreed to draft supporting district recommendations to make *tengkawang* a NTFP primary commodity, drawing upon FTA learning on local edible fruits which support rehabilitation of the upstream Labien-Leboyan watershed (covering 106,925.5 ha) and are appropriate for NTFP value chains. In Bulukumba, CIFOR and NGO partners helped convene and support collaborative processes with district governments and community stakeholders from two villages (Malleleng village, Tanah Toa village) situated on the Raowa watershed (covering 4,408.5 ha) to strengthen local institutional capacities to advance regulations for indigenous customary forest rights. As a result, NGO partners from the Balang Institute/Organization for Action on Social Issues and the Environment (OASE) were invited to join a task force assigned to produce a regulatory framework clarifying the role of local governments in the protection of customary rights of the Kajang peoples. The resulting regulation from the government of Bulukumba district (No.40/2018) drew upon maps produced by FTA, which were used to inform integrated watershed management strategies and collaborative planning with communities along watershed boundaries. Balang Institute/OASE also supported drafting of the RPJMD for Bonto Lojong village upstream of Tangnga Watershed (covering 9,798.5 ha) to implement watershed management strategies. In other parts of Bantaeng, Balang Institute/OASE conducted activities with communities upstream of the Bialo and Biang Loe watersheds (covering 10,948 ha and 5,260.5 ha, respectively). In conjunction with a local government technical management unit, Teras Community partners initiated a collaborative mechanism to manage the watershed in the Nipa-Nipa Forest Reserve (covering 7,877.5 ha) and issue permits for environmental service use (e.g., water, ecotourism, carbon). Teras' continued lobbying using FTA's data in recommendations for improved water management influenced a provincial-level regulation to prevent exploitation of natural resources in Nipa-Nipa.

In the Philippines, FTA's findings and recommendations for watershed management were integrated into the development of 29 indigenous peoples plans and development plans across four river basins (e.g., Chico River Basin, Wahig-Inabanga River Basin, Lake Lanao River Basin, Upper Bukidnon River Basin).

Practice Influence

Practices were also influenced by FTA's research and engagements in both countries. In Indonesia, FTA enhanced local communities', governments', and companies' awareness on the need for IWMA. FTA equipped these stakeholders to co-identify common issues affecting downstream, midstream, and upstream areas and make informed decisions to manage water resources to prevent flooding and maintain water stores as seasons change. FTA offered extensive networking opportunities through meetings and workshops and strengthened working relationships between stakeholders. For example, regular dialogues are held between NGO partners, government representatives, communities, and companies in Sumbawa districts and several task forces and working groups have been established to support multi-stakeholder governance. NGO partners are better equipped to continue evidence-based policy advocacy and implement follow-up development programmes to assist watershed management on-the-ground. For example, the Riak Bumi Foundation continues to promote FTA's recommendations; offers community training in sustainable cultivation and agroforestry practices, biofuel production, organic fertilizer production, and NTFP value addition; and monitors activity in the Kapuas Hulu basin. In East Java, FTA supported the establishment of the Rejoso Watershed Care Forum (FPDR) and a science-based PFES scheme, which is being piloted as a public-private co-investment model for watershed management.

In the Philippines, collaborative testing with and training of 476 people from participating CBOs supported practical learning in how to use and apply FTA's community-based participatory Environment and Social Safeguards (ESS) monitoring tool. As a result of their engagements and partnerships with FTA, 428 CBOs implemented NRM practices in 1,281 sub-projects related to agroforestry, commercial tree plantations, conservation farming, ANR, reforestation, and community-based protection and monitoring. Adoption of NRM supports reduced sedimentation, run-off, and pollution from agricultural activities and improves the quality of watershed ecosystems, forest density, and support greater biodiversity.

Research Influence

While no research pathway was envisaged for this cluster, FTA enhanced partners' research skills and supported student capacity-building through the research process. 257 NGO and government partners learned about and built skills in qualitative data management, policy analysis, GIS, PAR, and IWMA. This equipped NGO partners to identify topics of interest and develop proposals to continue research on watershed management issues post-project. Students' involvement in the project and linked internships with NGO partners supported eight undergraduate, four graduate students, and 32 research assistants, who gained knowledge about watershed management; built skills in GIS, IWMA, and academic writing; and acquired professional experience to support future careers in academia, NRM, or watershed management.

Potential Impact

In Indonesia, the KHLK's adoption of the IWMA approach supports the management of 2.5 million ha of degraded forest lands across 108 watersheds; however, implementation on-the-ground has been limited to date and continues to be a focus of FTA and NGO partners' support. FTA's study areas in different watersheds cover a total area of 228,747.5 ha (Sumbawa Watershed, Nipa-Nipa Forest Reserve, Bialo Watershed, Biang Loe Watershed, Tangnga Watershed, Raowa Watershed, Labian-Leboyan Watershed, Rejoso Watershed); however, evidence of outcomes supporting improved governance arrangements and capacities for effective watershed management varied across study sites. Evidence was strong for the watersheds in Sumbawa, Tangnga, and Nipa-Nipa Forest Reserve, but outcomes in the Bialo, Biang Loe, Raowa, Labian-Leboyan, and Rejoso watersheds require further investigation. FTA and partners' continued support in the study watersheds are likely to lead to improved watershed management in the future. FTA's activities in the Philippines targeted 138,601 ha of watersheds; to date, uptake of sustainable agroforestry and NRM practices in partnering CBOs' sub-projects met approximately 90 percent of the target (i.e., 124,507 ha).

Table 19. Watershed Management in South-east Asia Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<p>Indonesia:</p> <ul style="list-style-type: none"> • KHLK adopted IWMA • FTA approach and data operationalized in Sumbawa 'Grand Strategy for Integrated Management of Timber and NTFPs at the Landscape Level'; Grand Strategy adopted by FMU • Working Group of PFES formed to produce local regulation to manage funds in Sumbawa district • NGO partner (Samawa Center) invited to support development of the 2016-2021 RPJMD for Sumbawa district <ul style="list-style-type: none"> • Supported inter-village agreement to manage Sumbawa Watershed • Kapuas Hulu government agreed to develop supporting recommendations to make <i>tengkawang</i> a NTFP primary commodity for the district • NGO partner (Balang Institute/OASE) invited to join task force to produce a regulatory framework regarding Kajang customary rights (No.40/2018) • NGO partner (Balang Institute/OASE) supporting drafting of RPJMD for Bonto Lojong village • Mechanism for watershed management and permit issuance for environmental service use (e.g., water, ecotourism, carbon) initiated in Nipa-Nipa <p>Philippines:</p> <ul style="list-style-type: none"> • FTA supported development of 29 indigenous peoples plans and development plans
Practice Influence	<p>Indonesia:</p> <ul style="list-style-type: none"> • Enhanced awareness on need for IWMA and understanding of water resource management • Enhanced networking and working relationships between stakeholders <ul style="list-style-type: none"> • Regular dialogues between NGOs, government, community, and companies • Co-identification of issues affecting downstream, midstream, and upstream stakeholders • Established a task force to support multi-stakeholder governance • Evidence-based decision-making of governments, NGOs, and private sector enhanced • NGO partners equipped for policy advocacy and implementation of follow-up development programmes • NGO partner (Riak Bumi Foundation) supporting community training, monitoring, and promotion of FTA recommendations • FPDR multi-stakeholder forum established for protection of the Rejoso Watershed • Science-based PFES scheme established and piloted as a co-investment model in Rejoso Watershed <p>Philippines:</p> <ul style="list-style-type: none"> • 476 people from CBOs built capacities in community-based participatory ESS monitoring tool <ul style="list-style-type: none"> • Digital ESS platform (KoBoCollect) in development • 428 CBOs implemented NRM practices in 1,281 sub-projects across four river basins
Research Influence	<ul style="list-style-type: none"> • Produced 73 outputs <ul style="list-style-type: none"> • 33 publications (articles, book chapters, working papers, briefs, etc.), 101 citations, 1,247 downloads • 7 tailored product (infographics, manuals, brochures, flyers, etc.), 84 views, 67 downloads • 18 blogs (no view data) • 15 videos (121,029 views) • Enhanced research capacities of 257 NGO and government partners in qualitative data management, policy analysis, GIS, PAR, and IWMA <ul style="list-style-type: none"> • Supported NGO partners to develop proposal based on lessons learned • 8 undergraduates, 4 graduates (2 masters, 2 doctoral), and 32 research assistants built research capacities
Potential Impact	<ul style="list-style-type: none"> • KHLK adopted IWMA to manage 2.5 million ha of degraded forest lands across 108 watersheds in Indonesia <ul style="list-style-type: none"> • Sumbawa Watershed covers an area of 20,756 ha • Nipa-Nipa Forest Reserve covers an area of 7,877.5 ha • Bialo Watershed covers an area of 10,948 ha • Biang Loe Watershed covers an area of 5,260.5 ha • Tangnga Watershed covers an area of 9,798.5 ha • Raowa Watershed covers an area of 4,408.5 ha • Labian-Leboyan Watershed covers an area of 106,925.5 ha • Rejoso Watershed covers an area of 62,773 ha • INREMP targeted 138,601 ha of watersheds in the Philippines <ul style="list-style-type: none"> • 124,507 ha have been placed under NRM

Fire Management in Indonesia Cluster Results:

To promote pre-emptive fire management strategies in Indonesia, FTA undertook long-term research and engagement in Riau to investigate the socio-ecological aspects of fire. FTA framed fire management issues and preventative solutions, raised public awareness, developed policy inputs for a national fire prevention strategy, and supported communities to implement community-based fire prevention and restoration models. Key results are summarized in Table 20. For a list of projects in this cluster, see Table 41 in Appendix 1.

Policy Influence

FTA's research and engagements achieved policy influence at the national level, effectively shifting policy discourse from fire suppression to fire prevention. CIFOR became the go-to resource for government agencies like the KHLK and the BRG for information on fire and haze as well as collaborative action, being invited to co-develop recommendations for fire prevention strategies and discuss peat restoration initiatives. Governmental uptake of FTA's inputs and findings influenced the development of the Grand Design for Fire Prevention (2017-2019), which prohibits burning within a target area of 2.4 million ha of peatland. Findings also informed the Standard for Forest Plantation and Land Fires Prevention, where CIFOR provided inputs on canal blocking in peatland ecosystems, as well as regency- and provincial-level regulations on Fire Management and Prevention (e.g., Riau PERDA No.1/2019). Using Riau's PERDA as an example, the regulation reflects many of the points proposed in CIFOR's academic script (e.g., responsibilities of permit holders, budget for fire prevention, participatory principles and economic incentives for fire prevention, the role of NGOs in fire management support, etc.). The Indonesian government also used FTA's research in the National Board for Disaster Management's (BNPB) national statements on fire causes, a KHLK proposal for a World Bank loan to finance fire management, and the Coordinating Ministry of Economic Affairs' (Kemenko) discussions on interconnections between fire use and oil palm production. There is also evidence that the Dompas village government allocated USD 300,000 in funding for the management and maintenance of restored peatland to support fire prevention.

Practice Influence

In terms of practice influence, FTA's research and engagement also resulted in private sector forum discussions and commitments to fire prevention (e.g., Fire Free Alliance). A MoU was signed between CIFOR, ICRAF, and a large palm oil pulp and paper company to commit to fire prevention. FTA helped establish a multi-stakeholder forum to discuss fire and haze issues (e.g., Forum of Haze-free Country (FORSIBU)), which has fostered space for collaboration and the cross-pollination of knowledge between researchers, provincial and district governments, NGOs, and the private sector. NGO allies like Jikalahari and WWF used FTA's findings as part of their advocacy and integrated learning in their activities to support community transition to fire prevention practices. In Bengkalis regency, Riau, participating communities learned about fire management practices, institutionalized fire prevention and community-based monitoring systems, and applied new preventative fire practices and peatland management (e.g., sago planting, canal blocking, large and small pond development, dipwell monitoring, etc.). To date, participating communities have applied fire prevention models on 18.4 ha; planted sago on 11.4 ha; and applied canal blocking and rewetting practices on 56 ha in Dompas village. There are indications that this learning and capacity-building have positively influenced community attitudes around future fire usage and prevention measures. Moreover, several community groups registered under a single forest farmer group to support community-led fire prevention and peatland restoration action (e.g., Forest Farmer Group of Dompas Ghedang Cemerlang). FTA implemented a participatory Community-based Peatland Restoration Monitoring System (CO-PROMISE) on 11.1 ha across six PAR areas of the Dompas village study site.

Research Influence

Research influence was considerable. Research partnerships strengthened working relationships between CIFOR and local universities (e.g., University of Riau (UNRI), IPB) and built graduate student research capacities. As follow-up, UNRI partners launched a program for student volunteers to support fire prevention at the village level (e.g., Haze Clean Village Ambassador Volunteers (RDDSIBU)). Overall, FTA's research projects on fire and

haze in Indonesia raised the research profile of CIFOR, and captured the attention of national media and the public on science-based fire management.

Potential Impact

With clear evidence of FTA's contributions to the Grand Design for Fire Prevention and ongoing support to its implementation, it is likely that the policy target of 2.4 million ha of peatland will be better protected and managed. This estimate rests on the condition that no fires arise from natural causes, and that the policy is effectively implemented and enforced to incentivize reduced burning on peatlands. To date, participating communities have applied a variety of fire prevention, rewetting, and monitoring practices to a total of 85.5 ha in Bengkalis regency.

Table 20. Fire Management in Indonesia Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<ul style="list-style-type: none"> • Shift in policy discourse from fire suppression to fire prevention • Government consults CIFOR on forest fire issues (i.e., became the go-to resource institution) <ul style="list-style-type: none"> • KHLK invited CIFOR to co-develop recommendations on fire prevention strategies • Invitations from BRG to discuss collaboration on peat restoration • FTA research used as inputs to 3 draft policies: <ul style="list-style-type: none"> • Grand Design for Fire Prevention (2017-2019) • The Standard for Forest Plantation and Land Fires Prevention • Regency- and provincial-level Regulation on Fire Management and Prevention • FTA research used as inputs in other governmental processes: <ul style="list-style-type: none"> • BNPB statements on fire causes • KHLK proposal for a World Bank loan to finance fire management • Kemenko's discussions on fire and oil palm • Village government confirms allocation of funding for maintenance of peatland restoration
Practice Influence	<ul style="list-style-type: none"> • CIFOR invited to contribute to private sector-led Fire Free Alliance • Company signed a MoU committing to fire prevention • Multi-stakeholder forum on fire and haze established (e.g., FORSIBU) • NGOs use FTA findings in advocacy • NGOs (Jikalahari, WWF) facilitate implementation of fire prevention activities with communities (e.g., sago planting, canal blocking) • Company incorporated Dompas village into their Integrated Forest and Farming System Program • 99% of 110 farmers surveyed in Dompas, Riau plan to not use fire • Community-based fire prevention and peatland restoration institutions formalized <ul style="list-style-type: none"> • 7 community groups formally registered under 1 forest farmer group (e.g., Forest Farmer Group of Dompas Ghedang Cemerlang) • Implementation of participatory monitoring system (CO-PROMISE)
Research Influence	<ul style="list-style-type: none"> • Produced 37 outputs <ul style="list-style-type: none"> • 15 publications (articles, book chapters, working papers, briefs, etc.), 679 citations, 5,765 downloads • 4 tailored products (infographics, manuals, brochures, flyers, etc.), 12,106 downloads • 12 blogs (12,516 views) • 6 videos (2,757 views) • Strengthened partnerships with local universities (e.g., UNRI) • Partner university launched volunteer program for village-level fire prevention (RDDSIBU) in 4 districts • 2 UNRI students build research capacities in topic • 15 IPB student interns build capacities in topic • Journalists take interest in science on fire management • Public awareness raised • CIFOR's research profile raised on fire and haze management
Potential Impact	<ul style="list-style-type: none"> • Indonesia's Grand Design for Fire Prevention (2017-2019) aims to ensure that the peatland working area of the BRG (~2.4 million ha) is not burned • Community-based fire models applied on 11.4 ha of land in Riau • Sago planted on 7 ha and rewetting practices applied on 56 ha in Dompas village (1 large pond, 42 small ponds, canal blocking applied to 6 areas, 54 monitoring dipwells) • Monitoring of 11.1 ha in Dompas village using CO-PROMISE

Sustainable Oil Palm Management in Indonesia Cluster Results:

In efforts to support a more sustainable and equitable sector, FTA investigated governance arrangements, private sector commitments and value chains, changing land use and oil palm expansion, environmental degradation and biodiversity loss, and smallholder experiences within Indonesia's oil palm sector. Key results of the Oil Palm Management cluster are summarized in Table 21. For a list of projects in this cluster, see Table 42 in Appendix 1.

Policy Influence

FTA supported multi-stakeholder engagement and decision-making processes to influence policy at sub-national, national, and international levels (e.g., Sustainable Plantation Communication Forum (FKPB), Indonesian Sustainable Palm Oil (ISPO) Working Group, National Action Plan for Sustainable Oil Palm Plantations (RANKSB) Working Group, Roundtable for Sustainable Palm Oil (RSPO) Working Group on Human Rights). At the sub-national level, uptake of an academic script on high conservation value (HCV) areas supported by FTA and partners as well as FTA's HCV maps influenced a provincial-level regulation (PERDA) and corresponding governor's regulation (PERGUB) in East Kalimantan. These regulations contain implementing guidelines to improve the preservation and management of HCV. Sub-national government agency in West Kotawaringin used FTA's smallholder plantation data to inform the 2023 Spatial Plan of West Kotawaringin. FTA and partners' involvement in RANKSB and ISPO processes has yet to contribute to policy change at the national level, though future influence is likely with continued engagement in these fora. At the international level, FTA's findings on gender and the role of women in Indonesia's oil palm sector informed revisions made to RSPO's Principles and Criteria to reflect gender. As an onward effect, Wilmar – a RSPO-certified oil palm company – established a Women's Charter that outlines company commitments to uphold women's rights. The Charter also outlines governance arrangements to ensure the welfare, health, safety, protection, and equal opportunities for women working within the company's value chain.

Practice Influence

In terms of practice change, sub-national governments used spatial data produced by FTA (e.g., Borneo Atlas, Papua Atlas) to verify oil palm plantation licenses and monitor expansion in unlicensed areas. In response to changes in RSPO policy, RSPO member companies established gender committees to increase women's representation in company decision-making and two companies introduced contract innovation pilots targeted to women growers (e.g., Wilmar, Sime Darby). Supply chains are increasingly more sustainable and equitable through company-led initiatives (e.g., Wilmar, Golden Agri Resources, Musim Mas, Cargill, Asian Agri). FTA researchers did build in targeted engagement with influential oil palm companies through dedicated private sector-led oil palm platforms (e.g., Indonesian Palm Oil Pledge (IPOP)), but faced challenges with rising political tensions and the ultimate collapse of IPOP. This affected FTA's ability to effectively engage and partner with the private sector to influence outcomes more broadly across the sector.

FTA also influenced NGOs' advocacy. For example, Greenpeace used spatial data from the Borneo Atlas in investigations submitted to RSPO regarding company-driven expansion and deforestation. FTA's data demonstrated changes in forest cover of companies' plantations over time, and successfully held the company accountable to the transgression. Oxfam Novib applied and transferred FTA's findings on oil palm and gender in a campaign for gender rights in the seafood sector. There are indications that RRI used FTA findings on gender and oil palm as part of their global advocacy to improve women's rights and forest-dependent livelihoods.

Research Influence

FTA centres and research partners are top contributors to research on oil palm in Indonesia, particularly on gender, as academic discussions on the intersection of oil palm and sustainability and equality continue to gain traction. FTA has published and been cited extensively. Partnerships with both Indonesian and international research institutions strengthened working relationships (e.g., IPB, UI, ETHZ, Center for Research and Development on Social, Economics, Policy and Climate Change (P3SEPKI), National Institute of Aeronautics and Space (LAPAN), and Mulawarman University (UNMUL)) and commitments to address pressing oil palm issues through research. FTA provided local university partners (e.g., IPB, UNMUL, Antakusuma University (UNTAMA),

Panca Bhakti University (UPB), Kutai Kartanegara University (UNIKARTA)) with training in relevant oil palm issues, methods, tools, and project management, enhancing local capacities in research. Indonesian graduate students are a key beneficiary of these relationships, having increased their expertise and received invitations to support community planning and government policy processes (e.g., Sustainable District Gathering Circle (LTKL), Sustainable Palm Oil Initiative (SPOI)). Many graduate students continue to work in research or NRM in Indonesia following completion of their studies.

Potential Impact

While no impact targets were set, FTA's contributions to the PERDA supports potentially up to 2 million ha in East Kalimantan to be protected under HCV; this estimate rests on the condition that the PERDA and PERGUB are effectively implemented and enforced. Estimations of impact potential associated with sustainable oil palm management in Indonesia via national policy (e.g., ISPO, RANKSB) and practice change were not possible. FTA's contributions to enhanced oil palm management under RSPO could also not be estimated.

Table 21. Sustainable Oil Palm Management in Indonesia Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<ul style="list-style-type: none"> Provincial regulation (PERDA No.7/2018) and PERGUB in East Kalimantan include HCV areas FTA findings included in 2023 Spatial Plan of West Kotawaringin Indications of FTA engagements in RANKSB and ISPO processes FTA findings contribute to revisions of RSPO Principles and Criteria on gender <ul style="list-style-type: none"> Wilmar established a Women's Charter to improve working conditions for women
Practice Influence	<ul style="list-style-type: none"> Sub-national governments use FTA spatial maps (e.g., Borneo Atlas, Papua Atlas) to verify and monitor licenses and expansion RSPO member companies comply with new regulations for more inclusive governance within the sector <ul style="list-style-type: none"> RSPO member companies required to establish gender committees to improve women's representation in decision-making Introduction of contract innovation pilots to support women growers (e.g., Wilmar, Sime Darby) Oil palm companies begin initiative to make supply chains more sustainable and equitable (e.g., Wilmar, Golden Agri Resources, Musim Mas, Cargill, and Asian Agri) NGOs use FTA research to strengthen evidence bases of sustainability and/or gender campaigns in oil palm and other commodities <ul style="list-style-type: none"> Greenpeace used Borneo Atlas to hold RSPO companies accountable to zero deforestation commitments Oxfam Novib's gender advocacy in seafood sector Indication of uptake by RRI in global advocacy to improve women's rights and forest-dependent livelihoods
Research Influence	<ul style="list-style-type: none"> Produced 161 outputs <ul style="list-style-type: none"> 96 publications (articles, book chapters, working papers, briefs, etc.), 1,130 citations, 49,029 downloads 23 tailored products (infographics, factsheets, posters, newsletters, datasets, etc.), 8,286 downloads 34 blogs (no view data) 8 videos (9,545 views) CIFOR top contributor to gender in oil palm topic; academic discussion gaining traction Strengthened working relationships with Indonesian and international research institutions (e.g., IPB, UI, ETHZ, P3SEPKI, LAPAN, UNMUL) Partnerships with Indonesian universities enhance local researcher capacities (e.g., IPB, UNMUL, UNTAMA, UPB, UNIKARTA) 6 OPAL graduate students build research capacities <ul style="list-style-type: none"> OPAL students invited as experts to support community and government processes (e.g., LTKL, SPOI) 24 out of 26 CIFOR-USAID Fellowship (CUF) graduate students build research capacities <ul style="list-style-type: none"> 11 continue to work in NRM
Potential Impact	<p>No targets listed</p> <ul style="list-style-type: none"> Potential area of HCV in East Kalimantan is 2 million ha

Climate Change Management in Asia Cluster Results:

In support of the drafting and implementation of countries' climate change mitigation strategies across Asia, FTA investigated the potential of land use planning, management, and agroforestry options to address climate change; developed land use planning and monitoring tools (e.g., LUWES, LUMENS, Information System for Sustainable Land Development (INSTANT) framework, etc.); and provided training to government officials, NGOs, researchers, CSOs, and community members. FTA also supported the establishment of multi-stakeholder policy dialogues and working groups at the sub-national and international levels, and produced recommendations and implementation guidelines for climate change mitigation. Key results of the Climate Change Management cluster are summarized in Table 22. For a list of projects in this cluster, see Table 43 in Appendix 1.

Policy Influence

FTA's contributions to and influence on climate change management policy are extensive. In Indonesia, multiple FTA projects supported the development of low-emissions development strategies for three regencies in Papua (e.g., Jayapura, Jayawijaya, and Merauke), one regency in South Sumatra (e.g., Banyuasin), and several districts in East Kalimantan (e.g., Berau, Kutai Timur, Paser, and Purbalingga). All districts and provinces are required to develop a RAD-GRK that support realization of national emissions reduction targets outlined in the National Action Plan to Reduce Greenhouse Gas Emissions (RAN-GRK). By facilitating participatory green development planning and providing technical advice, FTA helped regency-level government actors to identify context-appropriate, landscape-based mitigation actions to reduce GHG emissions (e.g., sustainable intensification, controlled or prevented agricultural expansion, mangrove reforestation, forest expansion, etc.). Three of the low-emissions development plans were incorporated into Papua's RPJMD. FTA also supported regency governments to create principles, criteria, and indicators to monitor and evaluate green investments and economic growth, sustainable land use planning, improved community livelihoods, protection of biodiversity, and well-functioning watersheds; these monitoring protocols are being tested and implemented. BAPPEDA invited FTA researchers to facilitate a public dialogue and consultation to guide and nest mitigation actions from the regency to provincial level. FTA also collaborated with a provincial-level working group, assisting the development of Papua's RAD-GRK through tool- and data-sharing, training, and technical inputs. In South Sumatra, FTA's technical support contributed to the development of low-emissions development plans in three districts (e.g., Banyuasin, Musi Banyuasin, Musi Rawas), all of which have been mainstreamed into the province's RPJMD. Stakeholders expressed interest to use FTA tools to inform a RAD-GRK at the district-level in Banyuasin. FTA databases, tools (e.g., LUMENS, 'Tagging Method'), and project lessons were drawn upon in a governor's regulation outlining the master plan for green growth (PERGUB No.21/2017) and the formulation of the 2019-2023 Green Growth Plan of South Sumatra (RPKMD No.1/2019). Tool uptake also supported the integration of climate change mitigation strategies into the province's RPHJP. In East Kalimantan, FTA supported district planners to draft local mitigation action plans for four districts, two of which were adopted in the province's RPJMD. This has served to support the monitoring and reporting of emissions to systematically assess effectiveness of the local development strategy and inform adaptive management to ensure economic growth is sustainable.

At the international level, FTA's involvement in and engagement with the Association of South East Asian Nations (ASEAN) policy processes influenced international policy that has trickled down to member states' national policy. In 2010, only 6.7 million ha were managed under social forestry arrangements – far from the 2030 goal of 30 million ha. In response to a call for an ASEAN agroforestry strategy in 2014, FTA and partners promoted agroforestry-based management arrangements and shared lessons, which led to the inclusion of social forestry and agroforestry in the ASEAN Vision 2025 for Food, Agriculture and Forestry and co-development of the Plan of Action for ASEAN Cooperation on Social Forestry (2016-2020). This latter document guides priorities and collective action across the region to leverage social forestry agreements for climate change management. Following endorsement of the Plan of Action, the ASEAN Secretariat called on technical partners to draft the ASEAN Guidelines for Agroforestry Development; ICRAF took leadership on this task by providing policy and technical support. The Guidelines outline 14 principles, 74 guidelines, and five considerations for implementation to restore degraded landscapes, improve food security and livelihoods, enhance farmers' resilience, and meet

NDC climate change targets. While voluntary, endorsement by member state representatives indicates strong political will for implementation.

With ongoing support from FTA, social forestry as a joint approach to climate change mitigation and adaptation was institutionalized in the ASEAN Multisectoral Framework on Climate Change in 2018. In total, FTA contributed to the development of eight ASEAN forest strategies, plans, guidelines, and tools, and helped establish working groups on social forestry, community forestry, and/or village forestry in five ASEAN member states (e.g., Cambodia, Lao PDR, Myanmar, Philippines, Vietnam) by 2020.

As effective multi-stakeholder mechanisms, these working groups have become the 'go-to' platforms to discuss related issues, such as REDD+, MRV, FLEGT, tenure, land use allocation, and others beyond social forestry. To give greater voice to forest-dependent people, marginalized and vulnerable groups, youth, and indigenous peoples, FTA regularly convened a CSO Forum to enrich ASEAN policy development processes and expand understanding of communities' relationships with forests in the context of climate change. As a result, many community groups have newfound access and agency to articulate their needs and challenges in international fora (e.g., Asia Pacific Forestry Week in 2016 and 2017, 2017 Resilience Conference, the 23rd Conference of the Parties (COP23), COP24, etc.).

Stemming from influence on ASEAN policy, FTA contributed to legislative reform and 14 national forest laws, policies, and guidelines in eight member states (e.g., Indonesia, Philippines, Thailand, Vietnam, Cambodia, Myanmar, Lao PDR, and Malaysia) to bolster institutional support for social forestry with clear mandates, roles, and budgets. For example, FTA provided technical support to Vietnam's Forestry Law, promoting agroforestry as a means to realize the country's NDC to reduce emissions. In the Philippines, a similar process is underway to develop a national agroforestry policy. Drawing on the Guidelines developed by ICRAF, both Cambodia and Myanmar devised roadmaps for agroforestry development. The ASEAN Secretariat requested these roadmap templates be shared with other member states. FTA and partners continue to provide policy support. For example, a new Plan of Action is under development for 2021-2025 to steer ASEAN commitments and initiatives into the next period.

Practice Influence

FTA's influence on practice was also far-reaching. Through involvement with the multi-stakeholder working groups in four Indonesian regencies, FTA strengthened relationships between government, NGO, community, and local university stakeholders. Stakeholders expressed that these engagements invigorated them to fulfill their responsibilities for monitoring and implementation. For example, two regency heads committed to create long-term institutional platforms for their respective working groups post-project; expert networks were established in Papua and South Sumatra; synergies between governmental agencies' activities and programmes increased in Bayuasin; more active participation of CSOs and marginal voices in public consultation processes took place; and cooperation with national and international partners increased.

Through FTA's training in Indonesia, over one thousand government officials, CSOs, research institutions, and community members learned about low-emissions development strategies and built technical capacities in land use planning (e.g., LUWES tool) and monitoring (e.g., carbon stock measurement, biodiversity, hydrological changes, INSTANT framework, etc.). These new skills and knowledge equipped stakeholders to determine REL and set targets; develop strategies and action plans to simultaneously reduce emissions, support economic growth, and manage and preserve natural resources; and monitor progress.

In Papua, FTA's monitoring tools are being piloted and deployed in several regencies, and both the Provincial Forestry Office and BAPPEDA expressed intentions to adopt other methods and tools in other Papuan regencies. BAPPENAS endorsed and adopted LUMENS to support baseline calculations for RAD-GRK revisions, launching a FTA-supported online monitoring and reporting system in 2017 (e.g., PEP-Online) which was applied by local planners from across 34 provinces. Provincial government in Central Java and three partner districts agreed to support the Smart Rice Locally Appropriate Mitigation Actions (LAMA) initiative and co-finance demonstration plots following successes in the LAMA-I Project.

Through ASEAN processes, FTA supported knowledge-sharing, capacity-building, and enhancement of the ASEAN Social Forestry Network to influence member states' and partner organizations' decision-making and practice. Through the network, local NGO counterparts gained new levels of access to engage ASEAN stakeholders. Over 2,000 people received training in the establishment and management of community enterprises, and 500 social forestry officers, NGOs, educators, and practitioners were trained in forest assessment, monitoring, and disaster risk reduction.

In recognition of their contributions in the region, ICRAF was invited to join the World Economic Forum's Grow Asia partnership platform to support network activities around green investment and promote the ASEAN Guidelines for Agroforestry Development. FTA's recommendations for agroforestry mapping were taken up in a pilot supported by FAO (a project partner) in Lao PDR, Cambodia, and Myanmar, where mapping will inform the drafting and field testing of agroforestry development roadmaps. Companies, private investors, and international financing institutions also took up the Guidelines to inform practice decision-making.

With a need for a flexible funding mechanism to support member states to respond to social forestry and climate change-linked challenges and opportunities, FTA helped establish the ASEAN Strategic Response Fund (ASRF). ASEAN also commissioned a curriculum for training of trainers in agroforestry and a practitioners' field guide to target 650 million people; FTA also assisted in the generation of these outputs to enhance agroforestry practice.

Research Influence

FTA's research influence has broadened understanding on changing landscapes and climate change, and the impact such changes have on local communities through participation in international conferences (e.g., 16th ASEAN Senior Officials on Forestry (ASOF) Conference, 2015 World Forestry Congress). Working relationships and research partnerships were strengthened with four partner universities across Asia, including the National University of Laos, University of Tanjungpura (UNTAN) (Indonesia), the Vietnamese Academy of Forest Sciences, and the National University of Singapore. Following these successful partnerships, university research partners invited FTA centres to collaborate on future joint research proposals. The partnerships also provided ten graduate students with applied research-to-policy opportunities, scholarships, methods training, and internships related to climate change management and enhanced their research skills to prepare them for future careers as researchers or practitioners.

Potential Impact

With supporting evidence of FTA's policy influence in Indonesia, 31.3 million ha of Papuan landscapes are now targeted for climate change management under sub-national low-emissions development strategies, and land-use plans target 25.8 million ha. Moreover, ASEAN member states set a 2030 social forestry target of 30 million ha; as of 2020, 7.22 million ha are newly managed under social forestry arrangements across six ASEAN member states (doubling what was achieved in 2010 for a current total of 13.89 million ha).

Table 22. Climate Change Management in Asia Cluster: Key results of policy, practice, and research influence and impacts

Policy Influence	<p>Indonesia:</p> <ul style="list-style-type: none"> Supported development of 4 regencies' low-emissions development strategies <ul style="list-style-type: none"> 3 incorporated into Papua's RPJMD 3 regencies developed monitoring principles, criteria, and indicators FTA invited by BAPPEDA to facilitate public dialogue nesting mitigation actions from regencies to province Assisted development of Papua's RAD-GRK Provided technical support in South Sumatra <ul style="list-style-type: none"> 3 districts produced low-emissions development plans (all incorporated into South Sumatra's RPJMD) Stakeholder interest to use FTA tools inform a RAD-GRK at the district level in Banyuasin FTA outputs used to formulate South Sumatra's Green Growth Plan and integrate climate mitigation into RPHJP Contributed to drafting of 4 East Kalimantan districts' local mitigation action plans <ul style="list-style-type: none"> 2 incorporated into East Kalimantan's RPJMD Merauke Regency pilot participatory land use planning approach in Zanegi village to co-develop a village regulation <p>Across the region:</p> <ul style="list-style-type: none"> Inclusion of social forestry and agroforestry in ASEAN Vision 2025 for Food, Agriculture and Forestry
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FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

	<ul style="list-style-type: none"> • Influenced Plan of Action for ASEAN Cooperation on Social Forestry (2016-2020) <ul style="list-style-type: none"> • A new Plan of Action is under development for 2021-2025 • FTA led drafting of ASEAN Guidelines for Agroforestry Development • Institutionalization of social forestry in ASEAN Multisectoral Framework on Climate Change in 2018 • Supported development of 8 ASEAN forest strategies, plans, guidelines, and tools • Multi-stakeholder social forestry working groups established in 5 ASEAN member states • FTA regularly convened a CSO Forum to include marginalized groups in ASEAN policy processes • Contributed to 14 national forest laws, policies, and guidelines in 8 ASEAN member states
Practice Influence	<ul style="list-style-type: none"> • Strengthened working relationships and established multi-stakeholder working groups in 4 regencies <ul style="list-style-type: none"> • 2 regency leaders committed to create long-term institutional platforms for working groups post-project • Establishment of South Sumatra and Papua expert network • Increased synergies between governmental agencies in Banyuasin • Supported active participation of CSOs in public consultation on low-emissions development • Enhanced cooperation with national and international partners • >1,000 government officials, research institutions, CSOs, and community members built technical capacities for low-emissions development in: <ul style="list-style-type: none"> • LUWES tool for land-use planning • Biophysical monitoring (e.g., carbon stocks, biodiversity, hydrology, etc.) • INSTANT framework for participatory monitoring • INSTANT framework piloted in Jayapura, Merauke, and Banyuasin • Monitoring system deployed in Merauke Regency in 2016 • Provincial Forestry Office and BAPPEDA intend to adopt FTA methods and tools in other regencies • BAPPENAS endorsed and adopted LUMENS to support baseline calculations for RAD-GRK revisions <ul style="list-style-type: none"> • 2017 PEP-Online system launch • Applied by local planners from across 34 provinces • Central Java government and 3 partner districts support Smart Rice LAMA and co-finance demonstration plots • ASEAN capacity-building: <ul style="list-style-type: none"> • ASEAN Social Forestry Network • >2,000 people trained in community enterprises • 500 social forestry officers, NGOs, educators, and practitioners trained in forest assessment, monitoring, disaster risk reduction, etc. • FTA invited to join Grow Asia partnership platform to support network activities (e.g., green investment, sustainable agricultural investments, promote agroforestry guidelines, etc.) • Uptake of FTA recommendations for agroforestry mapping in 3 ASEAN member states as a pilot <ul style="list-style-type: none"> • Partner (e.g., FAO) committed to support pilot activities • Uptake of ASEAN Guidelines for Agroforestry Development by companies, private investors, and international financing institutions • Establishment of ASRF, a flexible funding mechanism to support member states to respond to challenges or opportunities linking social forestry and climate change • Targeting 650 million people, ASEAN commissioned: <ul style="list-style-type: none"> • A curriculum for training of trainers in agroforestry • A field guide for agroforestry practitioners
Research Influence	<ul style="list-style-type: none"> • Produced 77 outputs <ul style="list-style-type: none"> • 43 publications (articles, book chapters, working papers, briefs, etc.), 262 citations, 8,654 downloads • 9 tailored products (manuals, field guides, etc.), 4,469 downloads • 15 blogs (no view data) • 10 videos (4,206 views) • Participation in 16th ASOF Conference and World Forestry Congress in 2015 • Strengthened relationships and partnerships with 4 universities across Asia <ul style="list-style-type: none"> • Spawned several joint proposals for future funding • Enhanced research skills of and opportunities for 10 graduate students (e.g., scholarships, internships, etc.)
Potential Impact	<ul style="list-style-type: none"> • Low-emissions development strategies target 31.3 million ha of Papuan landscapes <ul style="list-style-type: none"> • Land-use plans cover 25.8 million ha • ASEAN member states set a target of 30 million ha for social forestry arrangements by 2030 <ul style="list-style-type: none"> • As of 2020, 7.22 million ha are newly managed under social forestry arrangements across 6 member states

Box 4. Looking Forward: Transformative Partnership Platform on Agroecology

The Transformative Partnership Platform (TPP) on agroecological transitions, a recent initiative of FTA and CIRAD, seeks to accelerate and coordinate action on agroecology across various scales, contexts, and geographies. The platform will focus on a series of engagement landscapes, where knowledge is co-created with local stakeholders and partner institutions. The TPP aims to fill knowledge and implementation gaps in priority domains – areas where action is needed to unlock the potential for widespread adoption of agroecological approaches – to inform evidence-based decision-making of policy-makers, practitioners, and donors. This also involves the development of a shared and sound methodological approach to address the breadth of technical and socio-economic contexts in which these transitions occur and where FTA works.

Within each domain, the TPP will seed fund activities designed to generate proposals and investment in the target area, as well as support projects involving TPP partners. Some external projects aligned to the TPP domains will also be funded where collaboration is mutually beneficial. The TPP operates both within and between each domain, synthesizing evidence and learning across domains to foster transformative change.



Several TPP domains are relevant for Challenge 3.

Evidencing socio-economic viability and understanding adoption decisions

There is an urgent need to understand and document which management practices work where and for whom – and what motivates people to adopt them. The TPP will facilitate both knowledge-sharing and tools to help match agroecological options to different contexts and synthesize evidence on the socio-economic viability of agroecological approaches, which can then drive policy decisions on investment in agroecological transitions.

Fixing policies and institutions to enable adoption decisions

This domain explores public and private sector policies and institutions, with the aim of removing barriers to agroecological transitions to cultivate an enabling and conducive policy, market, and institutional environment. This includes embracing horizontal (cross-sector) and vertical (cross-scale) integration required to bridge top-down governance via national and international commitments and bottom-up management and action on-the-ground.



Pest, disease, and weed control

Effective management of pests, diseases, and weeds is critical to agricultural productivity and ensuring human and ecological health is maintained (e.g., soil biota, pollinators, water quality, biodiversity, etc.). Agroecological approaches address many of these challenges through the use of biodiverse crop, tree, and livestock components, but often require concerted action at field and landscape scales to manage specific threats. This domain includes projects focused on specific threats (e.g., fall army worm, swollen shoot virus, etc.), as well as general design and management principles for agroecological practices at field, farm, and landscape scales.

Sustainable and inclusive management of water resources and risks

Clean water is fundamental to human health and agricultural production, but populations are growing fastest in parts of the world where fresh water is most scarce. Moreover, crop irrigation has driven high extraction rates of fresh water, which is lowering water tables and increasing run-off. Coupled with the effects of climate change and agricultural pollution, a crisis on fresh water availability is mounting – with critical implications for ecosystem services and food and nutrition security. This domain will explore how agroecological approaches can contribute to sustainable, inclusive, and risk-mitigating management of water resources.



Source: <https://glfx.globallandscapesforum.org/topics/21467/page/domains>

Impact Estimation

FTA made notable contributions to awareness-raising, policy, and practice change, as well as research over the past ten years in an effort to enhance top-down and bottom-up landscape governance and reduce unsustainable land use practices that drive global deforestation, degrade landscapes, damage ecosystem services, and exacerbate poverty and food insecurity. This assessment illustrates how FTA's contributions to outcomes have already resulted in realized impacts on-the-ground in Latin America, Africa, and Asia, and are likely to catalyze further impacts in the future. Table 22 presents the aggregated impact estimates of the number of hectares under improved management influenced by FTA for all clusters under Challenge 3; see Appendix 3 for the impact estimates disaggregated by cluster and geography, and details of context-specific conditions and caveats.

We estimate that 59.5 million ha (low-end estimate) of landscapes are now under improved management as a result of policy mechanisms, monitoring systems, and changes in on-the-ground management and land use practices influenced by FTA. In addition, we project that if other relevant FTA-influenced policies, action plans, and monitoring systems are effectively implemented, a total of 204 million ha (high-end estimate) of landscapes have the potential to be better managed.

While FTA's Phase II proposal (FTA, 2016a) did not specify an impact target for landscapes under improved management (instead framed in terms of the number of households), it is likely that FTA's contribution target would have been met or exceeded had one been made. Unfortunately, impact reporting was limited in terms of documentation of households adopting improved management practices. Few projects included impact targets in proposals and actively monitored progress to achieving these targets. Those that did were close to meeting targets (e.g., DryDev, DRYAD, INREMP).

Table 23. Estimations of total impact for Challenge 3

Cluster	Low-end Impact Estimates	High-end Impact Estimates
<i>REDD+ Policy Mechanism (Global)</i>	23,535,771 ha	93,859,242 ha
<i>Forest Tenure Management (Global)</i>	1,245 ha	21,700,103 ha
<i>Agroforestry Concessions (Peru)</i>	193 ha	1,452,000 ha
<i>Sustainable Resource Management of Non-Timber Forest Products (Peru)</i>	4,000 ha	1,000,000 ha
<i>Community Forest Management (Mesoamerica)</i>	53,597 ha	352,807 ha
<i>Management of Trees on Farms (Mesoamerica)</i>	62,500 ha	6,800,000 ha
<i>Sustainable Conservation and Management of Protected Areas (Mozambique)</i>	–	4,200,000 ha
<i>Sustainable Forest Management (Congo Basin)</i>	14,600 ha	400,000 ha
<i>Landscape Management of Dryland Areas (Sub-Saharan Africa)</i>	163,745 ha	269,337 ha
<i>Forest Monitoring (Central Africa)</i>	–	–
<i>FLEGT Mechanism for Illegal Logging (Sub-Saharan Africa)</i>	–	–
<i>Sustainable Forest Enterprises (Cameroon)</i>	85,250.5 ha	1,300,000 ha
<i>Support to Landscape Restoration and Management (Asia)</i>	1,354,706 ha	1,409,482 ha
<i>Expanding Market Options via Landscape Management (Asia)</i>	81,204 ha	1,684,441 ha
<i>Community Forest Management (Indonesia)</i>	830,290 ha	1,280,587 ha
<i>Watershed Management (South-east Asia)</i>	353,254.5 ha	2,638,601 ha
<i>Fire Management (Indonesia)</i>	85.5 ha	2,400,000 ha
<i>Sustainable Oil Palm Management (Indonesia)</i>	–	2,000,000 ha
<i>Climate Change Management (Asia)</i>	33,020,000 ha	61,300,000 ha
Total	59,560,441.5 ha	204,046,600 ha

The majority of FTA's impact contributions were localized in Asia, with a range of over 59 million to 167.5 million ha under improved management (over three-quarters of these impacts were achieved in Indonesia, with an estimated impact range of over 49.4 million ha and 127.7 million ha²⁰). Likely, FTA's strong influence in

²⁰ It is highly likely that the impact estimates for Indonesia include double-counting, as some policies to which FTA contributed govern large swaths of land, forests, and peatlands. The evaluators were unable to determine whether any of the areas of study sites, target landscapes, or target areas under FTA-influenced policies, governance arrangements, and land use plans overlapped.

Indonesia is closely linked with the headquartering and longstanding presence of FTA research centres like CIFOR in Bogor, which facilitates networking and relationship-building with local government, NGO, CBO, and university stakeholders involved in issues related to the management of Indonesian landscapes. In other regions, such as Latin America, approximately 126,000 ha are better managed to date through implemented governance arrangements and 13 million ha are likely to be under improved management in the future (approximately half of these impacts were projected for Peru, with the other half projected for Nicaragua and Honduras). In Africa, between 275,000 ha are already under improved management or governance arrangements and 23.3 million ha have potential to be in the future through policy change and scaling (almost three-quarters of these impacts were projected for Ethiopia).

The realization of impacts relies on several conditions and caveats, including the effective enforcement of policies, the full adoption and implementation of new practices, the scaling of initiatives, and continuity of collective action post-project and post-FTA. Impact estimates are also sensitive to a number of key conditions that vary on the basis of the research initiative, contextual factors in which the research is taking place (e.g., geography²¹, politics, economy, culture, etc.), and specific contributions of the research, including the notion that research outputs are relevant, appropriately translated for the target audience, adapted to fit the needs of boundary partners, and positioned for use. For example, research projects based in countries in which FTA is well-established, where key scientists have connections to decision-makers, and where decision-makers are interested in and actively looking for evidence-based information and guidance, had a higher likelihood for impact achievement. Yet, FTA is one contributor among many organizations that aim to address this complex challenge. Therefore, there are limits to FTA's influence. The relative control and influence of a program declines as it progresses from its intervention (sphere of control) to its impact (sphere of interest) as more contextual and external influences become prevalent. This exercise attempted to trace specific program contributions to intended impacts across intervening geographies to specify how and where FTA made contributions to address widespread unsustainable land use practices in a global context.

²¹ The realization and extent of impacts can depend on baseline conditions; for example, small changes in landscapes under severe degradation can have drastic positive and/or negative effects.

Assumptions

There are a number of key assumptions underpinning FTA's contribution to enhanced landscape management globally. Table 23 aims to answer the evaluation questions: *What key assumptions are required to estimate the impact?*; *were the ToC assumptions valid?*; and *how sensitive is the estimation (of impact) to varied assumptions?* by assessing these assumptions and their potential effect on the realization of future impact for landscape management. More detailed and challenge-specific conditions and caveats for each impact estimate are documented in Appendix 3 for Challenge 3.

Table 24. Assessment of the assumptions underpinning the Challenge 3 Theory of Change

Assumption	Assessment
FTA holds a credible position in the academic and research-for-development realms, and is therefore able to exert influence over the way research agendas and policies advance	Sustained. Numerous evidence sources documented stakeholders' perceptions and testimonies of FTA and its affiliated research centres as trusted partners and credible sources of information on topics related to landscape management issues. FTA researchers' positions as experts allowed for greater access to relevant fora to build relationships with stakeholders (e.g., policy-makers, partner organizations, NGO advocates, local research institutions, etc.) and share findings, which supported the uptake and use of outputs to advance research agendas and stimulate evidence-based decision-making and policy-making.
The policies to which the research contributed are effectively implemented and enforced to reach intended targets (i.e., policy changes are sufficient to influence practice change and support sustainable land and forest management)	Sustained (dependent on geography and country context). FTA demonstrated varying degrees of successful policy influence targeted at landscape monitoring, landscape conservation, SFM, land use planning, and participatory governance arrangements across cluster geographies. FTA has the greatest policy influence in countries where FTA has been active the longest (e.g., Peru, Cameroon, Indonesia, etc.). FTA also appears to have had greater success at influencing sub-national policy processes and their implementation; though there were also notable contributions to large-scale international and national policies. There was extensive evidence to link FTA's involvement in the noted policy processes, though it was not always clear what FTA's exact knowledge contributions were to all policies and whether those inputs had sufficient bearing to claim the associated policy impact targets. FTA often held a convening role to facilitate multi-stakeholder dialogue and participatory decision-making; likely stakeholders' changes in attitude and uptake of FTA's knowledge were a subtle part of the learning and engagement process, making it difficult to draw direct connections to explicit changes in policy. There are other cases where FTA researchers went to great lengths to integrate evidence-based recommendations into draft policy, but this does not always guarantee reflection in the final policy. Moreover, many external factors exert influence within the policy sphere, including political will, global events, and market pressures, among others, that have at times interfered, halted, or reversed policy decisions or effective implementation and enforcement. Many of the policies that FTA helped co-develop and implement have strong indications of enforcement to date, though these will need to be continuously monitored over time.
NGOs, partners, and organizations with sustainability objectives are actively seeking out evidence to support their campaigns and programmes to continue to work with policy-makers, communities, and the private sector in efforts to enhance governance and address unsustainable use of land and forests	Sustained. Evidence shows that key stakeholders are actively seeking out evidence-based information to support their work, many relying on research produced by FTA. This applied most strongly for actors campaigning for sustainably- and ethically-sourced timber and NTFP. FTA supported local and international NGOs, farmers and producer organizations, and partner organizations by filling knowledge gaps and providing targeted information in accessible and fit-for-purpose formats to ensure the uptake and use of findings. FTA also helped equip these actors through dialogues, events, and training workshops to ensure they had the knowledge and skills to utilize, share, and leverage FTA's research through their networks and exert influence on other stakeholders. There were also several examples of NGOs and partner organizations that continue to support capacity-building, policy influence, pilot activities, and scaling of innovations post-project in the contexts where FTA intervened. Many of FTA's partners continue to champion the work and maintain momentum for sustainable governance and landscape management. Factors such as the increased global focus on the Sustainable Development Goals also play a role in increasing urgency for evidence-informed action.
The public is aware and informed of possible ways to support top-down and bottom-up landscape management, and is actively demanding change at policy, practice, and individual levels	Partially sustained. Evidence depicting FTA's influence on the wider public was limited. FTA did target the public through various knowledge-sharing strategies, such as making outputs publicly accessible (e.g., via brochures, newspapers, blogs, websites, YouTube videos, etc.) and by promoting FTA knowledge via national media outlets like television and radio (e.g., Sustainable Forest Management in the Congo Basin cluster, Fire Management in Indonesia cluster). Much of this required FTA to capture political attention and foster relationships with political champions who could help FTA researchers leverage opportunities for national reach. Working with journalists was also critical to ensure the accuracy of FTA's findings and position on the issue (in some instances, poor journalism misconstrued the messaging which led to a breakdown in trust). There was some

	success at public outreach via NGO campaigns (e.g., Sustainable Oil Palm Management in Indonesia cluster, FLEGT in Sub-Saharan Africa cluster). However, there is limited evidence of active campaigning by the public for policy and practice change across Challenge 3 geographies in response to FTA's research.
Large companies uphold commitments to climate action and international certification standards as a result of policy, market pressures, and consumer demand	Partially sustained (dependent upon geography and country context). Evidence shows commitments in Indonesia by large companies to comply with national REDD+ policies, the fire prevention agenda, and international certifications such as RSPO are underway. Evidence within the FLEGT cluster suggests that the practice of large companies in Cameroon is expected to eventually change to adhere to recent policy change for domestic timber markets as well as increased international market demand for legally-sourced timber; though current evidence of this change is limited and too early to observe.
As smallholders and SMEs gain access to formal markets and tenure via enabling policies that reduce barriers, these groups are better equipped to comply with sustainability requirements, change practices, and manage the land and forests in which they live	Partially sustained (dependent upon geography and country context). FTA engaged smallholders and SMEs across various contexts to build understanding of policy mechanisms; provide opportunities to voice community needs in policy processes; equip communities with knowledge and skills for self-governance and more sustainable landscape management practices; and support tenure processes. Current evidence indicates that progress on enabling policies has been made for smallholders in Latin America (via AFCs in Peru, community forest concessions in Guatemala), Africa (via forest tenure schemes in Uganda, CFE in Cameroon), and Asia (via PFES in Vietnam, RES and social forestry schemes in Indonesia, reward schemes in the Philippines, MTCS in Malaysia). Some of FTA's efforts to enhance opportunities for smallholders via policy are still in progress (e.g., China, India, Bhutan, DRC) or yet to be realized (e.g., ISPO and RANKSB in Indonesia). The policies that were most successful built in benefits and incentives to attract and encourage compliance (i.e., PFES, tenure, market access, micro-financing, etc.) and foster inclusivity (e.g., RSPO, P3MHA). Yet, if policies do not accommodate smallholder heterogeneity or landscape approaches, regulations may exclude or marginalize the smallholder groups they aim to support.
All individuals of relevant actor groups who receive training from FTA interventions, either directly or from FTA-supported training programmes, benefit and obtain new knowledge, skills, and relationships as a result, and are motivated and capable of leveraging and applying these in their work	Sustained. Capacity-building is a key strategy within FTA's work on landscape management to influence changes across multiple impact pathways. By providing new knowledge and training on landscape governance, data collection and tracking systems, monitoring and assessment tools, and sustainable landscape management practices, and providing technical assistance to ensure effective use and application of such knowledge, FTA equipped multi-level governments, practitioners and NGOs, communities and CBOs, farmers and producer groups, companies, and researchers to make better informed decisions, apply FTA's tools, and change practices. Training and capacity-building engagements also served to enhance FTA's relationships with different stakeholder groups. Training that involved multiple stakeholder groups also created opportunities for participants to build connections with other stakeholders. Many of these stakeholders continue to rely on FTA researchers and centres for ongoing support for implementation, but some NGOs have taken over the capacity-building role to continue momentum and scaling post-project.
Evidence sources containing impact estimates (i.e., targets, achieved impacts, potential impacts) consulted in the review are valid, accurate, credibly-derived, and reliable	Partially sustained. We continuously interrogated the impact estimates found in our review to test the plausibility of FTA's contributions to the reported impacts. It was necessary to query the corresponding evidence supporting the estimates to classify each impact estimate as either an impact target, impact that has been achieved to date, or impact that has potential to be achieved in the future. This enabled the evaluators to determine the likelihood that FTA contributed to the realization of the impact in question, and produce more realistic low-end and high-end estimates. However, we acknowledge that the impact ranges still reflect considerable margins of error as projects' impact reporting was often vague, not transparent (i.e., lacking explanation of the methods used to derive impact estimates or where reported numbers were procured), not quantifiable, and not always scientifically-derived. In some cases, these factors led the evaluators to doubt the accuracy of reported impacts and whether numbers reflected double-counting (van Gerwen et al., 2018).



FTA conducts research in a variety of landscapes to support improved management and address unsustainable land use; sloping landscapes in Vietnam are one such example. A H'mong farmer returning home after working on the upland field. Son La, Vietnam. (Photo: Robert Fox/[ICRAF](#))

Conclusions

Over the course of ten years, FTA clearly contributed to diverse changes in knowledge, attitudes, skills, relationships, and behaviours through diverse impact pathways to support the realization of impacts on-the-ground and increase the likelihood for further impacts with respect to sustainable management and land use across project countries in Latin America, Africa, and Asia in the future.

Table 1 in the executive summary shows the extent to which FTA's intended end-of-program outcomes were realized across Latin America, Africa, and Asia through concentrated efforts on landscape governance and management. FTA exceeded its first end-of-program outcome target, contributing to over 300 policies, strategies, frameworks, guidelines, action plans, development plans, land use plans, agreements, and governance arrangements at multiple levels (i.e., international, regional, national, sub-national) that support more sustainable landscape management across 29 countries. FTA's technical inputs, data and tools, evidence-based recommendations, and involvement in working groups supported context-appropriate decision-making, improved governance mechanisms, and strengthened institutional capacities for integrated landscape planning, policy implementation, and monitoring that balances socio-economic and ecological objectives.

FTA also exceeded its second end-of-program outcome target, influencing the decision-making, investments, pilots, and/or practices of at least 34 companies, 178 SMEs, and over 1,500 private sector actors to better manage and monitor natural resources, safeguard ecosystem services, and support inclusive, equitable, and sustainable livelihoods. Influence through private sector certification bodies (e.g., RSPO), private sector platforms, and farmer/producer associations supported far-reaching knowledge-sharing, capacity-building, and practice change for more environmental commitments, sustainable business models, and NRM.

Through contributions to Challenge 3 alone, FTA fell short of its third end-of-project outcome target to equip public and private sector actors to deliver more effective extension and pedagogical services to support the

sustainable management of landscapes and natural resources across 25 countries. However, FTA did provide capacity-building and technical support across 18 countries, training close to 40,000 government officers, extensionists, and NGO staff to build new and enhanced skills in participatory governance and tenure reform, rewards scheme implementation, land use planning, conservation, NRM, SFM, dryland management, wetland management, management of TonF, and/or landscape monitoring, among others. These supports translated to enhanced technical assistance and extension delivery. This outcome was also supported by the implementation and expansion of governmental programmes, monitoring systems, educational programmes and learning centres, public campaigns, as well as pilots, FDT, and EL.

FTA did not meet its fourth end-of-program outcome through projects mapped to Challenge 3. Evidence indicates that at least 282,365 people across 18 countries are better equipped to take up and apply context-appropriate agroforestry and landscape management practices as a result of FTA's training and engagements. The majority of this capacity-building was concentrated in Africa. Projects with participatory and experiential learning activities, tailored knowledge-sharing and engagement, and dedicated capacity-building for communities increased the likelihood for sustainable practice change. Pilots, FDT, and EL were particularly effective means to support community learning, showcase the viability of different management and practice options applied to the local context, and encourage uptake. Ongoing support and commitment of NGO partners in the target communities was key, and increased the potential for scaling in nearby communities and other regions.

This evaluative process uncovered unique difficulties in assessing the contributions and impacts of a decade-long program; provided opportunities to test novel ways to assess collective research efforts (i.e., composite and nested ToCs); and procured new insights on how research contributes to and influences change processes to address complex, inter-related societal issues. Such learning informed a set of lessons for the design and implementation of change-making research on the topic of unsustainable land use practices, governance, and landscape management, as well as lessons to improve future MELIA practices of similar research-for-development projects and programmes.

Lessons Learned and Recommendations

Lessons Learned on Research on Landscape Governance and Management

This exercise provided the opportunity to assess how research addressing unsustainable land use practices contributed to sustained outcomes and impacts, and highlighted a series of lessons learned. Through FTA's research initiatives across Latin America, Africa, and Asia, there is growing recognition of and interest in integrated landscape approaches to tackle the political, economic, social, and ecological inter-complexities of landscape governance and land use. Landscape approaches aim to reconcile competing interests, gain a systems perspective, and collectively negotiate solutions and trade-offs with relevant stakeholders. This involves decision-makers and policy-makers, land use planners, users of natural resources, advocates and activists, and those living upstream, downstream, or directly on the land or forest to work together towards more sustainable land use and resource management (FTA, 2016b; Reed et al., 2020). FTA's research identified actors who would benefit directly and indirectly from its engagement activities and research outputs, and encouraged these actors to participate in dialogue and decision-making processes, thereby supporting ownership over outputs and change processes. In a number of projects, FTA was particularly strong in engaging marginalized actors who would not normally have a voice in public policy or governance decision-making. FTA positioned itself as a key actor within the topic of landscape governance and management and acted as a knowledge broker, trusted partner, and capacity-builder to contribute to intended outcomes. Valuable insights in what works well have been presented via the main impact pathways highlighted in Challenge 3.

1. **Government Pathway:** Contributing to international, national, and sub-national policies was a predominant means by which FTA addresses unsustainable land use practices. Many of the other impact pathways intersect with and are influenced by policy change on landscape management. There is growing governmental interest for landscape approaches. FTA's policy contributions which offered some form of tenure or land use rights (e.g., concessions, community-based governance arrangements) and incentives for sustainable stewardship (e.g., PFES, RES) were particularly successful, especially if a policy window was

already in place to tackle the issue (i.e., ongoing policy dialogue, multi-stakeholder consultations). Supports to align district-level regulations and land use plans with provincial, regional, and national policies were also effective strategies to influence policy and decision-making for the management of land, forests, drylands, and/or wetlands. FTA was also able to exert more influence when invited by governments to support a policy process or serve as a member of a dedicated working group on an issue.

- **Providing policy-makers with knowledge and training through collaborative processes strengthened the capacities to implement sustainable change.** For example, engaging policy-makers and decision-makers in multi-stakeholder dialogues fostered common understanding of the issue; enabled co-identification of priorities, responsibilities, and implementation strategies; facilitated the co-generation of recommendations; and built coalitions. Continuing to support policy-makers and providing on-going training also increased the likelihood of policy change and uptake of FTA's outputs to inform decision-making. It was important to engage policy-makers at multiple levels to ensure policy alignment, coordination, and synergistic action.
- **Research projects led by scientists with established relationships with policy-makers were more likely to contribute to policy outcomes.** Positive pre-existing relationships supported access to key policy spaces, knowledge-sharing, and trust in research outputs to support uptake and use within national and sub-national policy. This held true for projects located in countries where a FTA research centre is headquartered or has a designated country office. Often governments viewed FTA as a useful source of contextual knowledge, tools, data, and expertise to inform landscape management policy decisions. The credibility of FTA's research also contributed to convincing policy-makers to integrate research findings into policy and make landscape management issues a higher priority.
- **With frequent government turnover, knowledge can be lost, particularly when restructuring occurs.** Building trust with and gaining support from government champions have been good strategies to influence policy change, but complete reliance on individual champions is vulnerable to political turnover. Research centres should consider developing institutional relationships and partnerships with government agencies or departments that enhance institutional capacity, foster collaboration, build trust, fill knowledge gaps that are necessary to realize intended policy outcomes, and incentivize and leverage opportunities for continued momentum.
- **Aligning the research with parallel issues supported the uptake of research outputs by policy-makers.** Providing information that was relevant to current policy processes and timing the research in-line with favourable political climates can leverage policy windows. Including a strong outreach component using means that are appropriate and accessible to targeted policy actors who are most likely to implement change on the identified issue increased chances to drive policy change. Through discussions, FTA researchers ensured research outputs were appropriate for use and aligned with government/political concerns. In some cases, FTA's findings were able to draw new attention to or reinforce an issue's priority on various political agendas (e.g., climate change, tenure, illegal logging).
- **Policy outcomes rely on the continuous promotion and use by institutions and decision-makers to influence legislations and regulations for effective landscape management.** This was supported via ongoing institutional and individual relationships with government actors and departments, some of which were stronger in some geographies (e.g., Indonesia, Peru, Vietnam, Cameroon, DRC) than in others. Projects with long-term donor funding provides a foundation for the development and maintenance of continuous relationships, longer project cycles, and follow-up projects.
- **Supporting social process contributions are equally or more important than knowledge contributions.** While many FTA research outputs (e.g., maps, data, scenarios, technical inputs, tools) were successfully taken up governments to inform decision-making or changes to policy, projects and research initiatives that supported social processes (e.g., systems-thinking, more equitable/multi-perspective decision-making, collaborative problem-solving and solution development, coordination,

capacity-building, implementation processes, etc.) were more effective at sustaining policy change and ultimately contributing to institutional or systemic changes. Sometimes government actors do not take up research findings because the information is not tailored or appropriately translated; governments may not have the skills to use or apply the outputs; or they lack the infrastructure or resources to use the outputs effectively. Supporting social processes can help overcome these barriers.

2. **Practitioner Pathway:** While this impact pathway was sporadically targeted, FTA did succeed in influencing practitioners' knowledge and practices. Knowledge-sharing and training were common strategies used to equip and influence practitioners for better management and monitoring. Changes in practitioners' practices had onward effects for both private sector and farmer practices.
 - **Build the capacities of practitioners and extensionists to use landscape approaches, data, and new technologies to inform evidence-based decisions for land and forest management and monitoring.** There may be more scope to engage and influence practitioners and extensionists to support outcomes in other pathways through research-for-development projects.
3. **NGO and Allies Pathway:** Influencing NGOs was a reinforcing pathway to stimulate changes in other pathways, particularly governmental decision-making, private sector practice, community practice, and advocacy to the general public. NGOs were a key boundary partner to support FTA's activities, gain access to various networks, promote FTA's outputs, advocate for policy or practice change, and continue momentum post-project. Compared to FTA, NGO partners are often better situated to hold an advocacy role. However, some political and institutional contexts are not always open to advocacy and NGO criticism, which can polarize issues and limit progress.
 - **Boundary partners should be identified based on their ability to use research solutions to support progress to intended outcomes.** Researchers should be strategic in partner selection, looking for partners who will support engagement processes during and after the project, as well as innovation testing and pilots, training and capacity-building, policy implementation, and the socialization and sharing of outputs.
4. **Private Sector Pathway:** Influencing private sector policy and practice was one of the weaker pathways. Most evidence of changes in company practices was observed in individual companies or SMEs, indicating there are likely many barriers and competing economic interests limiting change at the industrial or sector-wide scale. Some successful private sector change was often influenced by changes in other pathways, such as international commitments, national policy, contracts with governments, or NGO advocacy. Strategically engaging private sector actors and equipping them with knowledge and capacity supported practice change in some contexts, but often it was difficult to get private sector actors in the room if they did not already have a vested interest.
 - **Capacity-building in sustainable management and land use practices were effective means to support outcomes for SMEs and private sector associations.** Workshops and training sessions were a successful way to increase awareness of the economic effects and implications of unsustainable land use practices and incentivize SMEs to adopt more sustainable ways of working. Working through or helping to establish farmer or producer associations were also influential strategies to build capacities, support formalization and empowerment, and enhance bottom-up governance.
 - **There is scope for more strategic engagement of and active relationship-building with private sector actors at project inception to bring about change.** Finding private sector champions and boundary partners may be a first step to access wider private sector networks.
5. **Community Pathway:** Influencing the knowledge, capacities, and practices of communities and smallholders were common aims within the community pathway. Giving voice to and supporting the empowerment of farmers, women, youth, indigenous peoples, and other marginalized groups were key foci of FTA's engagement and advocacy in multi-stakeholder fora and findings. FTA created many opportunities to involve communities in policy dialogues, meetings, and workshops, and sought ways to build more

participatory research and governance processes into their projects. Offering targeted training and community pilots for new technologies, community-based monitoring systems, agroforestry, and sustainable management practices, as well as FDT and EL were frequent and reliable strategies to support outcomes for practice change.

- **Community engagement, participatory activities, and presenting knowledge in ways that are appropriate for the target audience increased the utility of the research process and FTA's outputs for communities to build understanding and apply learning in their local context.** Participation in the research process and capacity-building through training, pilots, and FDT were effective means to empower communities to encourage practice change (i.e., sustainably manage their lands, adopt new technologies, etc.) and participate in policy/decision-making dialogue.
 - **Short-term projects experienced more challenges in trust-building and behaviour change amongst forest communities and smallholders.** Investments in relationship-building and community buy-in are key. Evidence shows that trust often takes time to build, which can affect the likelihood of smallholder and community uptake of recommended approaches. For sustainable practice change at the community-level, community leadership and community members need to be equipped to manage and maintain their lands and forests well-beyond the project lifespan. Therefore, more investments are needed to support longer project cycles as well as follow-up projects for continuity.
6. **Public Pathway:** The public pathway was not as prevalent within FTA's engagement on landscape management topics. However, targeted dissemination through national media, sensitization campaigns, and working through NGOs who acted as advocates to garner public attention on governance and unsustainable land use were effective means to raise awareness of the general public to persisting issues. There may be more scope to leverage the public to exert influence or increase public pressure for changes in other pathways (e.g., consumer demand driving private sector practice change).
7. **Donors/Investors Pathway:** The donor pathway was also relatively weak. Including donors in discussions and decision-making from program start through to completion helped build understanding of the issues affecting poor governance and unsustainable management. Most donor outcomes that were realized supported additional funding for new or follow-up projects on the topic. In some cases, this helped bring more alignment, continuity, and sustainability to FTA's interventions. There is scope to more actively involve and influence donors to support transdisciplinary research, landscape approaches, longer project cycles, follow-up projects, and scaling projects.
8. **Research Pathway:** Many clusters mapped to Challenge 3 utilized a research pathway to contribute to outcomes and impacts in other pathways. FTA is a research organization; therefore, much of its work focuses on the development of knowledge that can be taken up and used by stakeholders. In many research areas, FTA was a lead contributor to the knowledge base as well as method and tool development that served to advance government policy, practice, and the research agenda on the many inter-related issues of governance, landscape management, and sustainable land use globally. FTA also works to build the capacity of students, researchers, local universities, government research agencies, and international research organizations to advocate for science-based decision-making and advance in-country research on landscape approaches for enhanced governance and management.
- **Developing research capacities through collaborative work and trainings with students and research partners ensured the continuation of research activities and engagements to build on FTA's data and findings.** Building student and partner research capacities are worthwhile investments that benefit present and future research.
 - **Diverse dissemination methods supported uptake of FTA's research.** Utilizing multiple targeted dissemination methods by attending conferences, publishing in peer-reviewed journals, communicating through blogs, maintaining active participation in multi-stakeholder platforms, and partnering with

local universities to raise academic interest helped to spread awareness of FTA's findings among academic audiences and encouraged new questions on the topic.

- **FTA's research on landscape governance and management was supported by long-standing relationships between researchers and influential national and international institutions that helped deliver research recommendations to policy-makers.** Research partnerships strengthened working relationships between FTA and local and international research institutions, and raised FTA's research profile on a variety of topics to support increased interest on landscape governance and management at research, public, and policy levels.

Obstacles to Overcome

The assessment of Challenge 3 provides opportunities for FTA, its research centres, and other research-for-development programmes to reflect on and consider how to optimize MELIA to more strategically align future programmatic and research initiatives to more effectively address complex challenges. These difficulties include:

1. **Inconsistencies in monitoring, evaluation, and impact reporting.** Varying levels of detail in project documentation and data presented an obstacle for the evaluation team to categorize projects to one or more of the five challenges, as well as identify projects with promising indications of outcomes and impacts. This made the categorization, selection, and assessment processes highly time-consuming and inefficient. Project selection was in part driven by the availability of project documentation, so it is possible that key FTA research efforts to address unsustainable land use practices may have been overlooked or omitted. These inconsistencies are further confounded by the differences between centres' systems and databases. For example, some centres have systematic and robust databases while others are less advanced and developed. In addition, the ways in which project reports and/or evaluations document evidence of outcomes and impacts are inconsistent. This is further reflected in the Managing Agricultural Research for Learning and Outcomes (MARLO) database (i.e., the database built for CRPs and where projects are referenced for FTA), which acts a repository but does not provide a consistent or specific format to report outcomes. Therefore, the evaluators needed to delve deeply into available project reporting and piece together supporting evidence from external sources or conversations with researchers. This difficulty was also particularly apparent in reporting for multi-country projects and programmes, where reported evidence is often not disaggregated by study sites, let alone by country. This made the review and analysis of available evidence an arduous task, and introduced difficulties in the testing of ToC logic and increased potential to misinterpret or misattribute evidence. Few evaluation reports and/or project documents quantify or estimate impacts in terms of the five challenges or the SLO targets. Often reporting focuses on documenting project activities and outputs, rather than contributions to outcomes, impacts, or other changes in the wider system (i.e., results-based reporting).
2. **Inconsistencies in the use of monitoring, evaluation, and impact terms.** There are inconsistent conceptualizations and uses of evaluation terminology across centres and projects. For example, the terms 'output', 'outcome', and 'impact' vary in reporting, which added to the time requirements of the document review. These keywords could not simply be searched and pulled from reports; the review involved much closer reading, review, and translation of content into the appropriate concept categories. Obtaining conceptual clarity of evaluation terminology within the evaluation team was also challenging. Fortunately, prior experience and distinct definitions were shared and attempts were made to build common understanding and consistent application of these components across the evaluation team throughout the evaluation.
3. **Diffusion of topics and geographies of research and engagement signals a lack of coherence in FTA's program strategy to address complex global challenges.** While FTA centres, partners, and researchers believe they are doing transdisciplinary research and make such claims in proposals and final reporting, this may not always be the case in practice. Siloes often remain or attempts at transdisciplinary approaches fall short – both can be driven by internal or external factors. Building on discussions from the 2020 FTA Science Conference, many of FTA's research projects are in fact Type I projects that aim to address Type

III 'wicked' problems (i.e., the five challenges)²². Moreover, research efforts were diffuse across geographies and topics. These are clearly missed opportunities, as many of the topics and geographies in which FTA operates are closely aligned and overlap in terms of the actors and external processes that FTA engages. Where new projects could leverage pre-existing personal and institutional relationships established by researchers within their own centre, other FTA centres, or FTA partners, too often many begin the process from zero. Overlooking these networks also overlooks the valuable institutional memory of the relationships and former engagements in those contexts, which can be a source of valuable learning and efficiency for new research initiatives as well as serve to reinforce and strengthen existing relationships. Moreover, research efforts inconsistently build on one another, affecting FTA's capacities to meaningfully and strategically address complex problems in a given country and/or region. Such diffuse contributions are insufficient to support the type of transformative change that FTA aims to realize. In part, this is a result of inconsistent and intermittent use of ToC across centres and projects, and likely an artefact of the diffusion and lack of coherence inherent to how centres have responded to bilateral donor demands. Effective, centrally-coordinated information management systems are critical to facilitate integration and coherence. Often the strengths that the ToC tool can provide for more strategic interventions (e.g., building shared understanding, negotiation, communication, consensus-building, adaptive project management, etc.) are not leveraged, and in many cases some impact pathways are likely to hold up and demonstrate greater potential than others. Effective integration mechanisms are required to ensure that research programs aiming to address complex Type III problems reach their full potential for influence within the scope of short-term project cycles. Therefore, research-for-development programmes need to clearly and explicitly link strategies and goals at both project and program scales.

4. **Setting targets for projects helps ground intended influence and impact, and makes researchers build impact into project design.** Many of FTA's projects did not set or document impact targets (e.g., proposal stage, end-of-project reporting stage), making the evaluation and estimation of FTA's impacts immensely challenging. One reason that might explain this is that projects' MELIA activities were often designed to fulfill proposal or final reporting requests from the respective project donor²³; some donors require projects to set targets and report against them, while others do not. The few projects that set specific impact targets were close to fully achieving these targets by the end of the project cycle (e.g., DryDev met 97 percent of its farmer target; DRYAD met 80 percent of the target area; INREMP met almost 90 percent of the target area). Projects that targeted general swaths of landscapes were much less efficient (e.g., the FORETS study area targeted 400,000 ha in DRC, but evidence suggests only 12,500 ha are likely to be under improved management in the near future; SECURED Landscapes targeted 76,000 ha in Cameroon for improved cocoa and forest management, but only 3,000 ha of farms have adopted cocoa management models to date). Many projects that did not set targets did not report impacts either, and were likely unable to do so. In many cases, baseline data were not collected to enable rigorous periodic or post-project comparison. Understandably, it can be daunting for researchers to lay claim to potential impact at the proposal stage (particularly when funding and other resources remain unclear), only to be held accountable to original (possibly overly ambitious) targets at project-end. More explicit documentation of impact targets, particularly as part of the ToC, requires researchers to be more realistic with the targets they set and also more intentional in how they

²² All Type III problems can be broken down into several smaller Type I pieces, each tackling one or a few disciplinary foci with targeted and precise research questions. Individually, these pieces cannot address Type III problems, but collectively there may be some overlap with potential to bring the pieces together. This is precisely the role and function of a programmatic approach; to a great extent, such integrative studies are a way by which the program tries to bring together multiple Type I answers to a Type III question. However, more efforts are needed for transdisciplinary research approaches, multi-pronged and multi-dimensional approaches, and integration. One of the lessons learned from the integrative studies includes the identification of gaps in the (Type III) ToC that should trigger new research foci and initiatives going forward.

²³ Donors are often an omitted stakeholder group from ToC processes (both at project- and program-level). Hence, FTA and its research centres missed opportunities to consider what donors could learn (i.e., in the research topic, study context, change processes, etc.), encourage donors to be explicit about their own agenda and mental models of how change happens, and strategize how the project or program could influence change in donors' priorities and practices.

design and implement projects to reach those targets. The collection of baseline data can inform more reliable target-setting, and projects that plan to collect baseline, interim, and endline data are better equipped to track progress and report on final impacts.

Recommendations for Enhanced MELIA

Based on the identified and described obstacles, the evaluators formulated recommendations to enhance MELIA, which can strengthen project design, monitoring, adaptive management, and learning, as well as reporting and final evaluation of future projects.

1. **Aim for consistent documentation of projects and influence across centres.** A common theme throughout this exercise, and an identified bottleneck, was the need for a well-functioning, results-based data management system to support documentation, monitoring, and reporting and collate information in ways to support MELIA processes. Project (and program) management and MELIA would be much more efficient and effective with a common database structure for researchers and project managers to document, manage, track, and monitor project progress on ToC components (e.g., activities, outputs, outcomes, and impacts), and other relevant indicators²⁴ (e.g., study locations, partners, stakeholder networks, stakeholders, gender and youth²⁵, bibliometrics, altmetrics, etc.). The ability to document and link ToC components to observed changes is powerful for reporting, valuable to determine influence, and key to learning how change does or does not happen in different contexts (e.g., drawing connections between project activities or specific outputs to the realization of intended outcomes and impacts). Such a system would also serve to assist in the presentation of achievements and results to donors in a consistent and credible way. Having either a common program-level or similarly structured systems for each centre could help ensure consistent and relevant documentation, facilitate reporting, as well as assist inter-centre alignment between initiatives. In joint research programs like the CRP FTA, MELIA teams should liaise with each other to ensure that documentation procedures are consistent across centres. In addition, we recommend MELIA be embedded into the research process from the outset. Too often, MELIA is relegated to the end-of-project phase. In many of the projects mapped to Challenge 3, final reporting gave the impression that MELIA was a box-ticking exercise and/or an afterthought. We recommend project managers seek support from their centre's respective MELIA teams from the beginning to support project design, ToC documentation, and proposal development during the inception phase. MELIA experts can also be involved during the course of a project to document progress, support adaptive management (e.g., ToC revision), and begin to collect MELIA evidence. The systematic collection of MELIA data along the entire project lifespan enhances the accuracy and comprehensiveness of measured results compared to an ex-post assessment, and would be more cost-efficient. For example, baseline, interim, and endline data could be collected in targeted project areas to lay the foundation to monitor progress and estimate the impacts of FTA's interventions. Yet, the up-front resource investment and the lack of a well-developed database management system are clear constraints at both the centre- and program-level. We recommend research centres integrate research and MELIA teams together. This could be done in different ways, such as providing a dedicated MELIA point person or team for each project to support such tasks throughout the project cycle and/or investing in researchers' MELIA capacity-building. Researchers and partners will need training, administrative support, and time to develop new skills to fully engage in more and better MELIA. Appropriate organizational structures will need to be built, as well. For example, more mechanisms for reflection and reflexivity would be beneficial to build on learning (i.e., what worked and why, learning from failure²⁶, problem-solving for persistent challenges,

²⁴ A set of appropriate indicators could be co-identified with researchers, project managers, MELIA, donors, and other relevant stakeholders (e.g., longstanding government and NGO partners).

²⁵ It is also recommended to collect disaggregated MELIA data on gender and youth promotion in projects where appropriate, in order to satisfy donors' interest in the centres' performance in these fields (in some projects, this data was not collected, though the evaluation team assumes this would have been both possible and promising).

²⁶ Using failures as constructive and accountable learning; rather than hold researchers accountable to failed initiatives, research centres should hold researchers accountable to learning from those failures.

risks and trade-offs, etc.). These need to be formal structured processes that inform research as well as institutional practice (i.e., embedded into transitions between programmatic phases/stage-gating).

2. **Strive for consistency in the application of monitoring and evaluation concepts.** We suggest the following definitions for terminology be adopted by FTA and across centres, and recommend enhanced capacity-building for FTA researchers on the use and implementation of these concepts for project planning, monitoring, and reporting:
 - a. “Outputs: The products, goods, and services of the research and the research process (i.e., knowledge, fora, and processes generated by the activities).
 - b. Outcomes: Changes in knowledge, attitudes, skills, and relationships manifested as changes in behaviour.
 - c. Impacts: Changes in flow (e.g., higher annual income, increased water discharge from a river) or state (e.g., socio-economic status, water quality in a reservoir), resulting wholly or in part from a chain of events to which the research has contributed.” (Belcher, Davel, & Claus, 2020, p.9)
3. **Use of nested ToCs can support challenge-centric program and strategy design, including identifying targets for research projects and programs.** Researchers and program managers should fully utilize ToC as a core element of strategic project planning and adaptive management. How FTA aims to contribute to complex social problems should guide program strategy, design, and implementation. There is a need for nested ToCs – with cross-comparability at the organizational level – for the program, its research portfolios, and the individual projects that fall within them. FTA did attempt to do this with the FPs during Phase II, but lacked program-wide implementation. A robust overarching ToC for each of the challenges that FTA aims to address would be a useful tool to guide strategic program design and management, and align centre and partner efforts in overlapping geographies and research topics to maximize intended contributions to outcomes, impacts, and SLO targets. Collaboratively developing ToCs for research projects would also build shared understanding, co-generation, and design research for impact. Target-setting encourages researchers to aspire for big impact through their research projects, but also guides researchers to set reasonable and feasible impact targets. More explicit target-setting and documentation makes it easier for researchers, project coordinators and managers, and MELIA to attract funding and report progress back to donors. Project-level impact targets should also align with program-level targets for impact and be reported on consistently in projects' midterm and final reports. Projects that were guided by a ToC and/or set impact targets at inception were more successful at realizing outcomes, meeting targets, and realizing impacts on-the-ground. It is paramount that when quantifications of progress on targets or realized are reported, the method by which they were derived and their connection with project influence are clearly articulated with discussion of limitations and caveats to the results. Theory-based evaluation offers the opportunity for both summative and formative assessment, and can facilitate both continuous learning and accountability to intended outcomes and impact targets. ToC can also support and highlight opportunities for investment in long-term partnerships that continue to sustain themselves across projects, a key factor that contributed to successful policy change in projects mapped to Challenge 3. Future research-for-development programmes should be guided by the value offer of purpose-driven central coordination for impact, which can be informed by explicit and well-developed nested ToCs. This holds great potential for sustaining funding and upholding commitments to a culture of learning. Furthermore, impact assessments of strategically designed research initiatives and innovations that ultimately aim to support enhanced governance and landscape management can help build a strong case for uptake and scaling, as the benefits of adoption are robustly measured and tested in different contexts.

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Appendix 1. Challenge 3 Cluster-level ToC Models²⁷ and Narratives

Table 25. Cluster: REDD+ Policy Mechanism (Global) (Figure 7)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Learning from REDD: A Global Comparative Analysis (Phase 1 of GCS REDD+ Program)	CIFOR	2010-2013	USD 10,194,000	Indonesia, Vietnam, Nepal, Brazil, Peru, Bolivia, DRC, Tanzania, Cameroon
Learning from REDD+: An Enhanced Global Comparative Analysis (Phase 2 of GCS REDD+ Program)	CIFOR	2013-2015	USD 10,238,910	Cameroon, Tanzania, Indonesia, Vietnam, Brazil, Peru
REDD: Research to Support Design and Implementation	CIFOR	2012-2015	USD 9,899,000	Indonesia, Vietnam, Papua New Guinea, Nepal, Tanzania, Mozambique, Cameroon, Burkina Faso, Peru, Brazil, Bolivia
Opportunities and Challenges to Developing REDD+ Benefit Sharing Mechanisms in Developing Countries	CIFOR	2012-2016	USD 6,566,500	Brazil, Cameroon, Indonesia, Peru, Tanzania, Vietnam
A Global Comparative Study for Achieving Effective, Efficient and Equitable REDD+ Results (Phase 3 of GCS REDD+ Program)	CIFOR	2016-2020	USD 10,752,688	Brazil, Indonesia, Peru, Ethiopia, Guyana, Myanmar, DRC, Vietnam
SECURED Landscapes: Sustaining Ecosystem and Carbon benefits by Unlocking Reversal of Emissions Drivers in Landscapes	ICRAF	2013-2015	NOK 10,000,000	Cameroon, DRC, Indonesia, Vietnam, Peru
From Climate Research to Action under Multilevel Governance: Building Knowledge and Capacity at Landscape Scale (MLG)	CIFOR	2014-2018	USD 4,979,230	Indonesia, Mexico, Peru, Vietnam

Purpose: Effective implementation of REDD+ to reduce emissions and enhance forest and land management

In addition to international and national climate change policy mechanisms, reliable data are needed to support effective policy implementation to support sustainable forest and land management. FTA conducted a range of projects and global comparative studies on the REDD+ policy mechanism, involving the development and testing of step-wise approaches to estimate reference emission levels, investigation of international REDD+ policy arenas and governance frameworks, analysis of enabling conditions for REDD+ governance, exploration of incentives and trade-offs for benefit-sharing mechanisms, country-level policy impact studies and cross-regional comparative studies, demonstration landscapes, and development of improved MMRV systems. FTA research framed REDD+ policy opportunities, gaps, and barriers to raise the profile of REDD+ governance arrangements. FTA developed methods and tools to develop land-use planning and emissions reduction strategies, as well as monitor and assess REDD+ policy, implementation, and monitoring systems. FTA produced data and analyses of policy instruments, institutional capacities, legal arrangements, financial incentive mechanisms, monitoring tools, and different land use scenarios. In addition, the research proposed options and recommendations for global and national REDD+ policies, measures, and commitments, developed training and support for REDD+ design, implementation, and communication, established a REDD+ learning community, as well as provided guidance for the implementation and monitoring of REDD+ policies, instruments, and projects. As a result, multi-level governments were expected to develop and implement more REDD+ policies, governance frameworks, and monitoring systems informed by empirical data and landscape approaches. Governments were expected to adopt FTA tools (e.g., LUWES, step-wise approach, etc.) to inform decision-making and establish public-private co-investments. REDD+ practitioners were expected to implement and monitor REDD+ projects in accordance with international and national policy, using best practices informed by research and empirical evidence. Partners, allies, and international funding organizations were expected to support policy implementation at municipal, sub-national, national, regional, and international levels and play an active role in the monitoring of government, practitioner, and private sector REDD+ commitments for accountability. In turn, the private sector was expected to respond to policy and civil society pressures to adhere to REDD+ policies, and change their practices to support better landscape management. Researchers were expected to build capacities and advance the research agenda on REDD+, which would continue to feed into REDD+ policy development and implementation. Ultimately, it was expected that REDD+ would better fill its mandate to reduce emissions through enhanced forest and land management at the national and international levels.

²⁷ An interactive version of the cluster-level ToCs for Challenge 3 can be found on [Miro](#).

Expected impact from the cluster: No quantifiable impact targets were set by the projects, except for 76,000 ha targeted for improved cocoa and forest management in Cameroon and 10,000 ha of pilots targeted in DRC (SECURED Landscapes).

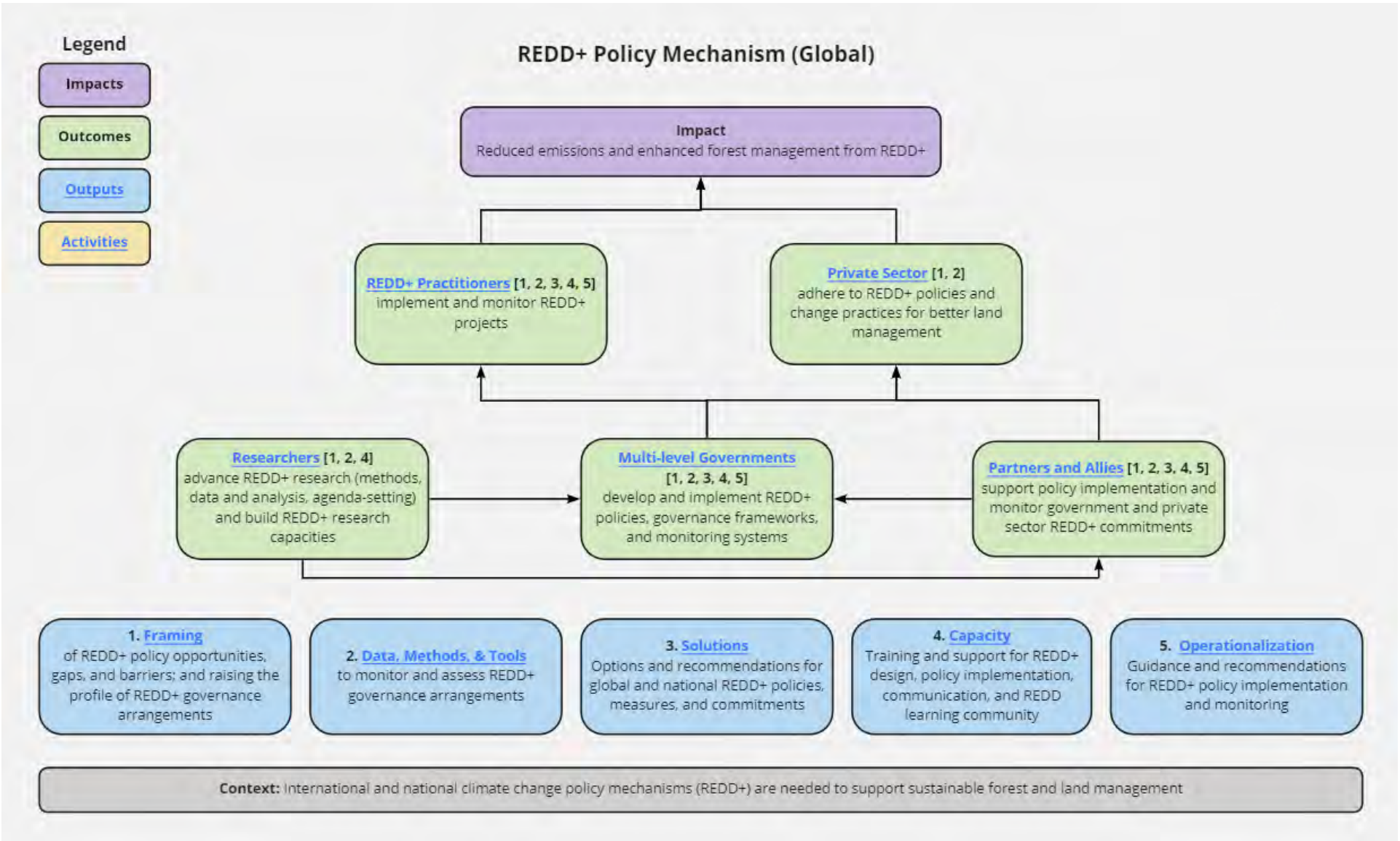


Figure 7. Cluster-level sub-ToC for FTA’s research on the REDD+ Policy Mechanism

Table 26. Cluster: Forest Tenure Management (Global) (Figure 8)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Addressing the gender gap in participation and representation in community forestry: Consolidation of research and action on gender, tenure and community forestry in Uganda and Nicaragua	CIFOR	2013-2016	€842,238	Uganda, Nicaragua, Peru
Assessment of Natural Resource Governance Including Land and Forest Tenure in Coastal Mangrove Forests of Southeast Asia and Africa	CIFOR	2013-2015	USD 144,084	Indonesia, Tanzania
Global Comparative Study on Tenure	CIFOR	2012-2015	USD 1-2 million	Peru, Uganda, Indonesia (Tier I countries); Colombia, Nepal, Kenya (Tier II countries)

Purpose: Sustainable and equitable management of forests

Policy is needed in order to implement equitable tenure arrangements and tenure reform that supports community and women's participation in forest governance, decision-making, and on-the-ground management. FTA conducted surveys as well as institutional and policy analyses to raise the profile of tenure arrangements and reform amongst governmental policy-makers and frame information on the prevailing conditions and challenges of forest governance, socio-ecological benefits of tenure arrangements and women's participation. FTA also produced gender-differentiated data on forest use, tenure benefits, and perceptions of women's participation in forest governance and developed manuals on application of participatory methods, like Prospective Participatory Analysis (PPA), in forest governance processes. Based on policy, institutional, and bureaucratic analyses, FTA proposed solutions and policy options to secure and strengthen tenure rights, strategies to improve conditions to enable women's participation, and recommendations for equitable tenure arrangements and reform. FTA hosted training workshops for governments, NGOs, and communities on Adaptive Collaborative Management (ACM), and established academic and practitioner networks and multi-stakeholder platforms. To help operationalize tenure mechanisms, FTA produced guidance for tenure implementation and reform. Researchers were expected to enhance local research capacities, build national and international research networks, and advance the research agenda on forest tenure rights and gender issues. It was expected that donors and international cooperation agencies would coordinate with other stakeholders on tenure issues, and increase their support and investment in forest tenure processes (e.g., Land Policy Initiative), research, and agendas. Governments at multiple levels were expected to gain understanding of the benefits of community tenure schemes and women's participation in forest governance, enhance coordination with other stakeholders, and take up recommendations to develop and implement tenure policy or tenure reform that support both conservation management and community rights. NGOs were expected to learn about conditions needed for successful forest tenure governance and related benefits, advocate for tenure rights for communities and women, support multi-stakeholder processes and provide evidence-based inputs to governments to inform tenure policy development or reform, and assist tenure implementation and provide technical support to communities. Civil society organizations were expected to learn from FTA engagement, increasingly engage in multi-stakeholder processes on tenure issues and forest governance, and advocate for tenure rights, women's participation, and community needs. Communities were expected to learn about tenure arrangements, responsibilities, and benefits; engage with other stakeholders and participate in forest governance decision-making; become better heard in local governance processes (e.g., women, indigenous groups, etc.); and secure access to tenure. By offering formal forest tenure rights to communities and supporting women's participation in forest governance, it was expected that forests and their natural resources would become sustainably and equitably managed.

Expected impact from the cluster: No quantifiable impact targets were set by the projects.

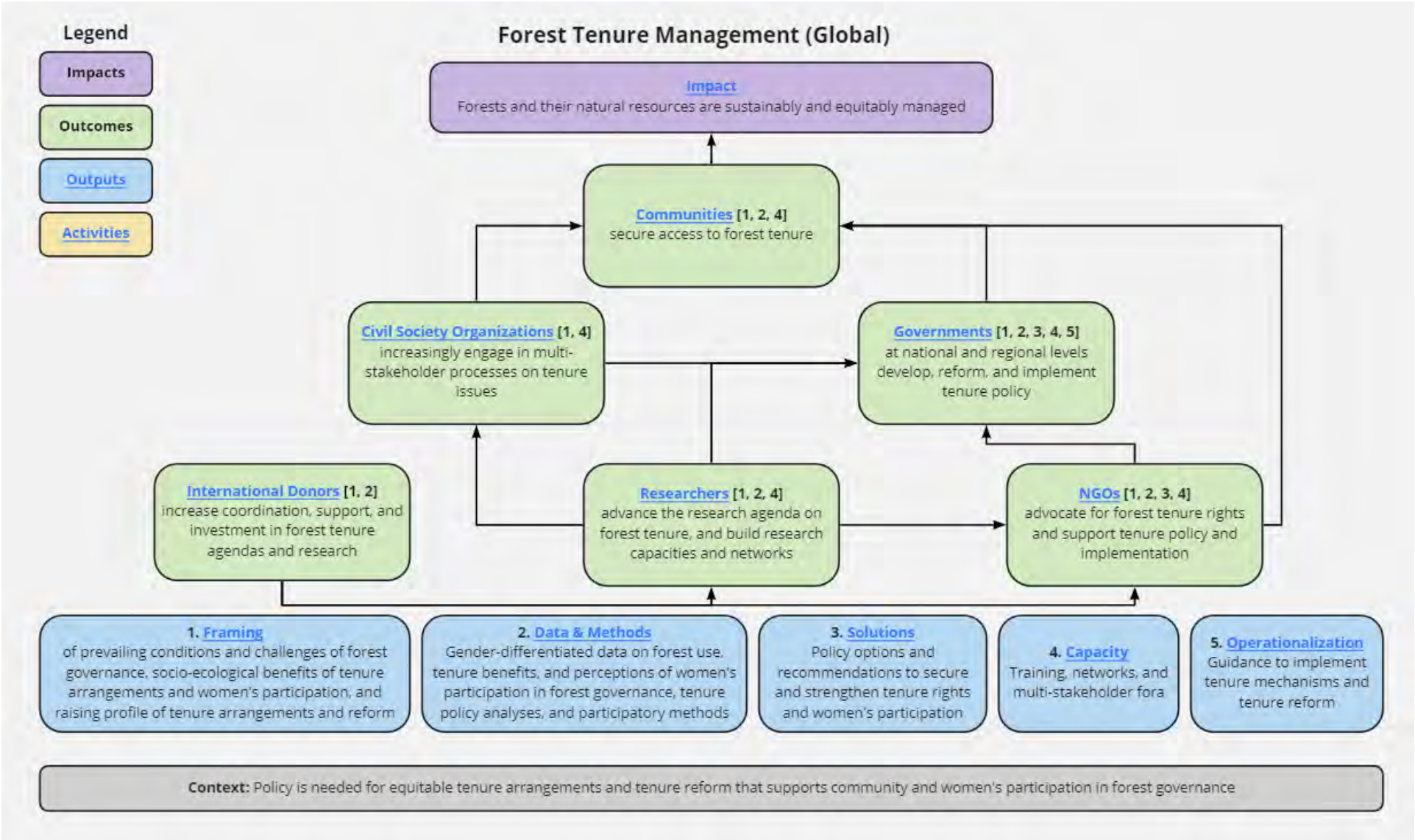


Figure 8. Cluster-level sub-ToC for FTA research on Forest Tenure Management

Table 27. Cluster: Agroforestry Concessions in Peru (Figure 9)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Support to the Development of Agroforestry Concessions in Peru (SUCCESS)	ICRAF	2016-2017	€125,000	Peru
PARA: Piloting approaches to rural advisory services in support of scaling of the Agroforestry Concessions scheme in Peru	ICRAF	2019-2022	€1,343,930.56	Peru
Peru's Agroforestry Concessions Scheme: Collaborative Action to secure Multi-level Readiness for Implementation of an Innovative, Transformative Policy Project (AgroFor)	ICRAF	2020-2023	€3,260,000	Peru

Purpose: Sustainable multi-use management through agroforestry concessions

Tenure incentives and policy are needed to address informal agricultural expansion at the forest margins in the Peruvian Amazon, where extensive deforestation and unsustainable land use practices go unnoticed and unmonitored. FTA research aimed to support Peruvian governments' implementation and governance of agroforestry concessions as well as eligible smallholders' compliance with regulations. FTA engaged governments, NGOs, and local communities to frame the multi-functionality of agroforestry concessions for tenure, livelihoods, SFM, and climate change mitigation. FTA's research proposed a new approach for zoning and identifying land eligible for concessions, produced suitability maps, and quantified the potential GHG reduction impact of successful implementation of the mechanism. Based on an anthropological assessment of study communities and interviews with smallholders, FTA investigated challenges and opportunities for the agroforestry concession mechanism (e.g., compliance barriers for eligible smallholders), produced expanded definitions of smallholders (e.g., farmer profiles and typologies), and introduced concepts of smallholder heterogeneity. FTA involved farmers in participatory mapping exercises, producing maps which farmers could submit to register for a concession. Along with capacity and training for researchers and communities, FTA research co-produced guidance to implement and operationalize the agroforestry mechanism and its technical guidelines. FTA also supported pilot concessions through the regional technical committee in San Martín and engaged regional and national authorities to co-develop action plans for full-scale implementation. As a result of these interventions, it was expected that national and sub-national governments would revise existing policy and effectively implement the mechanism, and municipal extension staff would provide technical assistance to concession holders to ensure concessions are sustainably managed. NGOs were expected to support policy revisions and implementation to ensure smallholders can benefit from and comply with the mechanism's requirements. As a result, eligible smallholders would be incentivized to apply for and be awarded a concession, gain tenure and other benefits, comply with concession requirements, and adopt agroforestry practices. It was expected that the culmination of these outcomes would ensure that land and forests located within agroforestry concessions in the Peruvian Amazon would become sustainably managed.

Expected impact from the cluster: No quantifiable impact targets were set by the projects. SUCCESS findings projected that 123,000 smallholders across 1.5 million ha of forest land in Peru could benefit from the agroforestry concession mechanism.

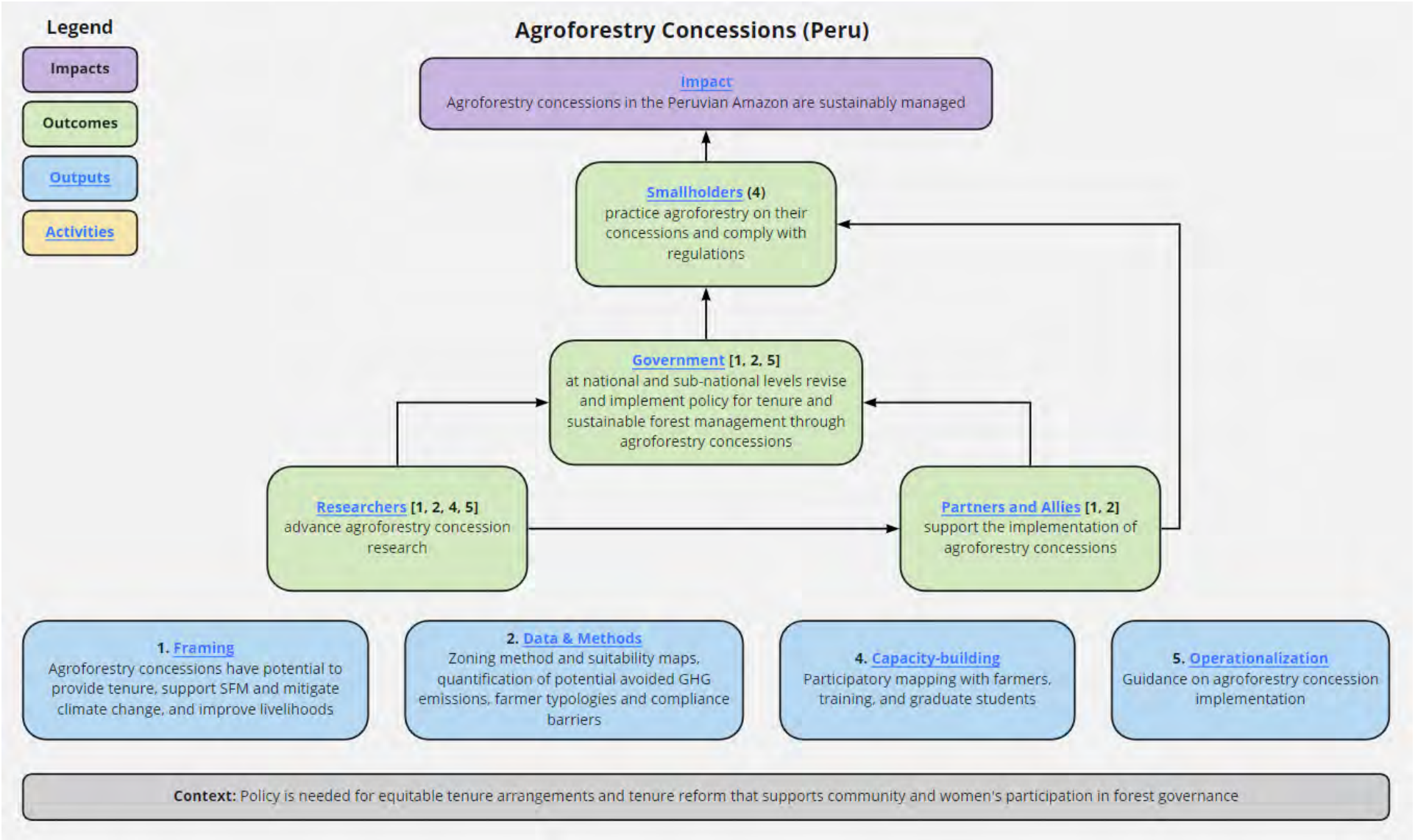


Figure 9. Cluster-level sub-ToC for FTA research on Agroforestry Concessions in Peru

Table 28. Cluster: Sustainable Resource Management of Non-Timber Forest Products in Peru (Figure 10)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Brazil Nut Project	CIFOR	2012-2015	USD \$500,000-1 million	Peru

Purpose: Non-timber forest products are sustainably managed

The production of non-timber forest products (NTFP), such as Brazil nuts, is negatively affected by unsustainable timber harvesting in Peru. With a need for empirical evidence of the environmental impacts of timber extraction, policy pressures are needed to ensure sustainable resource management of different tree and forest species. In particular, policies at the national and sub-national levels need to be revised to provide guidelines and restrictions for how much timber can be sustainably harvested within a Brazil nut concession. FTA research investigated the constraints facing Brazil nut production by concessionaires and conducted an impact assessment of logging activities on Brazil nut production. FTA produced contextual knowledge on the Brazil nut concession system and legal process, quantified the number of trees that can be sustainably harvested (2 trees/ha), and compiled policy recommendations to encourage the adoption of the 2 trees/ha figure. As a result of this research, it was expected that researchers would engage in more debates about sustainable management of Brazil nuts and other NTFPs, advance the topic of multi-use management, and build the local research capacities and career prospects of students involved in the project. Donors were expected to gain awareness of multi-use management technical solutions, gain access to and value scientific evidence, and fund more development and research projects on multi-use management and sustainable resource management. NGOs and allies were expected to take up the findings to advocate for policy change for Brazil nut concessions that reflects evidence-informed data and sustainable resource management principles, as well as support concessionaires and communities to change practices. As a result, government at the national and sub-national level would revise Brazil nut concession policy and guidelines for optimal resource management. Practitioners, such as regents and extensionists, would support and monitor the implementation of the revised concession guidelines, promote multi-use management practices to concessionaires, and monitor concessions to ensure resources are sustainably managed. With both legal pressures to adhere to the revised policy guidelines and support from practitioners and NGOs, concessionaires would comply with the timber extraction limits on their concession and adopt sustainable resource management practices. Collectively, these changes were expected to result in the sustainable management of both timber and Brazil nuts in Peruvian Brazil nut concessions.

Expected impact from the cluster: No quantifiable impact targets were set by the project. Project findings estimated the potential for 1 million ha of Brazil nut concessions in the Madre de Dios region of Peru.

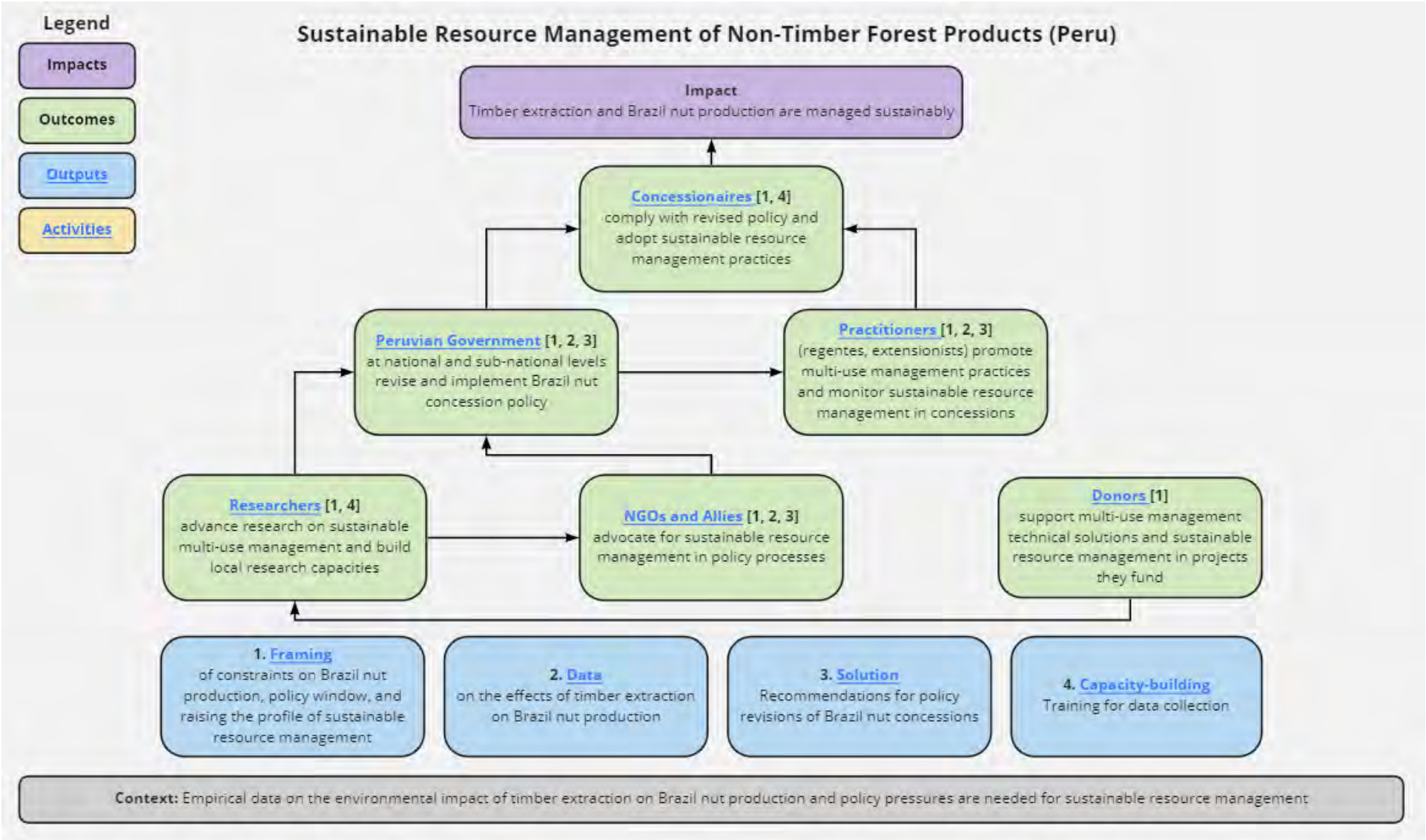


Figure 10. Cluster-level sub-ToC for FTA research on Sustainable Resource Management of Non-Timber Forest Products in Peru

Table 29. Cluster: Community Forest Management in Mesoamerica (Figure 11)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Forestry to enhance livelihoods and sustain forests in Mesoamerica: How institutional arrangements and value chains affect benefits and resources	Biodiversity International	2013-2017	USD 643,150	Guatemala, Nicaragua

Purpose: Enhancing conservation of forest resources in Mesoamerica (Guatemala and Nicaragua)

In Mesoamerica, where policy pressures are needed to support community-based forest management, FTA's research documented conservation and socio-economic benefits of community forestry, undertook participatory research with communities, investigated governance arrangements in different community contexts, and explored the socio-cultural realities, barriers, and opportunities of community forestry for communities. The research produced recommendations for policy development, policy implementation, and the management of community forests, including the renewal of community concessions in Guatemala, targeted to governments, local forestry cooperatives, NGOs, and communities. Based on these interactions, governments in Guatemala and Nicaragua were expected to develop and implement policy to support sustainable community forest management practices. Local cooperatives and NGOs were expected to support policy processes as well as communities' adoption of more sustainable forestry practices and community forest management strategies. By influencing these actors, FTA aimed to contribute to the enhanced conservation of forest resources and communities' socio-economic well-being in Mesoamerica.

Expected impact from the cluster: No quantifiable impact targets were set by the project. Approximately 350,000 ha of community forestry concessions in Guatemala's Maya Biosphere Reserve are up for renewal. Approximately 1.5 million ha in Nicaragua's North Atlantic Autonomous Region (RAAN) would be conducive for community forest management schemes.

Table 30. Cluster: Management of Trees on Farms in Mesoamerica (Figure 12)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Nicaragua–Honduras Sentinel Landscape (NHSL) Initiative	CATIE, ICRAF, CIFOR	2012-2021	Not available	Nicaragua, Honduras

Purpose: Sustainable management of trees on farms in Mesoamerica (Nicaragua and Honduras)

In Mesoamerica, where regulatory and educational frameworks are needed to bring visibility to trees on farms (TonF) to support enhanced and proactive management, FTA's research analyzed policy to identify regulatory gaps, conducted biophysical and socio-economic studies to assess land and soil health as well as the prevalence and use of TonF, and investigated issues around the forest transition curve. FTA also explored and co-identified indicators to monitor landscape sustainability in a variety of cultural, institutional, and environmental settings. The research framed TonF as an explicit category of trees outside forests and the need for management of such tree stands, and generated inventories, land use maps, and datasets of TonF, soil quality, and tree density. FTA produced recommendations and guidance for the management of TonF, targeted to extensionists, NGOs, and communities. FTA also helped establish a multi-stakeholder platform and hosted training workshops for students, researchers, local farmers, extensionists, NGOs, and governments to use FTA tools (e.g., Land Degradation Surveillance Framework (LDSF), ShadeMotion, TonFanalyzer). Based on these interactions, governments in Nicaragua and Honduras were expected to integrate TonF into policy to support sustainable management practices and reflect TonF in national reporting. NGOs and allies were expected to support policy processes, capacity-building, and coordination for TonF in the Nicaragua-Honduras Sentinel Landscape. Extensionists were expected to promote TonF and sustainable management practices, and be better equipped to provide enhanced technical assistance to communities. Communities were expected to adopt and manage TonF, such as using trees to form natural boundaries through live fences and/or shade trees to increase productivity. Researchers were expected to advance research on forest management and TonF that would continually feed into the enhanced management of TonF by other stakeholders. By influencing these actors, FTA aimed to contribute to the sustainable management of TonF in Nicaragua and Honduras.

Expected impact from the cluster: Initiative targeted 6,800,000 ha of landscapes in Nicaragua and Honduras.

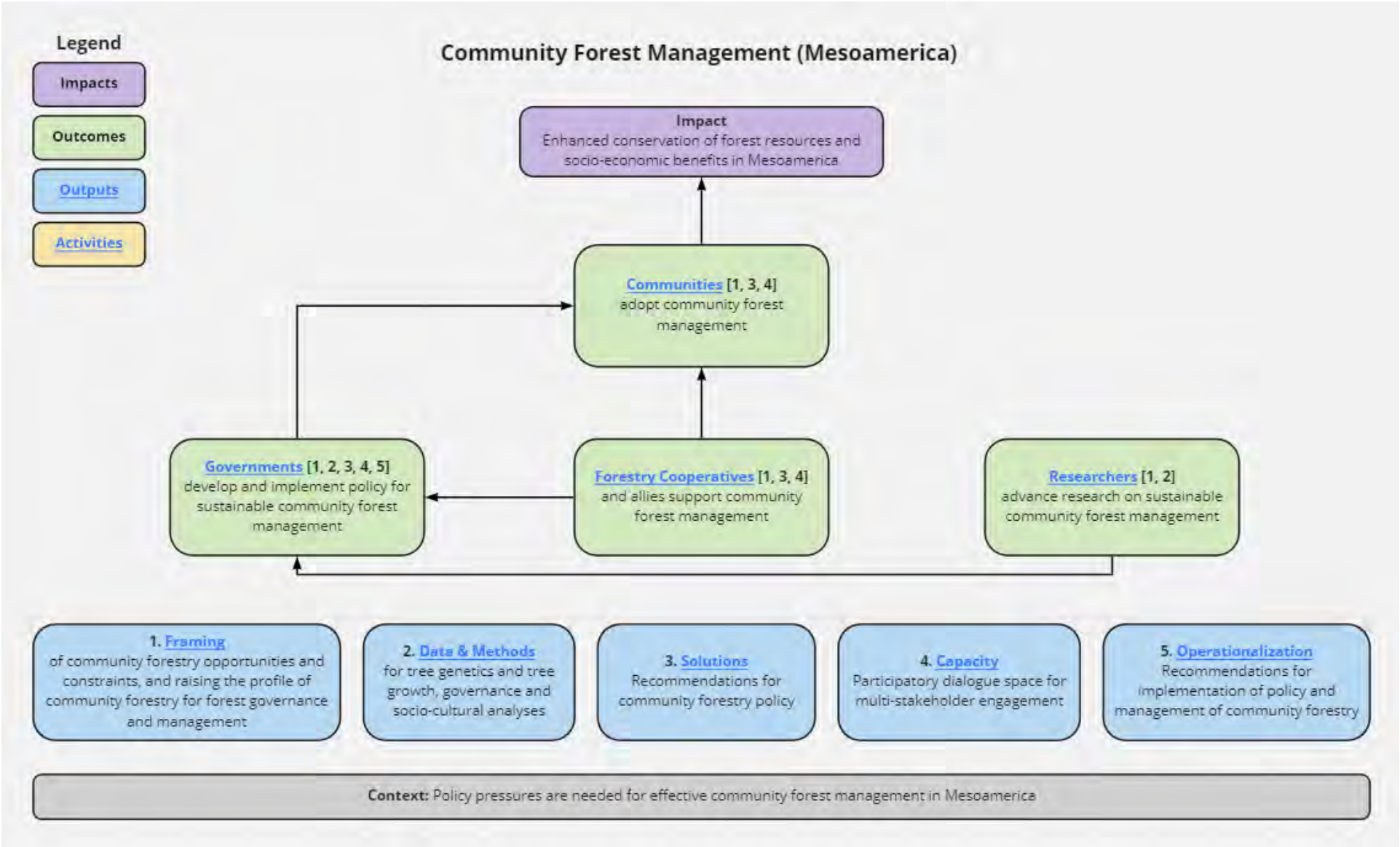


Figure 11. Cluster-level sub-ToC for FTA research on Community Forest Management in Mesoamerica

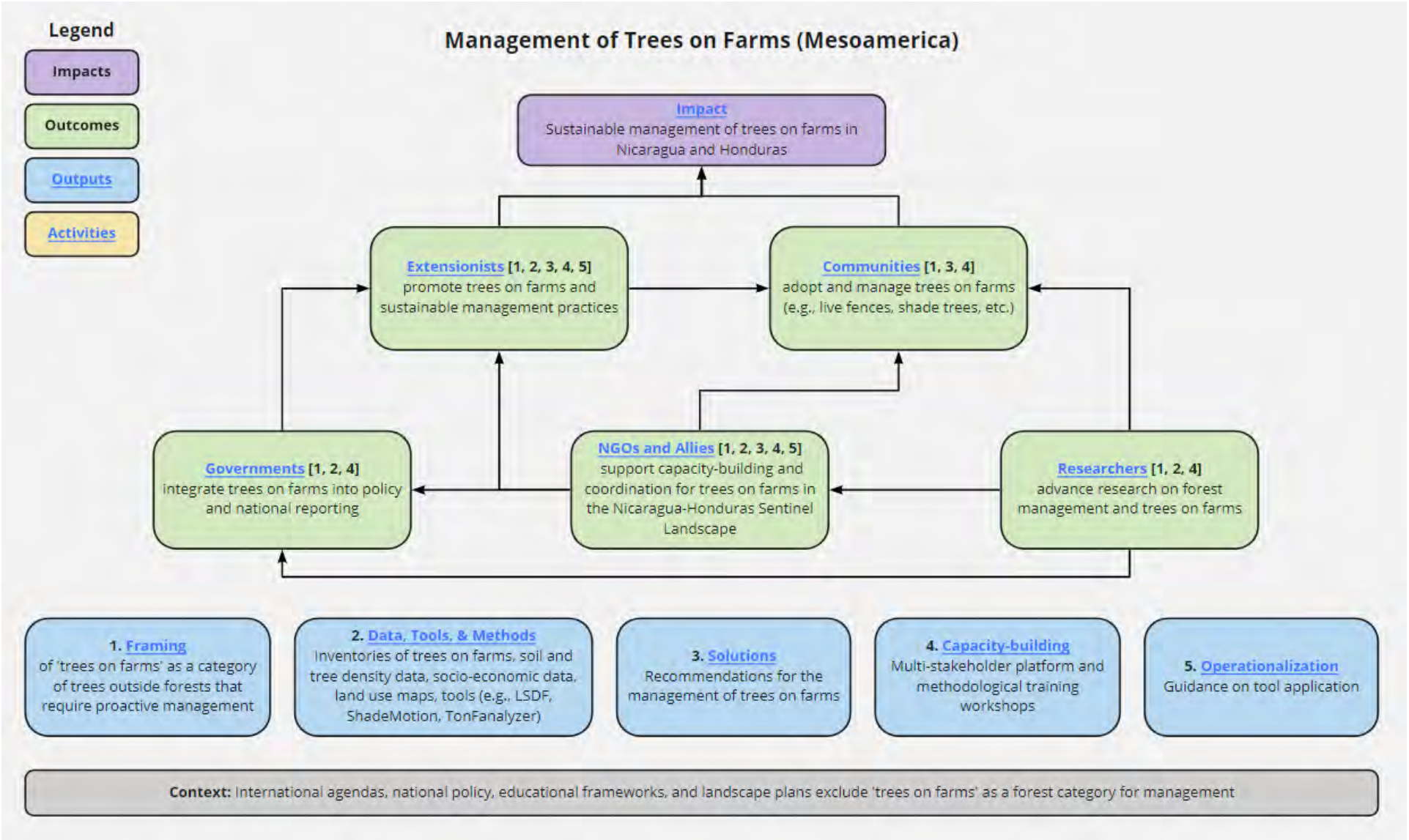


Figure 12. Cluster-level sub-ToC for FTA research on Management of Trees on Farms in Mesoamerica

Table 31. Cluster: Sustainable Conservation and Management of Protected Areas in Mozambique (Figure 13)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Sustaining Forest Resources for People and the Environment in the Niassa National Reserve in Mozambique	Bioversity International	2010-2014	685,900	Mozambique

Purpose: Sustainable conservation and management of the miombo woodlands in Mozambique

Improved management of protected areas and community development are needed to conserve the miombo woodlands in Mozambique. More than 40,000 people who live in the Niassa National Reserve depend on trees and other natural resources (notably honey-gathering and fishing) for their livelihoods. Woodlands in the Reserve are also threatened by illegal logging. FTA aimed to analyze and mitigate threats to tree populations in the best-preserved miombo woodlands in southern Africa, and quantified the impacts of uncontrollable logging and honey-gathering on populations of different tree species. The research engaged communities, reserve managers, and researchers in discussions around forest use, threats to tree species and ecosystems, conservation, and the potential for forest-based livelihoods. The research developed strategies to reduce negative impacts of destructive honey-gathering techniques (i.e., tree felling, burning) and recommendations for in-situ conservation management of priority tree species in the Reserve. Based on these interactions, reserve managers were expected to be better equipped to manage and conserve forest resources within the Reserve and promote sustainable livelihood benefits, stimulate governmental support for the implementation of action plans, and influence communities to adopt forest conservation practices. FTA also aimed to advance research on forest conservation among local researchers to encourage a critical mass of research efforts in Mozambique. Together, these changes would lead to the sustainable management and conservation of miombo woodlands.

Expected impact from the cluster: No quantifiable impact targets were set by the project. The Niassa National Reserve covers 4.2 million ha.

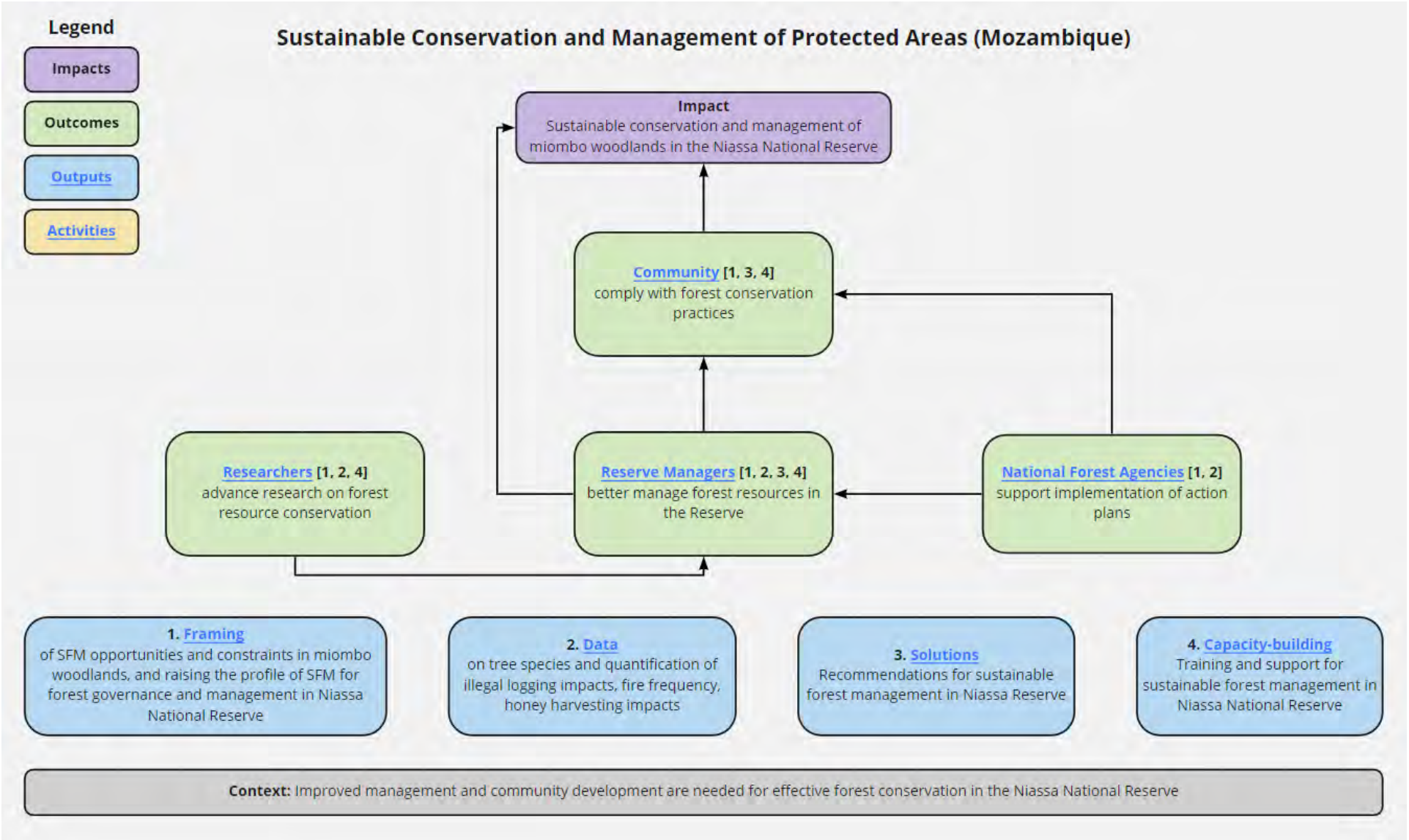


Figure 13. Cluster-level sub-ToC for FTA research on Sustainable Conservation and Management of Protected Areas in Mozambique

Table 32. Cluster: Sustainable Forest Management in the Congo Basin (Figure 14)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Appui à la politique nationale de conservation et gestion des forêts et de la diversité en République Démocratique du Congo (REFORCO)	CIFOR	2009-2016	USD 7,817,199	DRC
Formation, Recherche, Environnement dans la Tshopo (FORETS)	CIFOR	2016-2021	USD 28,971,000	DRC
Yangambi, pôle scientifique au service de l'homme et des forêts (YPS)	CIFOR	2017-2020	USD 3,557,700	DRC
Nouveaux Paysages du Congo (NPC)	CIFOR	2019-2022	USD 5,600,000	DRC
Promouvoir et Formaliser l'Exploitation Artisanale du bois en Afrique Centrale (PROFEAAC)	CIFOR	2019-2023	USD 2,240,000	DRC, Cameroon

Purpose: Sustainable forest management in the Congo Basin

In the Congo Basin, policy and market pressures are needed for the successful implementation of SFM across the region. FTA's research has ranged from participatory mapping, analyses of land use reform and governance frameworks, pilot farms, community capacity-building, and establishing a research hub in the DRC. The research produced knowledge on the effects of human pressures on forest resources such as logging and community use to frame and raise the profile of forest management issues, data illustrating the effects of unsustainable land management, monitoring protocol tools, guidance on best practices, inputs to governance frameworks, and recommendations for mutually beneficial forest management practices for communities and the private sector. FTA also created opportunities for research and SFM capacity-building through a platform for scientific coordination within the Yangambi Biosphere Reserve (e.g., data-sharing), as well as multi-stakeholder platforms involving municipal governments, timber companies, and community artisans to engage in, discuss, coordinate, and monitor progress on forest management and support artisanal governance. Based on these interactions and research activities, local research capacities and networks would be built and research on SFM in the Congo Basin would be advanced. Governments were expected to develop and implement policies, governance frameworks, and action plans to support SFM at the national, sub-national, and local levels. At the international level, donors and international institutions were expected to fund, develop, update, and implement international legislative frameworks to encourage the uptake of SFM practices and lobby companies to adhere to sustainable management practices. NGOs were expected to lobby governments and companies to support SFM, stimulate timber companies to design and implement SFM plans, support the monitoring of SFM plans, and influence communities to adopt more sustainable agricultural and artisanal practices to alleviate pressures on forests and the land. These changes were intended to improve land-use planning and the sustainable management of forests in the Congo Basin.

Expected impact from the cluster: Projects targeted 4 million ha in DRC.

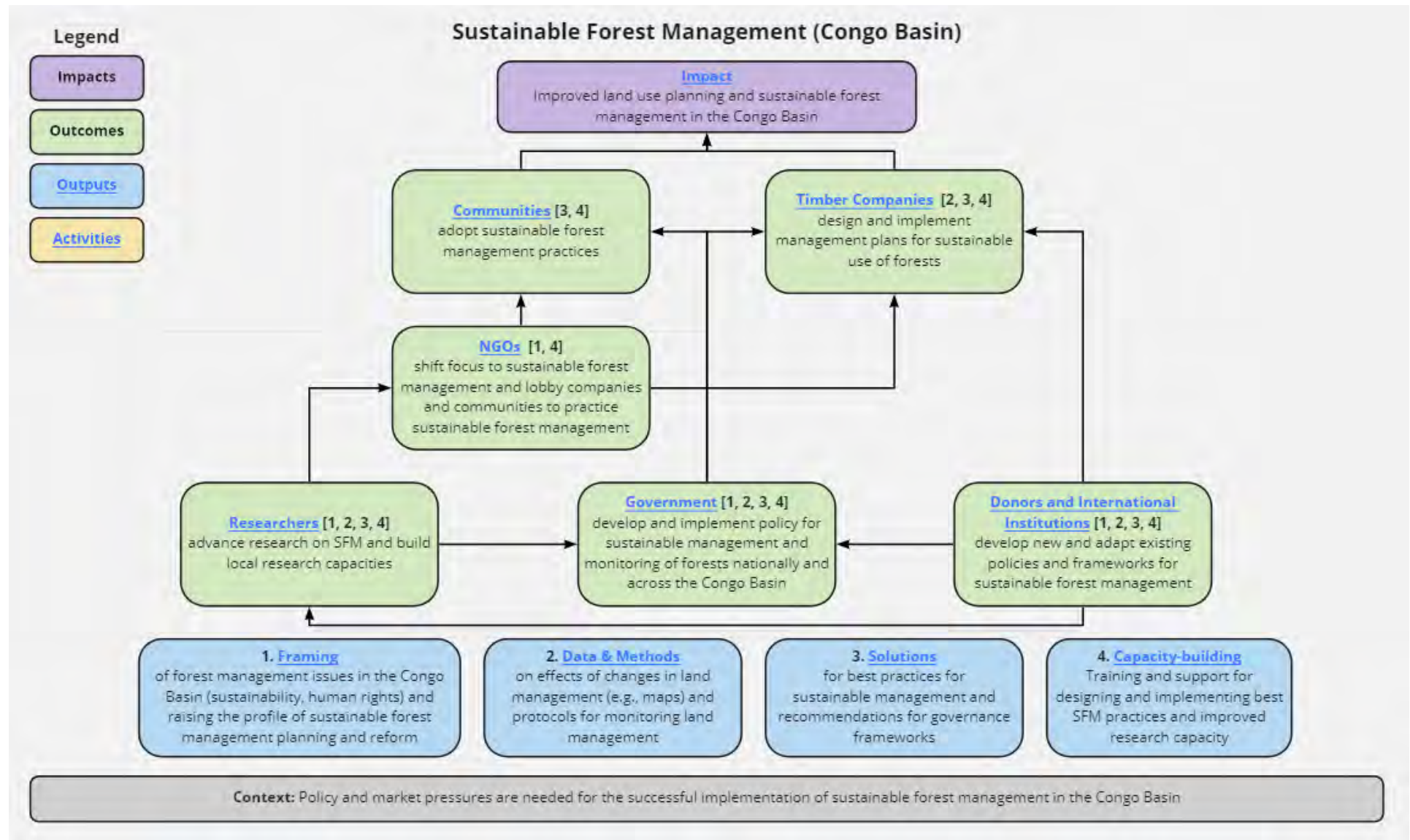


Figure 14. Cluster-level sub-ToC for FTA research on Sustainable Forest Management in the Congo Basin

Table 33. Cluster: Landscape Management of Dryland Areas in Sub-Saharan Africa (Figure 15)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
DRYDEV: A Regional Programme in the Sahel and Horn of Africa, enhancing Food and Water Security for Rural Economic Development	ICRAF	2013-2019	USD 50,000,000	Ethiopia, Kenya, Mali, Niger, Burkina Faso

Purpose: Drylands become sustainably managed

Favourable policy environments, capacity-building, and practice change are needed to transition dryland areas from subsistence farming to sustainable management that supports rural development and mitigates climate change. FTA conducted fieldwork to assess natural resource management, on-farm water and soil management, and farmer capacities. Other activities involved policy review, value chain analyses, and market assessments. FTA engaged stakeholders to enhance local governance, as well as host participatory consultation workshops to co-develop community action plans. Along with training workshops, FTA supported the facilitation of inter-village exchange, outreach workshops to share successes, and assisted in the construction of micro-dams and percolation ponds. Engagements and outreach served to raise the profile of the OxC approach to plan landscape-specific development interventions, policy and institutional constraints, the need for institutional strengthening, and the benefits socio-ecological benefits of dryland management. FTA generated biophysical and socio-economic data, value chain assessments, and solutions and recommendations for climate-smart production, management practice, and business models. FTA developed training workshops and helped establish farmers organizations. FTA also produced guidelines to operationalize the OxC approach for community visioning and planning. As a result, governments were expected to gain awareness of and invest in rural development through dryland management, improve the policy and institutional environment, take up policy recommendations, and increase coordination. Private actors, such as companies and investors, make more sustainable investment decisions. Partners and NGO allies champion the OxC approach, share FTA findings, and support farmers to build capacity and adopt sustainable management practices. Donors are expected to invest in new projects on drylands to scale the approach. Farmers are expected to learn, build skills in, and apply climate-smart production techniques, adopt sustainable management practices, join farmers organizations to support local governance, and participate in community-led development planning. With supportive and aligned institutional environments for governance and wider uptake of sustainable management practices by farmers, it is expected that dryland areas will become more sustainably managed in Sub-Saharan Africa.

Expected impact from the cluster: Project targeted the uptake of improved land use management practices by 227,000 farmers; no hectare targets were set by the project.

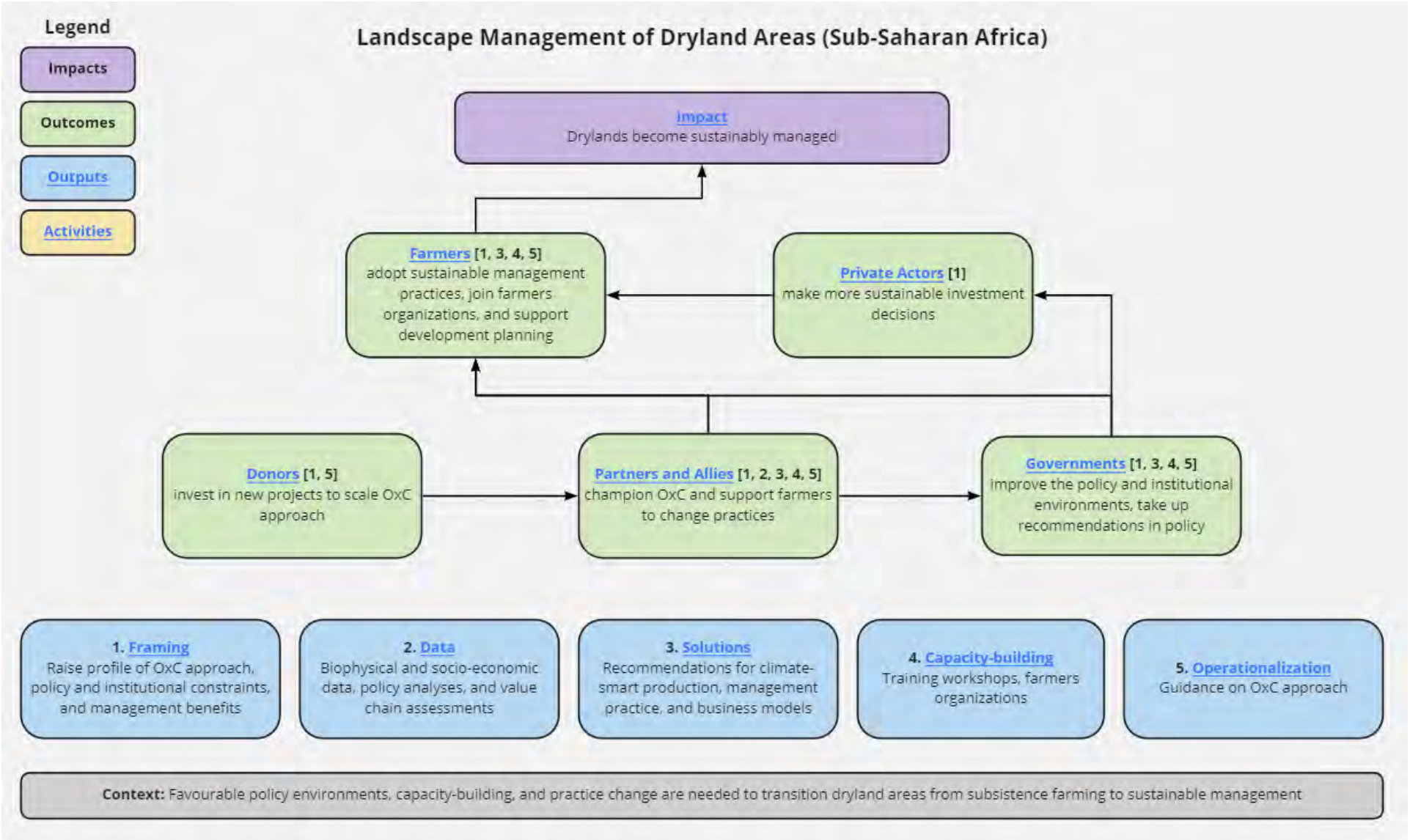


Figure 15. Cluster-level sub-ToC for FTA research on Landscape Management in Dryland Areas in Sub-Saharan Africa

Table 34. Cluster: Forest Monitoring in Central Africa (Figure 16)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Contribution à l'observatoire des forêts d'Afrique centrale (OFAC 3)	CIFOR	2015-2016	USD 28,416	Cameroon, Central African Republic, DRC, Congo, Equatorial Guinea, Gabon, Chad, Sao Tome and Principe, Burundi, Rwanda
Technical Assistance for the Facilitation of the Congo Basin Forest Partnership (CBFP)	CIFOR	2016-2017	USD 48,454	DRC
Renforcement et Institutionnalisation de l'Observatoire des Forêts d'Afrique Centrale (RIOFAC)	CIFOR	2017-2022	USD 4,560,000	Cameroon, Central African Republic, DRC, Congo, Equatorial Guinea, Gabon, Chad, Sao Tome and Principe, Burundi, Rwanda

Purpose: Sustainable governance and management of forest ecosystems in Central Africa

Effective decision-making, governance, and policy-making for forest management in Central Africa require access to up-to-date, credible, and relevant data on forests, as well as the corresponding databases organizing information on forests. FTA supported the strengthening of the Central African Forest Observatory's (OFAC) monitoring systems, which provides data for multiple countries in the region, through the development and improvement of websites, online databases, resources, and tools for the management and monitoring of forests. In addition to the consolidation of existing OFAC data, databases, and resources, FTA conducted policy analyses, ran training sessions, provided technical support to OFAC, hosted conferences and events, and consulted regional and international stakeholders to update OFAC indicators. With data as a focal point of this work, FTA developed and updated OFAC's directories and databases containing GIS data, maps, networks, and legal texts; protocols and monitoring tools; and online tracking systems for forests in Central Africa. These activities and engagements also framed gaps and opportunities for COMIFAC to enhance forest monitoring in the region, produced policy options for the CBFP and COMIFAC networks, and trainings for data collection, analysis, and communications. As a result, researchers and research institutions were expected to utilize OFAC's databases, enhance research capacities, support improved database management practice, and stimulate new research on forest management in the region to feed into other actors' work or back into OFAC. COMIFAC was expected to gain awareness of forest governance and management options, become equipped to navigate and utilize OFAC resources, and develop and implement strategies for forest management, monitoring, and conservation using OFAC resources or other sources of empirical forest data. International actors, such as the EU and DEVCO, were expected to advance international debates and support cooperation, coordination, and knowledge-sharing amongst stakeholders to improve governance agendas and strengthen institutional approaches for forest management. Partners and allies (i.e., technical and financial partners; e.g., CBFP, Forêt Ressources Management) were expected to use OFAC resources to promote OFAC and strengthen networks, collaboration, and coordination on the topic. With increased regional cooperation and coordination through COMIFAC and other international arenas, national governments in Central Africa were expected to refer to and use OFAC resources to make data-informed decisions to sustainably manage the use of land and forest resources. By collectively influencing these actors, it was expected that forest ecosystems across Central Africa would become more sustainably managed.

Expected impact from the cluster: No quantifiable impact targets were set by the projects.

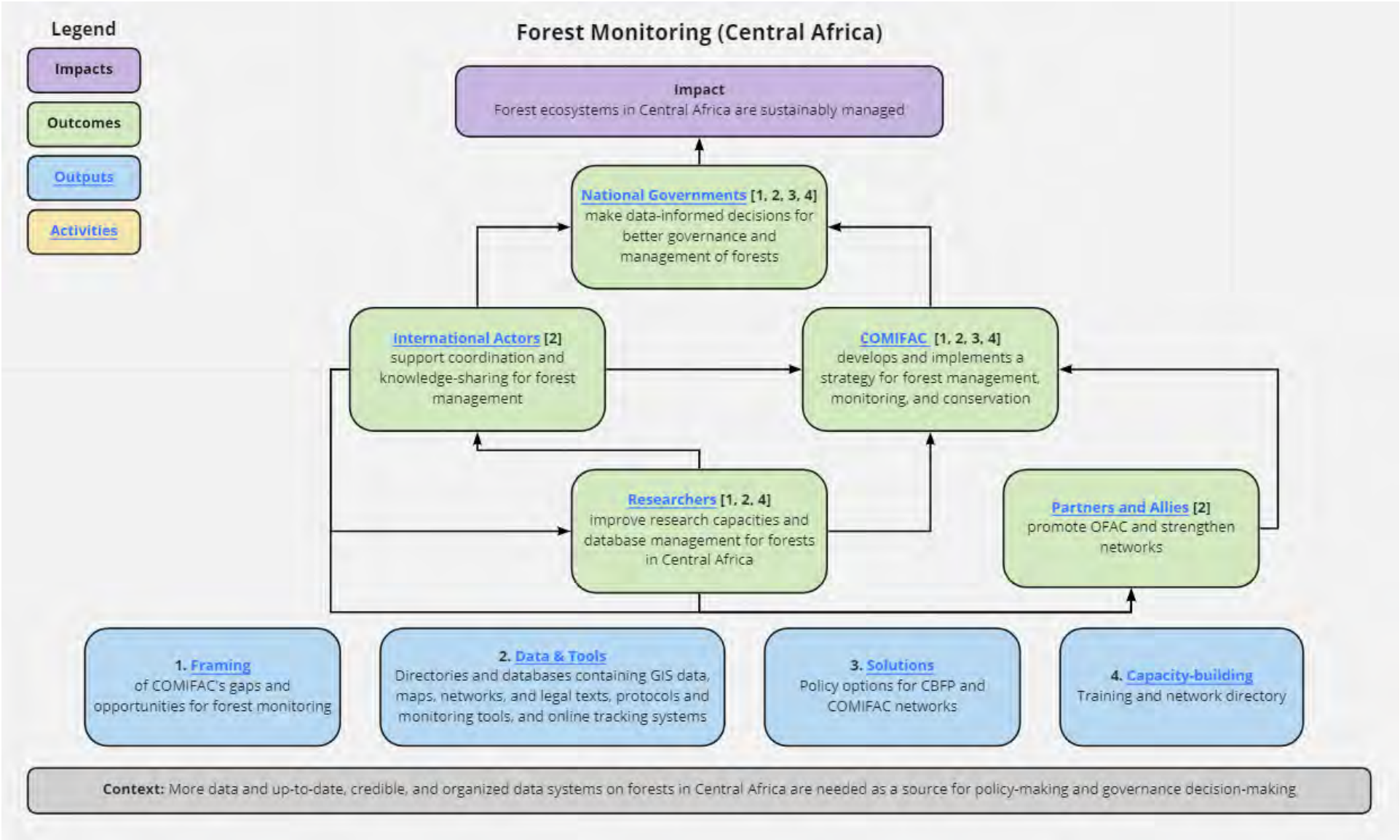


Figure 16. Cluster-level sub-ToC for FTA research on Forest Monitoring in Central Africa

Table 35. Cluster: FLEGT Mechanism for Illegal Logging in Sub-Saharan Africa (Figure 17)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Appui technique au Ministère des Forêts et de la Faune pour l'opérationnalisation de la page web et la collecte de données dans le cadre de la mise en œuvre de l'Annexe VII de l'APV/FLEGT	CIFOR	2015-2016	USD 27,048	Cameroon
Collecting evidence of FLEGT VPA-impacts for improved FLEGT communication	CIFOR	2019-2019	USD 459,896	Ghana, Cameroon (Indonesia) ²⁸
Realisation d'une etude de caracterisation des differents types d'offres et de demandes en bois et produits derives dans les marches publics en Côte d'Ivoire	CIFOR	2018-2019	USD 53,590	Côte d'Ivoire
Essor des demandes publiques et privees camerounaises en sciages d'origine legale	CIFOR	2017-2019	USD 109,947	Cameroon
PRO-FORMAL: Policy and regulatory options to recognise and better integrate the domestic timber sector in tropical countries	CIFOR	2010-2013	USD 3,870,000	Cameroon, Gabon, DRC (Ecuador, Indonesia) ²⁸
Governing Multifunctional Landscapes (GML) in Sub-Saharan Africa: Managing Trade-Offs between Social and Ecological Impacts	CIFOR ICRAF	2017-2021	USD 11,074,500	Cameroon, DRC, Ghana, Kenya, Mozambique, Liberia, Tanzania, Uganda, Zambia (and bordering countries such as Chad, Central African Republic, Nigeria, Somalia)

Purpose: Effective implementation of FLEGT to reduce instances of illegal logging

Policy pressure and market transparency are needed to implement and incentivize FLEGT compliance as a form of SFM to decrease instances of illegal logging. FTA's research ranged from policy analyses of the FLEGT mechanism and its communication strategy, assessments of value chain dynamics and regional priorities, and international and national-level policy engagements to support the development and implementation of FLEGT policy measures and monitoring systems. FTA engaged diverse government stakeholders and experts within the forest sector and implemented territorial approaches to support inclusive local community decision-making processes. The research framed study countries' FLEGT/VPA progress to date, outlining existing opportunities and gaps. FTA also produced wood-fuel trade flow maps and value chain analyses. FTA also proposed policy options for domestic timber markets and conservation strategies. The research established multi-stakeholder platforms to discuss issues or draft policy, offered training and technical capacity development, and supported graduate student learning. As a result of these contributions, it was expected that policy-makers (focusing primarily across Sub-Saharan Africa) would take up and internalize FTA's recommended policy options, adopt and/or strengthen FLEGT mechanisms, and be equipped with enhanced monitoring capacities for better wood-fuel governance. NGOs and CSO partners were expected to support the implementation of and private sector compliance with governmental policies on FLEGT and sustainable practice. Timber companies were expected to better understand FLEGT compliance requirements and change company practices to comply, and smallholders and SMEs were expected to have increased incentives and capacities to comply with legal requirements. As a result, there would be increased knowledge and capacity among large- and small-scale producers to improve logging practices, establish sustainable wood-fuel value chains, and have improved benefits from sustainable wood-fuel production and trade. Researchers were expected to build on FTA's research to advance the foundation of research on FLEGT, sustainable wood-fuel governance, and timber markets. These outcomes were expected to contribute to forests becoming more sustainably managed in West and Central Africa through greater adoption of FLEGT mechanisms and as more VPA countries shift to implementation and licensing status, subsequently decreasing the quantities of illegal logging found on the export market.

Expected impact from the cluster: No quantifiable impact targets were set by the projects.

²⁸ FTA's FLEGT activities were also conducted in Ecuador and Indonesia; with the strong focus on Africa and for the purposes of geographic clustering, FTA's contributions in these countries were not included in the assessment.

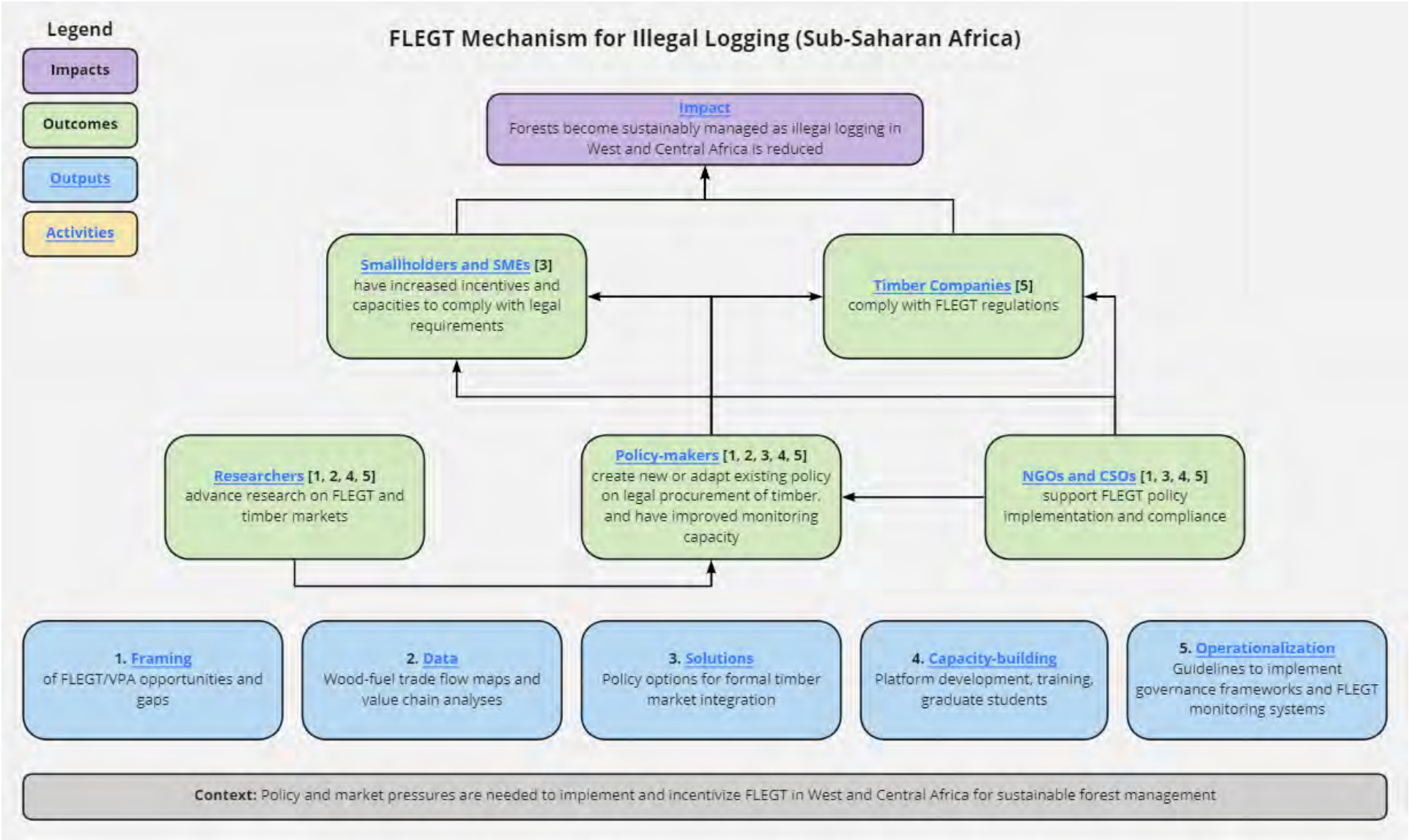


Figure 17. Cluster-level sub-ToC for FTA research on FLEGT in Sub-Saharan Africa

Table 36. Cluster: Sustainable Forest Enterprises in Cameroon (Figure 18)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Improving Livelihoods and Land Use in Congo Basin Forests - Financing Sustainable Community Forest Enterprises in Cameroon (DRYAD)	ICRAF	2015-2020	USD 8,941,462	Cameroon

Purpose: Enhance viable community forest enterprises for sustainable forest management in Cameroon

Many community forests in Cameroon are not operational because of low capacity, and have been unable to attract and access finance owing to underlying risks. Therefore, capacity-building, technical assistance, and financial investment are needed to equip viable community forest enterprises (CFEs) to support environmental, social, and livelihood objectives. As part of their activities, FTA tested a performance-based monitoring system with community enterprises to assess and report on select environmental, social, and economic indicators as a means to access finance. FTA offered capacity-building in use of the monitoring tool as well as technical, business, and governance training to local communities and implementing organizations. In addition to investigating the effectiveness and efficiency of the financial mechanism, FTA also participated in policy engagement to advance dialogue. FTA research framed the potential of CFEs to contribute to economic, social, and environmental development, facilitated the development of a real-time field monitoring system to enable CFEs to collect data and monitor forest use and CFE performance, produced performance-based finance models, lessons, and recommendations for policy and to scale up the approach, and published resources and guidance for CFE implementation. As a result of FTA's activities and uptake of outputs, it was expected that implementing organizations would be equipped to identify viable business plans, support CFE implementation through monitoring and technical advisory services, and hold communities to account. Governments were expected to create and facilitate a more enabling environment for CFEs through a better understanding of CFE barriers, formally recognize CFEs as social enterprises, as well as increase opportunities for community-governmental engagement and community participation in policy discourse. Public and private investors were expected to make investment decisions using evidence-based performance data and invest more in performance-based CFE models. Communities were expected to build capacities to sustainably manage and maintain community forest land and monitor CFE performance, establish a community of practice, and reinvest profits into community development. With successful outcomes and demonstrable return-on-investment, it was expected that other communities and regions would scale up the performance-based finance approach for CFEs. As a result, community forests would become better managed in Cameroon and beyond.

Expected impact from the cluster: Project targeted the enhanced management of 105,000 ha of community forests in Cameroon.

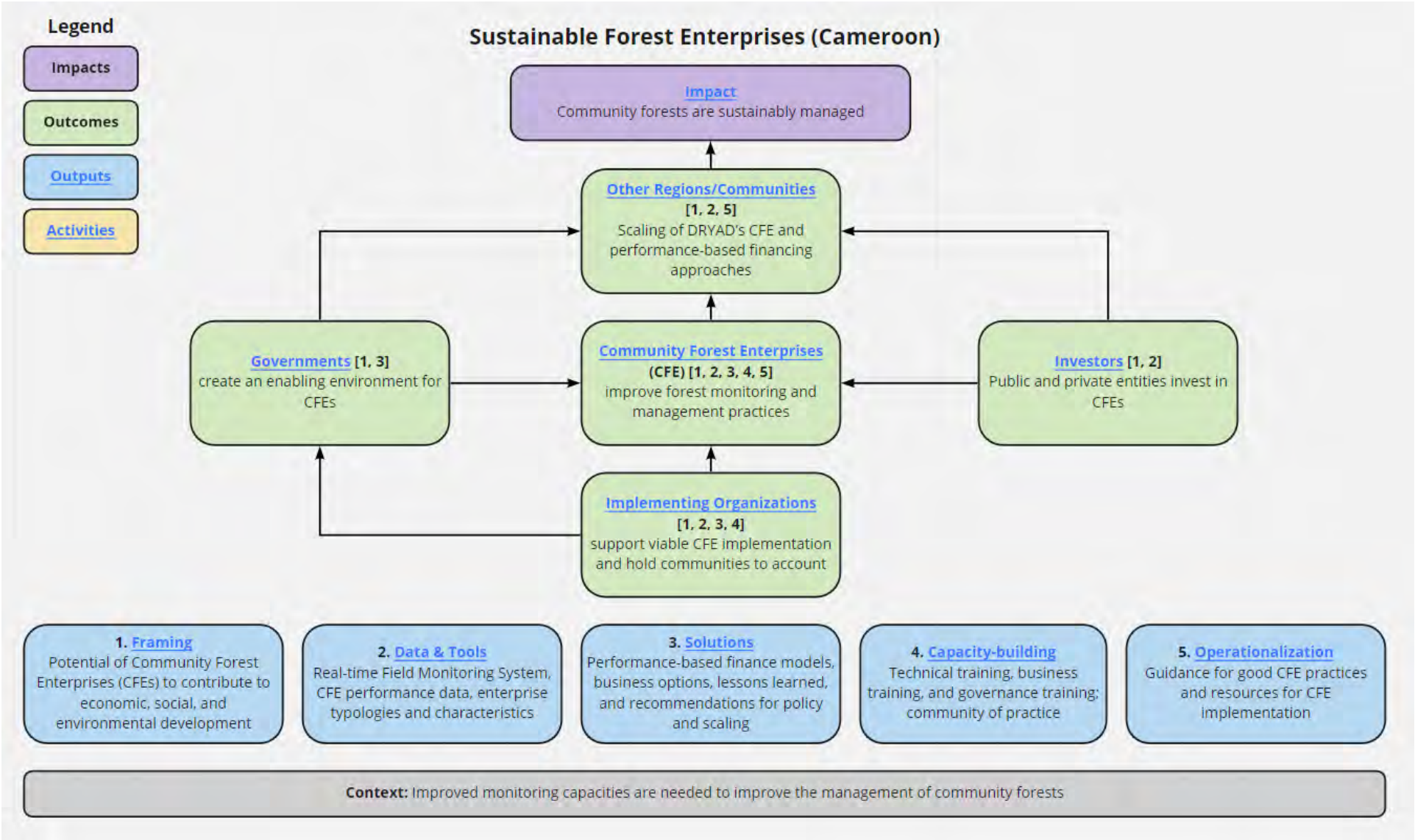


Figure 18. Cluster-level sub-ToC for FTA research on Sustainable Forest Enterprises in Cameroon

Table 37. Cluster: Support to Landscape Restoration and Management in Asia (Figure 19)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Opportunities for tropical forest and landscape restoration: A public forum by Sarawak State Government	Bioversity International	2017-2017	17,352	Malaysia
Alliance for Forestry Innovation in India - Innovation in Ecosystem Management and Conservation (IEMaC)	Bioversity International	2014-2017	276,373	India
Sloping Lands in Transition: Land Use Change and Smallholder Adaptive Capacity in Bhutan (SLANT 2)	CIFOR	2016-2019	€678,000	Bhutan
Rewards for, use of and shared investment in pro-poor environmental services, phase 2 (RUPES 2)	ICRAF	2008-2012	USD 3,936,000	China, India, Indonesia, Nepal, Philippines, Vietnam

Purpose: Forest landscapes in Asia are restored and better managed

Policy frameworks, action plans, and rewards schemes are needed to incentivize landscape restoration and environmental management across Asia to reduce pressures on forests, sloping lands, and protected areas. FTA undertook systematic reviews of existing landscape intervention schemes (e.g., forest landscape restoration, PFES) and conducted assessments of economic and environmental service benefits and intervention success factors. In multi-stakeholder consultations, FTA identified priorities, targets, and opportunities to institutionalize and finance landscape interventions and raised the profile of different landscape intervention schemes as a management option. FTA developed a suite of ecosystem service assessment and management tools. FTA hosted workshops and training sessions for multi-level governments, forest practitioners, NGOs, communities, and researchers on the application of research methods and tools, ecosystem service assessment, and SFM practices. Alongside inputs and recommendations for forest restoration policy, strategic action plans, landscape management schemes, and a community-based monitoring system, FTA produced toolkits and guidelines for SFM and monitoring. It was expected that researchers would build upon their research skills, generate new evidence for decision-makers, and advance the research agenda on environmental management. Partners were expected to advocate for policy change and socio-ecologically equitable forestry intervention schemes, contribute to governmental processes, and support capacity-building and intervention implementation in communities. Governments were expected to adopt recommendations for forest restoration and landscape management into policy, devise and implement action plans and rewards schemes that support both ecosystems and communities. Forest practitioners were expected to build new technical capacities and expertise in forest restoration and management, and provide enhanced technical support to ensure the land use practices of private companies and communities are sustainable. The private sector was expected to adhere to policy requirements by adopting sustainable practices that preserve ecosystem services. CBOs were expected to learn about forest and landscape management, monitor forest and land use, and support communities to adopt sustainable practices. Communities were expected to pursue and adhere to available landscape rewards schemes, as well as adopt sustainable practices. Through the combination of top-down landscape governance, rewards schemes, and restoration efforts and bottom-up community management and practice change, forests and lands across Asia will be restored and natural resources will be better managed to protect and enhance environmental services.

Expected impact from the cluster: No quantifiable impact targets were set by the projects.

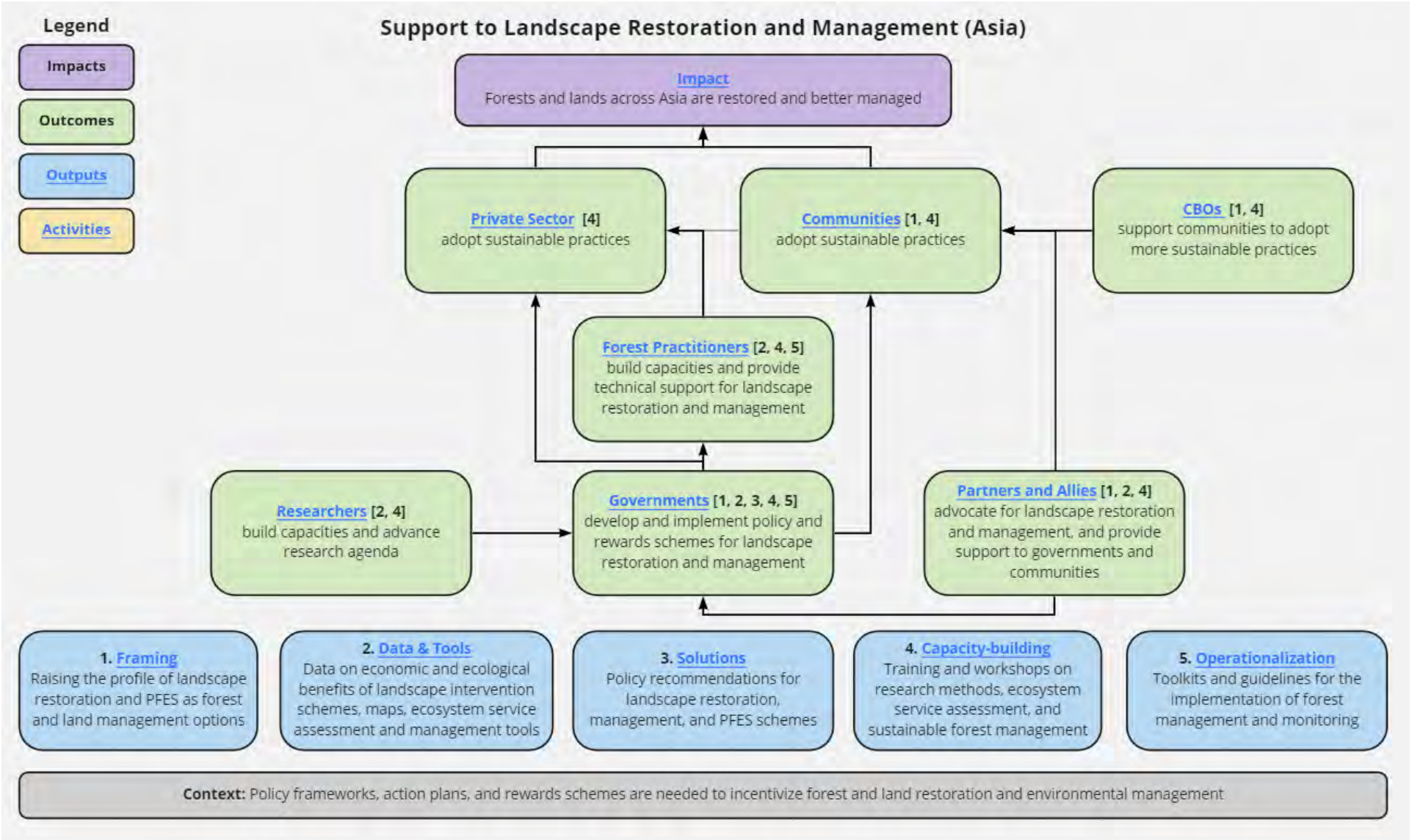


Figure 19. Cluster-level sub-ToC for FTA research on Support Landscape Restoration and Management in Asia

Table 38. Cluster: Expanding Market Options via Landscape Management in Asia (Figure 20)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Development of timber and non-timber forest products' production and market strategies for improvement of smallholders' livelihoods in Indonesia (KANOPPI Phase 1)	ICRAF	2013-2017	AUD 1,799,805	Indonesia
KANOPPI 2: Developing and promoting market-based agroforestry options and integrated landscape management for smallholder forestry in Indonesia	ICRAF	2017-2021	USD 1,804,511	Indonesia
AFLI-I: Agroforestry for livelihoods of smallholder farmers in Northwest Vietnam	ICRAF	2011-2016	USD 1,494,4565.54	Vietnam
AFLI-II: Developing and Promoting Market-based Agroforestry and Forest Rehabilitation Options for Northwest Vietnam	ICRAF	2017-2021	USD 2,043,442	Vietnam
Development of 2021-2030 Green Growth Action Plan for Lam Dong Province	ICRAF	2018-2019	€166,000	Vietnam

Purpose: Agroforestry landscapes in Indonesia and Vietnam are sustainably managed

Economic development in natural resource contexts requires holistic and environmental considerations for financial and ecological sustainability. In Indonesia and Vietnam, policy and new market-based agroforestry options are needed to promote and incentivize smallholders to adopt sustainable practices and agroforestry systems that support integrated land and forest management and green growth. To understand the drivers of unsustainable land use, FTA conducted ethnographic studies on bamboo cultivation, socio-economic assessments of agroforestry system benefits, and market suitability assessment of different agroforestry value chains. FTA produced agroforestry suitability maps, and established agroforestry trials, demonstration farms, and exemplar landscapes to identify the best-bet agroforestry options for productivity, profitability, and sustainability. Using the LUMENS framework and other tools, FTA modelled ecological and economic processes in different sectors in Vietnam to develop green growth scenario models. FTA engaged Vietnamese stakeholders to co-identify green growth interventions and co-develop green growth action plans. Based on a capacity-needs assessment, FTA offered training and field schools for smallholders, extension agents, governments, and researchers on FTA tools (e.g., LUMENS, LEAP), agroforestry practices, NTFP management, and value-addition. FTA engaged and provided capacity-building to governments and communities to frame the ecological and economic benefits of integrated landscape management via agroforestry systems to encourage adoption and scaling. FTA research proposed optimal agroforestry options suitable to the respective study landscapes, produced extension materials, and provided inputs and recommendations for agroforestry policy, industry strategies, and marketing arrangements. As a result of these interactions and uptake of findings, it was expected that researchers, including governmental research institutions, would build their research capacities in agroforestry systems and new analytical approaches to advance the research agenda on market-driven landscape management. Governments were expected to advance the policy agenda, establish working groups and collaborate with other stakeholders, develop and implement policy for agroforestry-based landscape management (e.g., NTFP Grand Strategies) and green growth action plans, and co-invest in exemplar landscapes and aligned programs. Partner organizations were expected to advocate for the establishment of resilient institutional arrangements and landscape management policy, as well as support ongoing FTA activities and other relevant programmes. Extensionists and practitioners were expected to learn and acquire new skills from training, apply new technologies and use evidence-based extension materials in the technical services and extension support offered to farmers, and help link farmers to markets. Communities were expected to apply learning from training, adopt sustainable agroforestry management practices, add value to their NTFPs, and access new markets. Together, facilitative policy environments, changed practices, and expanding market opportunities would result in widespread adoption of agroforestry systems and better landscape management in Indonesia and Vietnam.

Expected impact from the cluster: No quantifiable impact targets were set for the projects in Indonesia. No quantifiable impact targets were set for the projects in Vietnam, though there is potential for 360,000 ha of son tra plantations in Son La, Yen Bai, and Dien Bien provinces and 207,657 ha in Lam Dong province in Vietnam to be better managed.

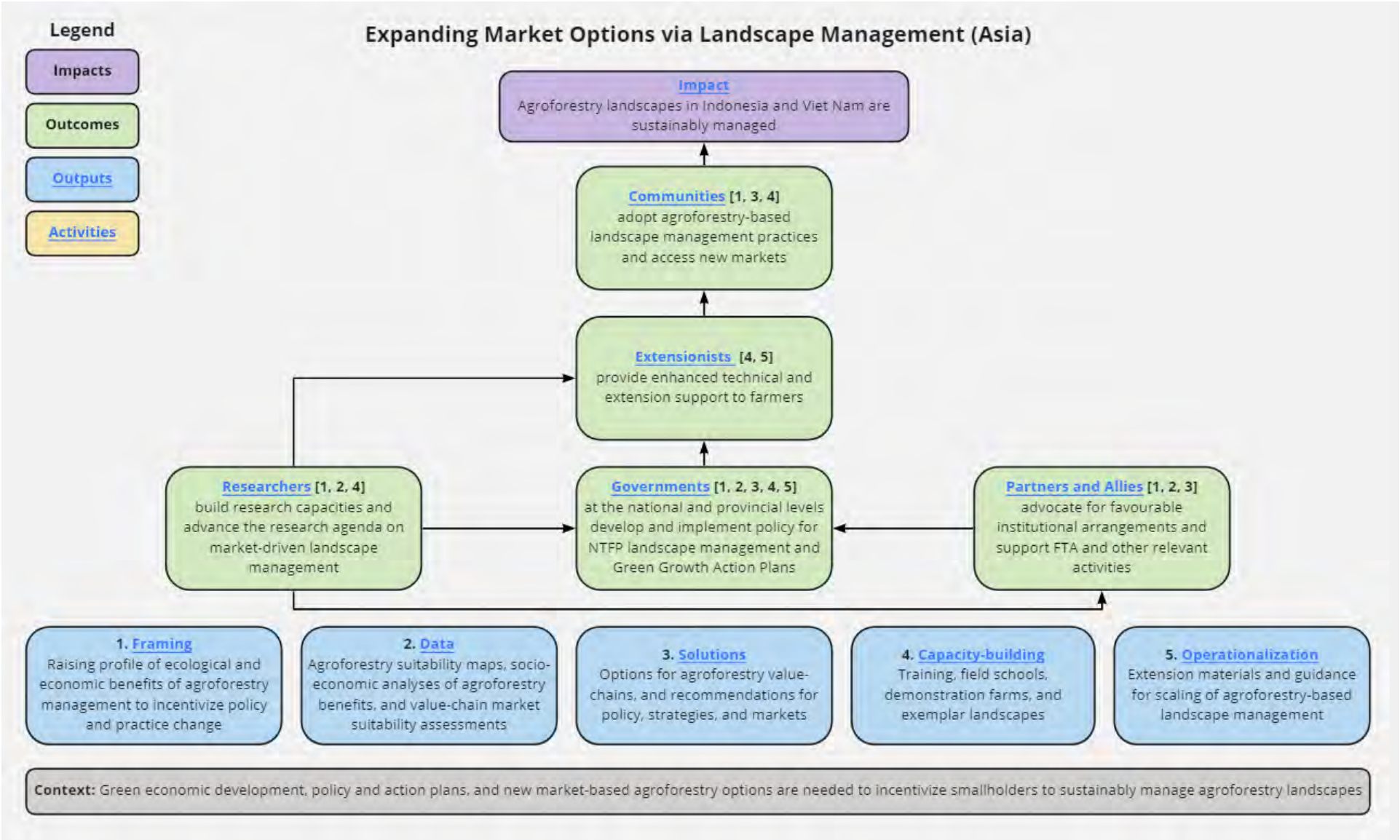


Figure 20. Cluster-level sub-ToC for FTA research on Expanding Market Options via Landscape Management in Asia

Table 39. Cluster: Community Forest Management in Indonesia (Figure 21)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Agroforestry and Forestry in Sulawesi: Linking Knowledge with Action (AgFor)	ICRAF	2012-2017	USD 9,003,409	Indonesia
Protecting biodiversity through improved community forest management and agroforestry	ICRAF	2013-2015	USD 1,206,975	Indonesia

Purpose: Sustainable community-driven management of forests in Indonesia

Policy supporting participatory forest governance arrangements, capacity-building, and community agreements are needed to address land conflicts and increase the equitable participation of local communities in bottom-up forest governance. FTA carried out community surveys, modelled simulations of communities' priority agroforestry systems, conducted gender-disaggregated rapid marketing appraisals, undertook a policy review of Indonesian forest policies and assessed existing environmental services reward schemes, hosted numerous workshops for communities, partners, and governments to learn about and build capacities in agroforestry management, and supported community forestry system and agroforestry enterprise development. By understanding communities' priority crops and identifying policy entry points, FTA's research framed opportunities for the integration of community forest management approaches. FTA developed a Vulnerability Assessment method and a land-use planning tool, generated data on priority crops and community practices, and produced maps of community land use. FTA research co-developed participatory land use models and other collaborative management schemes with community stakeholders, modelled different management scenarios to inform decision-making, and produced recommendations for policy and implementation of community forest management. In addition to farm demonstration trials and trainings on agroforestry management, land-use planning, and assessment methods, FTA provided technical guidelines for the implementation and operationalization of community forest management arrangements. As a result of these activities, engagements, and outputs, district and provincial governments were expected to implement participatory forest governance schemes, establish governance agreements with village communities, as well as offer and monitor community forest licenses. Partners and NGO allies were expected to support this implementation, advocate for community forest management in related working groups addressing land conflict, livelihoods, and environmental protection issues, and support community needs. Communities were expected to gain awareness and build capacities for sustainable governance, enter into community forest management agreements, adopt sustainable agroforestry and land use practices, and develop and strengthen community-based agroforestry enterprises. Researchers were expected to advance research on the topic and build graduate students' research capacities and knowledge of community forest management. With bottom-up governance of forests by communities, Indonesian forests and their natural resources would become sustainably managed.

Expected impact from the cluster: No quantifiable impact targets were set by the projects, though the KHLK aims to designate 500,000 ha as village forests across Indonesia.

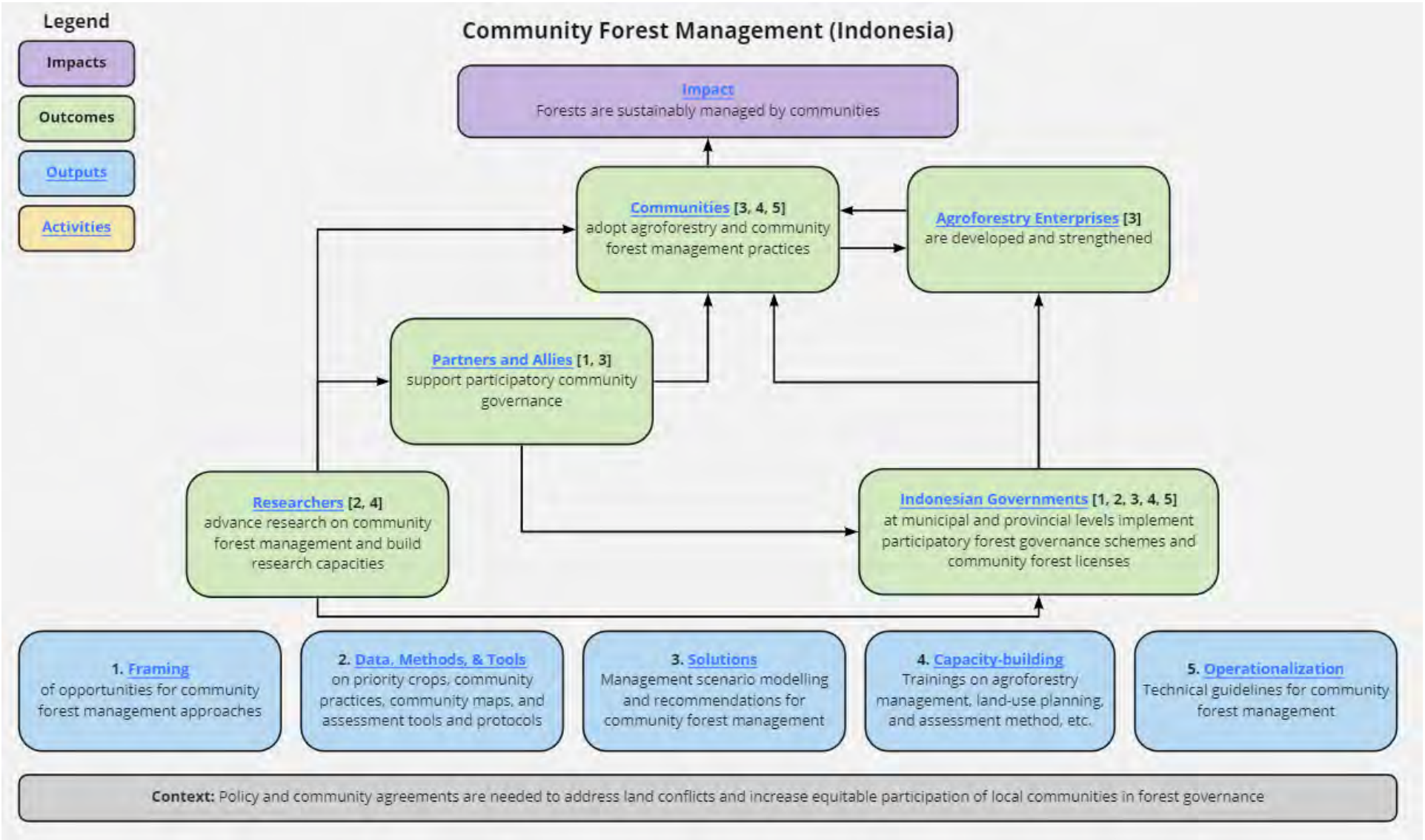


Figure 21. Cluster-level sub-ToC for FTA research on Community Forest Management in Indonesia

Table 40. Cluster: Watershed Management in South-east Asia (Figure 22)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Integrated watershed management for enhancing local livelihoods and biodiversity conservation in Indonesia	CIFOR	2015-2018	USD 300,000	Indonesia
Sustainable, Low Carbon Emission Agriculture and Water Resource Co-Investment of Rejoso Watershed (Gerakan Rejoso Kita)	ICRAF	2016-2018/ 2019-2022	€49,433	Indonesia
Integrated Natural Resource and Environmental Management Program (INREMP)	ICRAF	2018-2020	USD 2,078,641	Philippines

Purpose: Co-managed watershed governance for socio-ecological benefits in South-east Asia

Contextual knowledge, co-investment, public-private partnerships, and capacity-building are needed to address unsustainable land use changes within watersheds that threaten ecosystems and communities up- and downstream. FTA aimed to support the implementation of public-private governance arrangements and context-appropriate watershed management approaches to conserve watersheds and surrounding natural resources. FTA carried out biophysical and socio-economic studies to collect data on the hydrological conditions, land use change, carbon storage potential, and community characteristics of the Rejoso Watershed. FTA assessed the socio-ecological benefits of PFES schemes, and produced inputs for development action plans and watershed management plans in the Philippines. FTA also conducted policy analysis to identify regulatory obstacles hindering effective watershed management and assessed diverse institutional arrangements that could support IWMA and conservation in Indonesia. The research produced lessons for successful IWMA implementation and recommendations for policy development and revisions, co-investment models, and the establishment of multi-stakeholder platforms. FTA held capacity-building workshops, training, and demonstration plots to test climate-smart cultivation technologies, well-drilling and efficient water use, land conservation techniques and agroforestry practices, IWMA, and marketing strategies. In addition to other outreach and participatory research activities, FTA supported multi-stakeholder processes and institutional strengthening through engagements with national and district governments, NGOs, and communities. As a result, NGOs were expected to promote landscape-appropriate IWMA to governments at the local and national levels and support other actors' capacities to implement IWMA. Donors were expected to invest in watershed management and support existing collaborations. Governments were expected to gain a better understanding of the conditions needed for successful IWMA, apply lessons and adopt recommendations when creating policy and implementing regulations for watershed management on-the-ground, establish PFES as a form of co-investment, and enter into public-private partnerships with the private sector and community farmers. The private sector and financial institutions were expected to invest in sustainable watershed management schemes. Local associations were expected to support watershed monitoring. Communities were expected to learn and build capacities in IWMA, adopt climate-smart cultivation technologies and sustainable agroforestry practices, and self-regulate their use of and co-manage local watershed resources. Through co-investment in and co-governance of watersheds by governments, the private sector, and communities, it was expected that watershed ecosystems would be sustainably managed to reduce sedimentation, run-off, and agricultural pollution and improve water and soil quality, forest density, biodiversity, and socio-economic benefits.

Expected impact from the cluster: No quantifiable impact targets were set by the projects in Indonesia, though there are approximately a total of 2.56 million ha of watersheds across the country (the Rejoso Watershed covers 62,773 ha). 138,600 ha of watersheds were targeted in the Philippines.

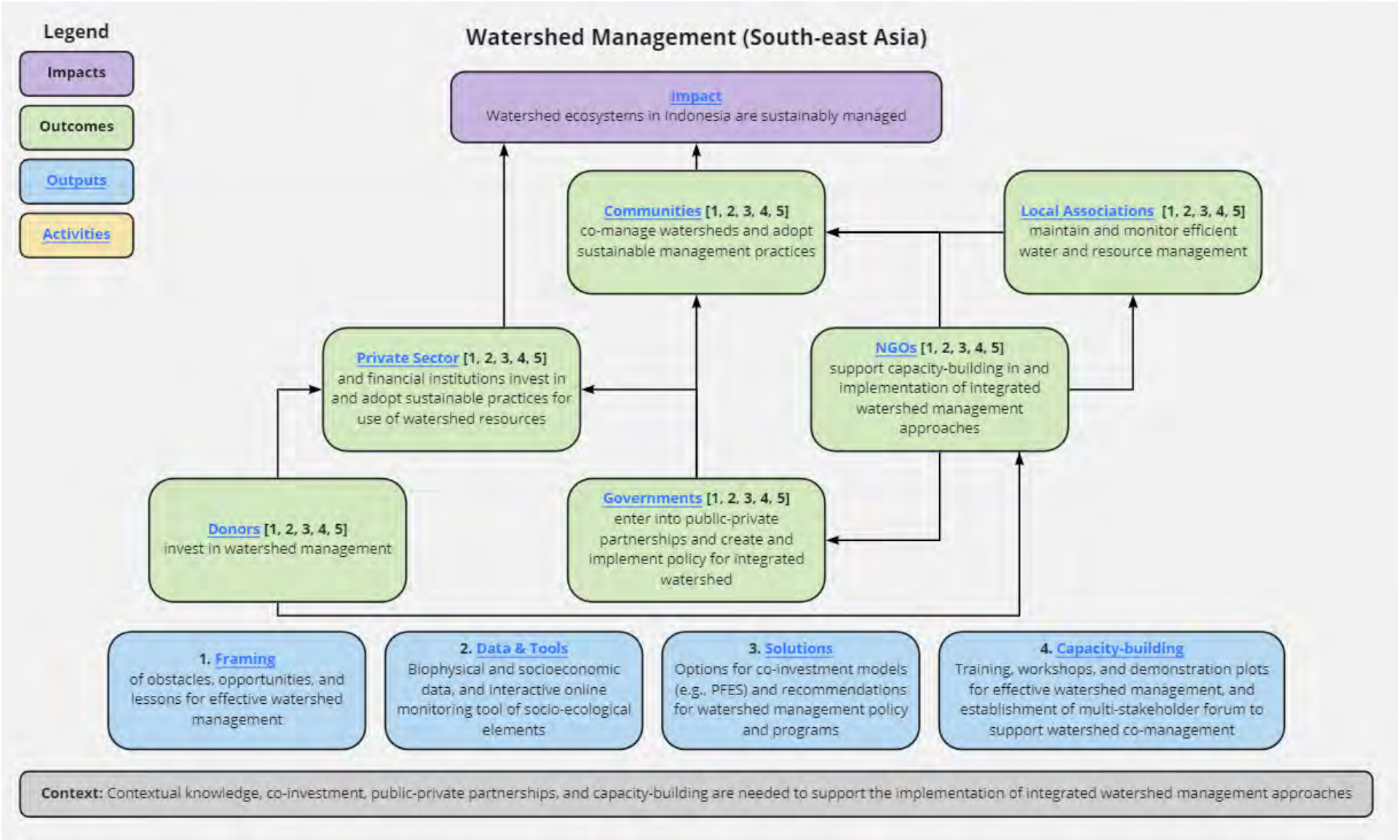


Figure 22. Cluster-level sub-ToC for FTA research on Watershed Management in Indonesia

Table 41. Cluster: Fire Management in Indonesia (Figure 23)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Improving the way knowledge on forests and climate is used and understood internationally (Political Economy Study of Fire and Haze in Indonesia)	CIFOR	2015-2015	USD 281,722	Indonesia
DFID Know-for 2: Political economy of fire and haze	CIFOR	2015-2017	USD 413,249	Indonesia
Disaster Preparedness Specific Discipline Integrated Programme in Riau, Indonesia	CIFOR	2018-2020	USD 307,685	Indonesia

Purpose: Reduced instances of fire in Indonesia for improved forest management

Advocacy, policy, and practice in support of fire prevention are needed to manage forests and reduce instances of anthropogenic and natural forest fires. FTA research investigated the social, ecological, and economic dimensions of fires in Indonesia with the intent to inform policy and practice. FTA's research contributed by framing fire issues (identifying the existence of political and economic incentives to burn), concepts to address issues (promoting fire prevention as a pre-emptive forest fire management strategy), and raising the profile of fire-related issues. FTA generated data on the causes and locations of fires to identify where fire governance was needed. The research proposed solutions including recommendations for fire prevention policy and practice that consider context, as well as guidance and input to fire prevention policy development processes at the national and regional levels. FTA also established multi-stakeholder fora for fire prevention in Riau and undertook substantial public outreach and consultation. As a result of these contributions, it was expected that the public would gain awareness of the importance of forest and land fire prevention and demand action for fire management. Public demand, in combination with FTA's contributions to inform policy, would help governments develop and implement regulations on fire prevention as a top-down management strategy. NGO allies would advocate for fire prevention as a result of accurate and reliable data, and researchers would advance research on fire and haze to continue to feed into these processes. The resulting pressure from policy and the public would influence bottom-up fire management strategies, via the private sector's commitment to the fire prevention agenda and changes in farmers' burning practices. By influencing effective top-down and bottom-up fire management in Indonesia, it was expected that the instances and scale of fire would be reduced.

Expected impact from the cluster: No quantifiable impact targets were set by the projects.

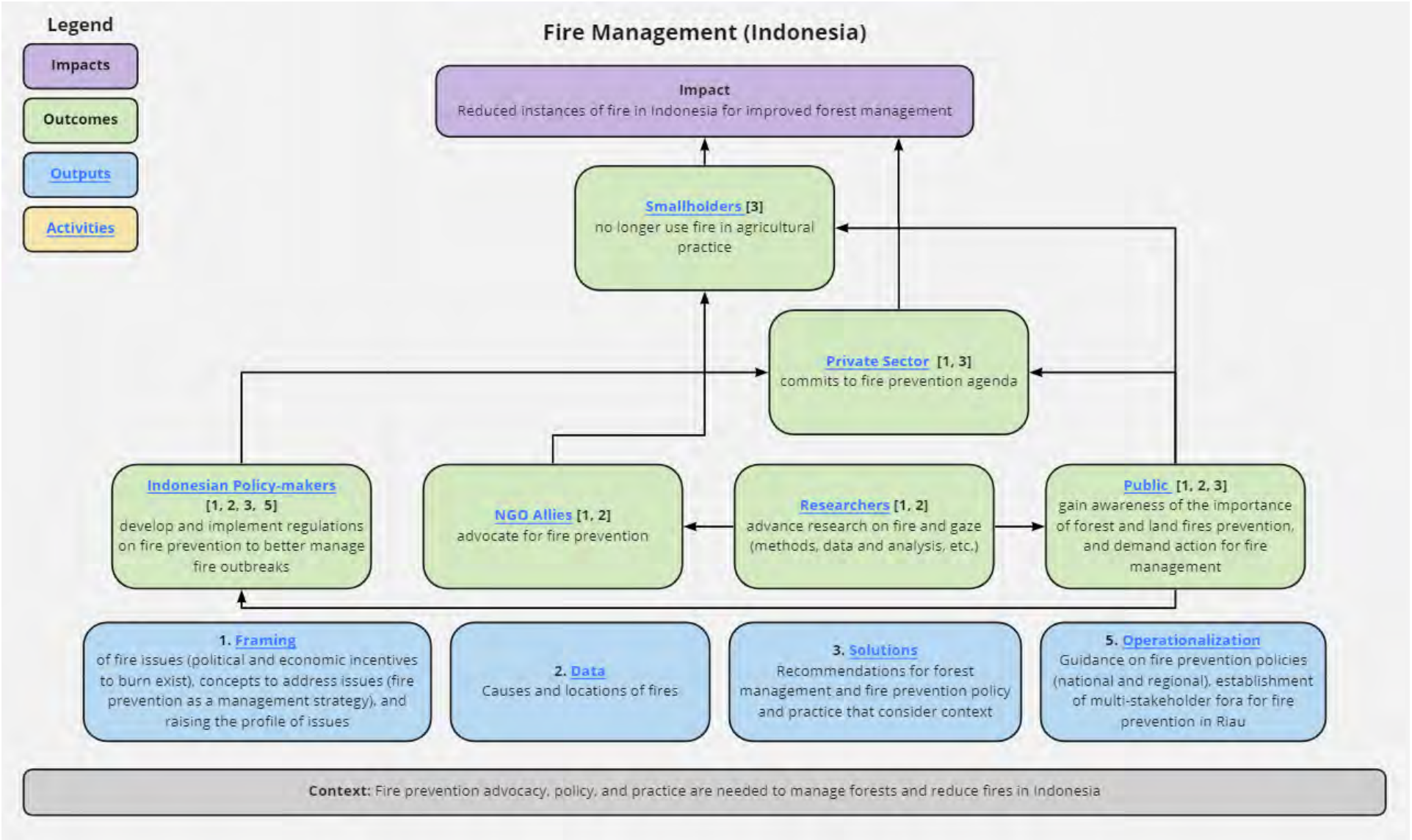


Figure 23. Cluster-level sub-ToC for FTA research on Fire Management in Indonesia

Table 42. Cluster: Sustainable Oil Palm Management in Indonesia (Figure 24)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Supporting local regulations for sustainable oil palm in East Kalimantan	CIFOR	2015-2017	USD 105,000	Indonesia (East Kalimantan)
Governing Oil Palm Landscapes for Sustainability (GOLS)	CIFOR	2015-2019	USD 2,490,485	Indonesia (Central and West Kalimantan)
Oil Palm Adaptive Landscapes (OPAL)	CIFOR	2015-2021	CHF 2,999,829	Indonesia, Colombia, Cameroon
Engendering RSPO Standards	CIFOR	2016-2017	USD 20,000	Indonesia
Impacts of Large-scale Land Acquisitions on Local Women's Land and Forest Tenure Rights: Case Studies from Indonesia	CIFOR	2016-2017	USD 67,556	Indonesia

Purpose: Oil palm production becomes more sustainable and equitable in Indonesia

Policy and market pressures are needed to change unsustainable oil palm management and production in Indonesia. FTA's research on oil palm in Indonesia ranges from analyses of the biophysical aspects of oil palm expansion, spatial analyses to quantify and qualify expansion and future scenarios, and policy-relevant analyses of RSPO, private sector, and government commitments to improve sustainability and inclusion in the sector. With new framing of oil palm issues, new data and analyses including maps and visualization tools, solutions and recommendations for improved policy and practice, enhanced research and governmental capacity, and guidance for policy development and implementation, there would be a greater foundation of knowledge and national capacity on which to advance oil palm research and policy toward sustainability. Research partners and allies with similar objectives would have reliable resources to further advocate for and pursue pressing oil palm sustainability and gendered issues with governments and RSPO. Increased consumer awareness and resulting market pressures for sustainability and equality are expected to influence policy and practice. As a result of FTA's engagements, the Indonesian government will be better equipped and incentivized to develop and implement sustainable oil palm policy through ISPO. Likewise, RSPO would revise their standards to better reflect sustainability and inclusion. These policy changes are expected to influence the practice of oil palm companies to adopt more sustainable and inclusive business models. As a result of better policy and improved practice across the private sector, smallholders are expected to adopt better agricultural practices and be better able to comply with sustainability standards. With improved practices by companies and smallholders, as well as better governance and management of forests, Indonesia's oil palm sector is expected to become more sustainable and equitable.

Expected impact from the cluster: No quantifiable impact targets were set by the projects. Project findings estimated the potential for 2 million ha to be eligible for HCV classification in East Kalimantan.

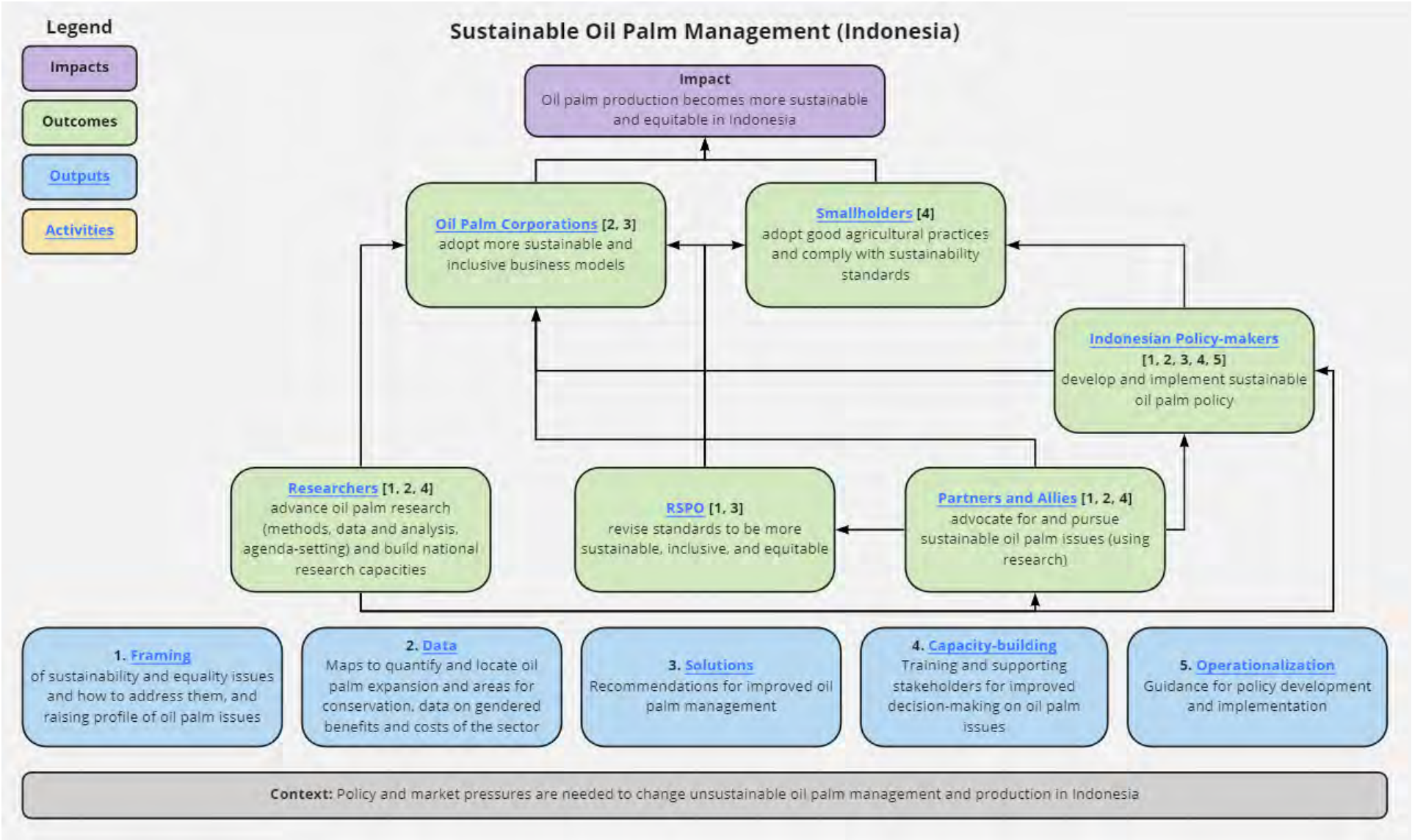


Figure 24. Cluster-level sub-ToC for FTA research on Sustainable Oil Palm Management in Indonesia

Table 43. Cluster: Climate Change Management in Asia (Figure 25)

<i>Project</i>	<i>Centre</i>	<i>Duration</i>	<i>Budget</i>	<i>Countries</i>
Participatory Monitoring by Civil Society of Land-use Planning for Low-emissions Development Strategies (ParCiMon)	ICRAF	2013-2017	€2,500,000	Indonesia
Locally-appropriate Mitigation Actions in Indonesia (LAMA-I)	ICRAF	2013-2017	€7,817,050	Indonesia
ASEAN-Swiss Partnership on Social Forestry and Climate Change (ASFCC-II)	ICRAF	2014-2016	CHF 599,100	Indonesia, Philippines, Thailand, Vietnam, Cambodia, Myanmar, Lao PDR
ASEAN-Swiss Partnership on Social Forestry and Climate Change (ASFCC-III)	ICRAF	2017-2020	CHF 425,000	Indonesia, Philippines, Thailand, Vietnam, Cambodia, Myanmar, Lao PDR

Purpose: The effects of climate change are mitigated through land and forest management in Asia

Across Asia, policy and national action plans are needed to manage and meet countries' emissions reductions goals and climate change mitigation strategies. FTA investigated land-use planning and change in Indonesia, NTFP management in Vietnam, and indigenous knowledge on landscape management in Thailand to frame priority policy issues and the potential of land-use planning, management, and agroforestry options to address climate change. FTA also developed and applied tools for monitoring and land-use planning to support landscape management, and produced recommendations to develop and operationalize policy, action plans, and implementation guidelines. FTA engaged diverse stakeholders in the ASEAN member states, such as multi-level governments, private sector, NGOs, CSOs, and researchers to provide training, organize policy dialogues, and facilitate the sharing of best practices and knowledge exchange. As a result, researchers were expected to build research capacities in climate change management and monitoring. Governments were expected to gain an understanding of existing policy issues for climate change management, apply FTA tools to support monitoring and land-use planning as part of their management approach, and take up and implement FTA recommendations into national and sub-national policy and action plans. Partners were expected to advocate for climate change management and support institutional capacity and multi-stakeholder decision-making processes, such as the ASEAN Working Group. CSOs were expected to build capacities, share knowledge, and support the implementation of land-use planning action plans and landscape monitoring initiatives. With effective policy frameworks, action plans, and monitoring as part of ASEAN members states' land and forest management approaches, climate change can be mitigated and emissions reduced.

Expected impact from the cluster: No quantifiable impact targets were set by the projects, though ASEAN member states committed to collectively allocate 30 million ha as social forests by 2030.

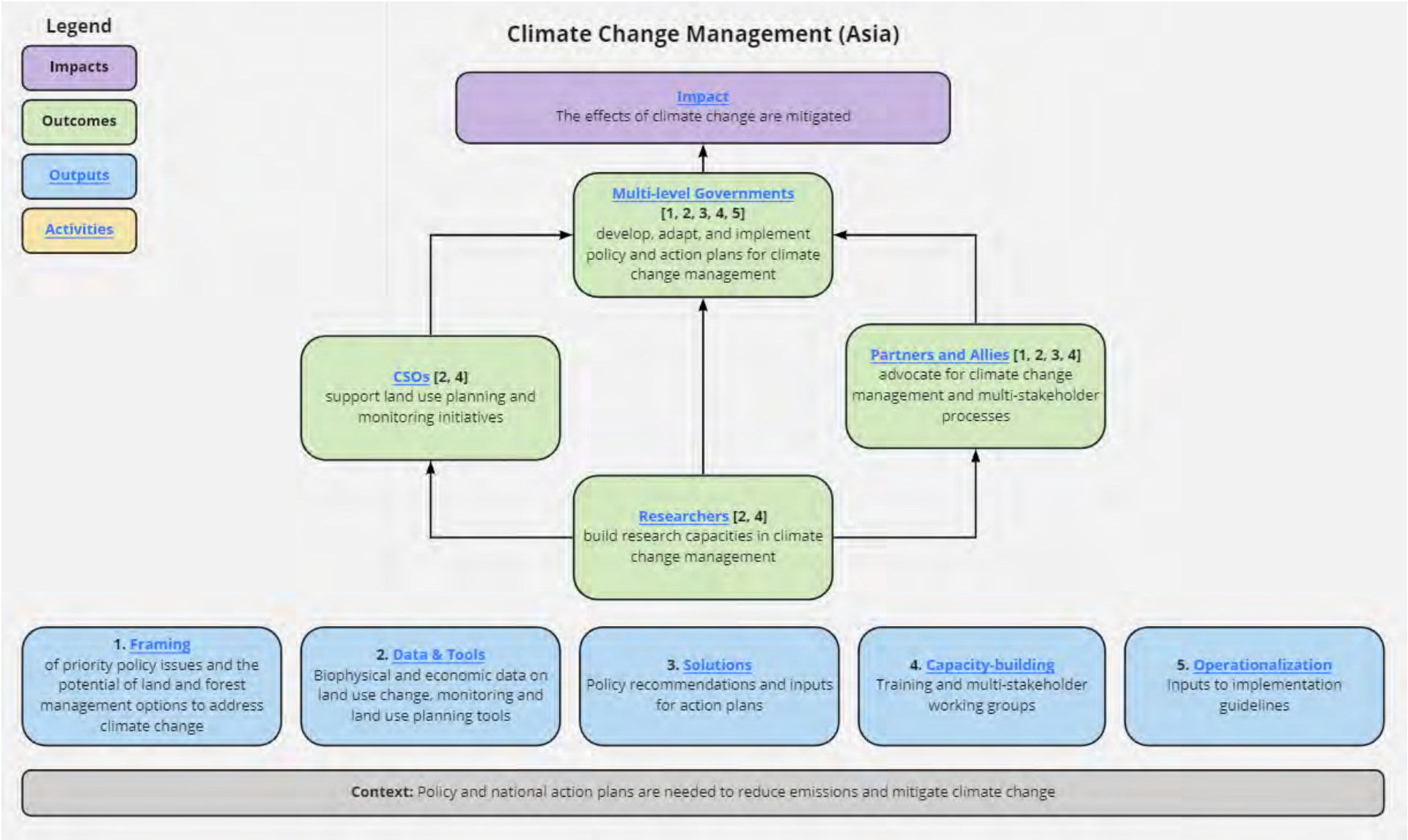


Figure 25. Cluster-level sub-ToC for FTA research on Climate Change Management in Asia

Appendix 2. Disaggregated Cluster Appraisal of Existing and Available Evaluation Evidence (by Project) for Challenge 3

REDD+ Policy Mechanism (Global) Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? Suggestions for additional data collection (for both outcomes and impact).	Prioritization for additional evidence?
<p>Learning from REDD: A Global Comparative Analysis (Phase 1 of GCS REDD+ Program) (CIFOR)</p> <ul style="list-style-type: none"> Indonesia Vietnam Nepal Brazil Peru Bolivia DRC Tanzania Cameroon 	<ul style="list-style-type: none"> 1 evaluation report (2015) 	<p>*reliability: high (external sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (M/H) Partner outcomes (H) Researcher outcomes (H) Private sector outcomes (L): no evidence Practitioner outcomes (M) 	N	<ul style="list-style-type: none"> Government outcomes: need more detail on capacities built; need more detail of governmental use of project outputs (what is being used and how); need more detail of monitoring activities Private sector outcomes: need evidence of private sector learning; need evidence of output use; need evidence of practice changes Practitioner outcomes: need more detail of REDD+ implementation and monitoring <p><u>Impact estimations:</u> is it possible to derive from policy targets? (e.g., Indonesia's Forest Moratorium, Peru's policies on peatlands)</p> <ul style="list-style-type: none"> Additional document review (policy documents, project documents, trip reports, external media) Interviews/surveys with governments, private sector, practitioners Quantification for impact estimation: policy review 	<p><i>Outcome level:</i> Possibly not as there is already substantial evidence (re: C1 deep dive)</p> <p><i>Impact level:</i> Some policy targets are possible to collect (sensitive to conditions; possibility of double-counting)</p>
<p>Learning from REDD+: An enhanced global comparative analysis (Phase 2 of GCS REDD+ program) (CIFOR)</p> <ul style="list-style-type: none"> Cameroon Tanzania Indonesia Vietnam Brazil Peru 	*same as above	*same as above	*same as above	*same as above	*same as above
<p>Opportunities and Challenges to Developing REDD+ Benefit</p>	<ul style="list-style-type: none"> 1 evaluation report (2018) 1 outcome story (2016) 	<p>*reliability: high (external source)</p> <p>*confidence: high</p>	Y (impact estimates noted in external & self-reported sources)	<ul style="list-style-type: none"> Government outcomes: need more detail on learning; need more detail on government use of outputs; need more detail on policy change 	<p><i>Outcome level:</i> Possibly not as there is already substantial</p>

FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

<p>Sharing Mechanisms in Developing Countries (accompanying phase 2 of GCS REDD+ program) (CIFOR)</p> <ul style="list-style-type: none"> • Brazil • Cameroon • Indonesia • Peru • Tanzania • Vietnam 		<ul style="list-style-type: none"> • Government outcomes (M) • Partner outcomes (M) • Researcher outcomes (M) • Private sector outcomes (M) • Practitioner outcomes (M) 	<p>[potential] Vietnam's PFES M&E system targets 6.5 million ha of forest area</p>	<ul style="list-style-type: none"> • Partner outcomes: need evidence of partner learning; need evidence of support/advocacy for practice change • Private sector outcomes: need evidence of learning; need evidence of practice changes (e.g., adherence to MRV) • Practitioner outcomes: need more detail of monitoring <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with government, partners, research team, private sector, practitioners</i> • <i>Bibliometric analyses</i> 	<p>evidence (re: C1 deep dive)</p> <p><i>Impact level:</i> Possible (possibility of double-counting)</p>
<p>REDD: Research to Support Design and Implementation (accompanying phase 2 of GCS REDD+ program) (CIFOR)</p> <ul style="list-style-type: none"> • Indonesia • Vietnam • Papua New Guinea • Nepal • Tanzania • Burkina Faso • Mozambique • Cameroon • Peru • Brazil • Bolivia 	<ul style="list-style-type: none"> • 1 final report (2015) • 1 outcome story (2017) • 1 evaluation report (2015) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> • Government outcomes (H) • Partner outcomes (L): limited evidence • Researcher outcomes (L): limited evidence • Private sector outcomes (L): limited evidence • Practitioner outcomes (M) 	N	<ul style="list-style-type: none"> • Government outcomes: need more detail on governmental learning • Partner outcomes: need evidence of partner learning; need more detail of support/ advocacy for practice change • Researcher outcomes: need evidence of output use • Private sector outcomes: need evidence of learning; need evidence of practice changes • Practitioner outcomes: need evidence of output use; need more detail of pilots and REDD+ implementation <p><u>Impact estimations:</u> Is it possible to derive from policy targets? (e.g., Vietnam's PFES, Peru's REDD+ Benefit-sharing Strategy)</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with government, partners, research team, private sector, practitioners</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: policy review</i> 	<p><i>Outcome level:</i> Possibly not as there is already substantial evidence (re: C1 deep dive)</p> <p><i>Impact level:</i> Some policy targets are possible to collect (sensitive to conditions; possibility of double-counting)</p>
<p>A Global Comparative Study for achieving effective, efficient and equitable REDD+ results (Phase 3 of GCS)</p>	<ul style="list-style-type: none"> • 1 midterm evaluation report (2019) • 1 final evaluation report (2021) 	<p>*reliability: high (external sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> • Government outcomes (H) • Partner outcomes (M) 	N	<ul style="list-style-type: none"> • Government outcomes: need more detail on government learning • Partner outcomes: need evidence of partner learning; need more detail of support/ advocacy for practice change 	<p><i>Outcome level:</i> Possibly not as there is already substantial evidence (re: C1 deep dive)</p>

FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

<p>REDD+ program) (CIFOR)</p> <ul style="list-style-type: none"> • Brazil • Indonesia • Peru • Ethiopia • Guyana • Myanmar • DRC • Vietnam 		<ul style="list-style-type: none"> • Researcher outcomes (M) • Private sector outcomes (L): limited evidence • Practitioner outcomes (M) 		<ul style="list-style-type: none"> • Researcher outcomes: need evidence of output use; need more detail of country-level partnerships with young academics • Private sector outcomes: need evidence of practice changes (e.g., adherence to MRV) • Practitioner outcomes: need more detail of monitoring <p><u>Impact estimations:</u> Is it possible to derive from policy targets? (e.g., Indonesia's Forest Moratorium, Vietnam's PFES, Peru's REDD+ Benefit-sharing Strategy and policies on peatlands, Ethiopia's revised Forest Law)</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with government, partners, research team, private sector, practitioners</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: policy review</i> 	<p><i>Impact level:</i> Some policy targets are possible to collect (sensitive to conditions; possibility of double-counting)</p>
<p>SECURED Landscapes: Sustaining Ecosystem and Carbon benefits by Unlocking Reversal of Emissions Drivers in Landscapes (ICRAF)</p> <ul style="list-style-type: none"> • Cameroon • DRC • Indonesia • Vietnam • Peru 	<ul style="list-style-type: none"> • 1 external evaluation (2014) • 1 donor report (2016) • 1 external webpage (2018) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> • Government outcomes (M) • Partner outcomes (L): limited evidence • Researcher outcomes (L): limited evidence • Private sector outcomes (M) • Practitioner outcomes (L): no evidence 	<p>Y (policy targets and impacts self-reported)</p> <p>[achieved] 714 ha of sustainable land use plans developed in Tanjabar, Indonesia</p> <p>[potential] 68,000 ha covered by low emissions development strategies in Ba Be, Vietnam</p> <p>[achieved] 212 ha piloted under a community forestry management scheme in Bac Kan, Vietnam</p> <p>[achieved] 85 ha of community forest placed under a land use certificate in Na Thau village, Vietnam</p>	<ul style="list-style-type: none"> • Government outcomes: need more detail on government learning; need more detail on government uptake/use of project outputs • Partner outcomes: need evidence of partner learning; need evidence of support/advocacy for practice change • Researcher outcomes: need evidence of output use • Private sector outcomes: need evidence of learning; need evidence of practice changes • Practitioner outcomes: need evidence of REDD+ implementation and practice change <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with government, partners, research team, private sector</i> • <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Possibly not as there is already substantial evidence</p> <p><i>Impact level:</i> Possible (sensitive to conditions; possibility of double-counting)</p>

FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

			<p>[achieved] 6,000 ha covered by a sustainable land use management plan in Padre Abad, Peru</p> <p>[target] 76,000 ha in Cameroon targeted for improved cocoa and forest management</p> <p>[achieved] 3,000 ha of farms adopted cocoa management models</p> <p>[achieved] 10,000 ha of pilots implemented in DRC</p>		
<p>From Climate Research to Action under Multilevel Governance: Building Knowledge and Capacity at Landscape Scale (MLG) (CIFOR)</p> <ul style="list-style-type: none"> Indonesia Mexico Peru Vietnam 	<ul style="list-style-type: none"> 1 final report (2019) 	<p>*reliability: low (self-reported source)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Government outcomes (M) Partner outcomes (L): limited evidence Researcher outcomes (L): limited evidence Private sector outcomes (L): limited evidence Practitioner outcomes (M) 	N	<ul style="list-style-type: none"> Government outcomes: need evidence of government learning; need more detail on government uptake/use of project outputs Partner outcomes: need evidence of partner learning and capacity-building Researcher outcomes: need more detail of country-level partnerships with young academics Private sector outcomes: evidence of learning, evidence of practice changes Practitioner outcomes: need more detail of monitoring <p><u>Impact estimations:</u> Is it possible to derive from policy targets? (e.g., Vietnam's PFES, Peru's ENBCC)</p> <ul style="list-style-type: none"> Additional document review (policy review, project documents, trip reports, external media) Interviews/surveys with government, partners, research team, private sector, practitioners Bibliometric analyses Quantification for impact estimation: policy review 	<p><i>Outcome level:</i> Possibly not as there is already substantial recent evidence</p> <p><i>Impact level:</i> Some policy targets are possible to collect (sensitive to conditions; possibility of double-counting)</p>

Forest Tenure Management (Global) Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
<p>Addressing the gender gap in participation and representation in community forestry: Consolidation of research and action on gender, tenure and community forestry in Uganda and Nicaragua (CIFOR)</p> <ul style="list-style-type: none"> Uganda Nicaragua Peru 	<ul style="list-style-type: none"> 1 final report (2017) 1 CIFOR annual report (2016) 	<p>*reliability: low (self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Government outcomes (M) Donor outcomes (L): no evidence Researcher outcomes (M) NGO outcomes (L): limited evidence CSO outcomes (L): limited evidence Community outcomes (H) 	<p>Y (impact self-reported)</p> <p>[achieved] 82 acres of degraded forests replanted by communities in Uganda (~33ha)</p> <p>[achieved] 175 acres of land allocated to two community groups (~70ha)</p>	<ul style="list-style-type: none"> Government outcomes: need more detail of MoUs; need more detail of policy change; need update of implications of policy change Donor outcomes: need evidence of donor learning; need evidence of donor support for ACM and gender empowerment in forest governance Researcher outcomes: need more detail of research partnerships and capacity-building NGO outcomes: need more detail of enhanced interactions between communities and NGOs; need more detail on MoU with AUPWAE; need more detail of NGO capacity-building; need more detail of NGO support for gender empowerment in forest governance CSO outcomes: need more detail of enhanced interactions between communities and CSOs; need more detail of NGO support for gender empowerment in forest governance <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> Additional document review (project documents, trip reports, external media) Interviews/surveys with governments, donors, research team, NGOs, CSOs Bibliometric analyses 	<p><i>Outcome level:</i> Possibly, preliminary evidence is promising though key gaps exist</p> <p><i>Impact level:</i> Possible</p>
<p>Assessment of Natural Resource Governance Including Land and Forest Tenure in Coastal Mangrove Forests of Southeast Asia and Africa (CIFOR)</p> <ul style="list-style-type: none"> Indonesia Tanzania 	<ul style="list-style-type: none"> 1 brief (2016) 1 donor report (2016) 1 case study report (2016) 	<p>*reliability: low (self-reported sources)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> Government outcomes (L): no evidence Donor outcomes (L): no evidence Researcher outcomes (L): limited evidence in Indonesia NGO outcomes (L): no evidence CSO outcomes (L): no evidence 	<p>Y (area of study sites self-reported)</p> <p>[area of study sites] 142 ha in Pahawang, Lampung; 300 ha in Purworejo, Central Java; 700 ha in Margasari, Central Java</p>	<ul style="list-style-type: none"> Government outcomes: need evidence of government learning on and awareness of tenure issues; need evidence of output use; need evidence of prioritization of mangroves at national level; need evidence of policy change (both in Indonesia and Tanzania) Donor outcomes: need evidence of donor learning and support for tenure-based management Researcher outcomes: need more detail of university support for awareness-raising; need more detail of partner capacity-building NGO outcomes: need evidence of learning on and awareness of tenure issues; need evidence of participation in multi-stakeholder fora; need evidence of NGO support for tenure-based management 	<p><i>Outcome level:</i> Likely not, limited initial evidence base; requires intensive data collection</p> <p><i>Impact level:</i> Possible from reported area of study sites in Indonesia, but requires supporting evidence of outcomes (sensitive</p>

FTA's Research Contributions Addressing Widespread Unsustainable Land Use Practices (Challenge 3)

		<ul style="list-style-type: none"> Community outcomes (L): no evidence 		<ul style="list-style-type: none"> CSO outcomes: need evidence of awareness and involvement on tenure-based management issues; need evidence of participation in multi-stakeholder fora Community outcomes: need evidence of learning on tenure and mangrove governance issues; need evidence of community involvement in mangrove management; need evidence of practice change <p><u>Impact estimations:</u> Is it possible to determine the hectareage of study sites in Tanzania? Already have for study sites in Indonesia.</p> <ul style="list-style-type: none"> <i>Additional document review (project documents, trip reports, external media)</i> <i>Interviews/surveys with governments, donors, research team, NGOs, CSOs, communities</i> <i>Bibliometric analyses</i> <i>Quantification for impact estimation: calculate area of study sites in Tanzania</i> 	to conditions); unsure of difficulty to collect/resources available for Tanzania
<p>Global Comparative Study on Tenure (CIFOR)</p> <ul style="list-style-type: none"> Peru Uganda Indonesia Colombia Nepal Kenya 	<ul style="list-style-type: none"> 3 case study outcome evaluations (2018, 2019, 2019) 1 synthesis outcome evaluation (2019) 1 OICR (2018) 2 CIFOR annual reports (2017, 2019) 1 FTA annual report (2016) 1 flagship outcome story (2017) 1 infobrief (2019) 	<p>*reliability: medium (external and self-reported sources) *confidence: high</p> <ul style="list-style-type: none"> Government outcomes (H) Donor outcomes (L): limited evidence Researcher outcomes (H) NGO outcomes (M) CSO outcomes (M) Community outcomes (H) 	<p>Y (policy target and potential impacts reported)</p> <p>[target] KHLK's social forestry policy set a target to allocate 12.7 million ha of forest estate and 9 million ha of land for agrarian reform</p>	<ul style="list-style-type: none"> Government outcomes: need more detail of uptake of project outputs; need update of new tenure policy reform or implementation Donor outcomes: need evidence of donor learning and support for tenure-based management NGO outcomes: need more detail of NGO advocacy and support for tenure-based management CSO outcomes: need evidence of advocacy groups' being organized to mobilize tenure rights; need evidence of women's groups being able to claim rights Community outcomes: need evidence of benefits from implemented tenure reform <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> <i>Additional document review (project documents, trip reports, external media)</i> <i>Interviews/surveys with governments, donors, research team, NGOs, CSOs, communities</i> <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Possibly not because of recent evaluation and additional evidence may take time to materialize (i.e., may not be available)</p> <p><i>Impact level:</i> Possible from policy targets, but requires supporting evidence of outcomes (sensitive to conditions)</p>

Agroforestry Concessions in Peru Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
<p>Support to the Development of Agroforestry Concessions in Peru (SUCCESS) (ICRAF)</p> <ul style="list-style-type: none"> Peru 	<ul style="list-style-type: none"> 1 OICR (2019) 1 outcome evaluation report (2019) 1 peer-reviewed article (2015) 2 external press releases (2018, 2018) 1 ICRAF annual report (2018) 1 FTA annual report (2019) 1 internal webpage (n.d.) 	<p>*reliability: high (external sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (H) Partner outcomes (H) Researcher outcomes (M/H): low evidence of external researcher uptake Smallholder outcomes (L): low primary evidence from smallholders/ farmers associations 	<p>Y (derived from project data – reliable as it was scientifically calculated)</p> <p>[potential] 1 million ha of land and 452,000 ha of forest eligible for AFCs</p> <p>[potential] 123,000 households eligible for AFCs</p> <p>[realized] 14 concessions cover 120 ha in San Martín</p>	<ul style="list-style-type: none"> Government outcomes: need update on governmental support for and implementation of AFCs, need update on San Martín pilot Partner outcomes: update on partner involvement in AFC issues Researcher outcomes: need update on external uptake of SUCCESS outputs Smallholder outcomes: need more detail on smallholder learning and changed practices, need update on San Martín pilot <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> <i>Interviews/surveys with governments, partners, research team, smallholders (e.g., those involved in San Martín pilot)</i> <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Possibly; recent evaluation provides substantial evidence and collecting an update could be low-hanging fruit (though additional evidence may take time to materialize)</p> <p><i>Impact level:</i> Possible from calculated project projection (sensitive to conditions)</p>
<p>PARA: Piloting approaches to rural advisory services in support of scaling of the Agroforestry Concessions scheme in Peru (ICRAF)</p> <ul style="list-style-type: none"> Peru 	<p>No evidence</p> <p>*ongoing project (may be too early to collect evidence)</p>	<p>No evidence</p>	<p>Y (projection noted in project proposal)</p> <p>[potential] 1.5 million ha of forest land in Peru eligible for AFCs (similar numbers to SUCCESS –already captured)</p>	<ul style="list-style-type: none"> Government outcomes: need evidence on governmental attitudes/support for AFCs and pilots, need evidence of research uptake/use Partner outcomes: need evidence on partner involvement in AFC issues, changes in relationships, and research uptake/use Researcher outcomes: need evidence on researcher capacity-building and changes in relationships Smallholder outcomes: need evidence on smallholder learning and capacity-building from pilots, evidence of changes in smallholder practices <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> <i>Additional document review (project documents, trip reports, external media)</i> <i>Interviews/surveys with governments, partners, research team, smallholders (e.g., pilot participants)</i> 	<p><i>Outcome level:</i> No evidence; collecting preliminary evidence could be low-hanging fruit (need to consider the infancy of the project)</p> <p><i>Impact level:</i> Similar estimates as SUCCESS (possibility of double-counting)</p>
<p>Peru's Agroforestry Concessions</p>	<ul style="list-style-type: none"> 4 external press releases (2020, 2020) 	<p>*reliability: high (external sources)</p> <p>*confidence: high</p>	<p>Y (projection noted in press release)</p>	<ul style="list-style-type: none"> Government outcomes: need evidence on governmental attitudes/support for AFCs, policy 	<p><i>Outcome level:</i> Possibly, preliminary evidence is promising</p>

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<p>Scheme: Collaborative Action to secure Multi-level Readiness for Implementation of an Innovative, Transformative Policy Project (AgroFor) (ICRAF)</p> <ul style="list-style-type: none"> Peru 	<p>2021, 2021, 2021)</p> <ul style="list-style-type: none"> 1 ICRAF press release (2021) 1 internal webpage (2021) <p>*ongoing project (may be too early to collect evidence)</p>	<ul style="list-style-type: none"> Government outcomes (L) Partner outcomes (L) 	<p>[potential] 120,000 beneficiaries farming 1.5 million ha are eligible for AFCs in Peru (similar to SUCCESS projections – already captured)</p> <p>[realized] 26 concessions cover 613 ha in San Martín</p>	<p>implementation and coordination, and research uptake/use</p> <ul style="list-style-type: none"> Partner outcomes: need evidence on partner support for AFCs (e.g., GGGI, SPDA) and changes in relationships Researcher outcomes: need evidence on researcher capacity-building and changes in relationships Smallholder outcomes: need evidence on pilot progress and smallholder registration, evidence of changes in smallholder practices <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> <i>Additional document review (project documents, trip reports, external media)</i> <i>Interviews/surveys with governments, partners, research team, smallholders (e.g., pilot participants)</i> 	<p>though key gaps exist (need to consider the infancy of the project)</p> <p>*collecting preliminary evidence could be low-hanging fruit</p> <p><i>Impact level:</i> Similar estimates as SUCCESS (possibility of double-counting)</p>
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Sustainable Resource Management of NTFPs in Peru Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
<p>Brazil Nut Project (CIFOR)</p> <ul style="list-style-type: none"> Peru 	<ul style="list-style-type: none"> 2 donor reports (2013, 2014) 1 external outcome evaluation (2018) 3 peer-reviewed articles (2015, 2019, 2020) 2 FTA annual reports (2011, 2013) 1 CIFOR annual report (2015) 	<p>*reliability: high (external sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (H) Donor outcomes (M) Researcher outcomes (H) NGO outcomes (H) Practitioner outcomes (M) Concessionaire outcomes (L) 	<p>Y (potential impact self-reported)</p> <p>[potential] 1 million ha of Brazil nut concessions in Peru (Madre de Dios region)</p>	<ul style="list-style-type: none"> Government outcomes: need update on progress of policy implementation Donor outcomes: need update on donor investment in multi-use management research Researcher outcomes: need update on students' career advancements Practitioner outcomes: need more detail of practitioner learning, need update on application of skills from CIFOR training Concessionaire outcomes: need evidence of changes in smallholder practices <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> <i>Additional document review (project documents, trip reports, external media)</i> <i>Interviews/surveys with governments, donors, students/research team, NGOs, practitioners</i> <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Possibly not as there is already substantial recent evidence</p> <p><i>Impact level:</i> Possible from scaling potential (sensitive to conditions)</p>

Community Forest Management in Mesoamerica Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? Suggestions for additional data collection (for both outcomes and impact).	Prioritization for additional evidence?
<p>Forestry to enhance livelihoods and sustain forests in Mesoamerica: How institutional arrangements and value chains affect benefits and resources (<i>Bioversity International</i>)</p> <ul style="list-style-type: none"> Guatemala Nicaragua 	<ul style="list-style-type: none"> 1 annual progress report (2016) 1 final report (2017) 1 CGIAR performance report (2019) 2 external press releases (2019, 2019) 1 FTA press release (2021) 1 external webpage (n.d.) 1 peer-reviewed article (2012) 1 OICR (2019) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (L): stated anticipated changes; evidence for Guatemala only Forestry cooperatives outcomes (M) Researcher outcomes (H) Community outcomes (H): evidence for Guatemala only 	<p>Y (potential impact self-reported, triangulated with external sources)</p> <p>[potential] 9 community forestry concessions in Maya Biosphere Reserve cover approximately 350,000 ha (potential for 25-year contract renewal)</p> <p>[achieved] 1 contract renewed in December 2019 (Cooperativa Carmelita covers 53,597 ha)</p> <p>[potential] 11 community-owned areas in RAAN cover 1.5 million ha</p>	<ul style="list-style-type: none"> Government outcomes: need evidence of government use/adoption of data/methods; need update on renewal of community forestry concessions Forestry cooperative outcomes: need more detail of learning, skill-building, and output use in advocacy Researcher outcomes: more detail needed on student capacity-building and career trajectory; need evidence of output use Community outcomes: need more detail on community learning; update on changes in community practice and governance <p>*predominance of evidence for Guatemala – need evidence of outcomes for Nicaragua component of the project</p> <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> Additional document review (project documents, trip reports, external media) Interviews/surveys with governments, partners, forest cooperatives, graduate students/research team Bibliometric analyses 	<p><i>Outcome level:</i> Preliminary evidence for Guatemala makes it a promising case, but lack of evidence for Nicaragua</p> <p><i>Impact level:</i> Possible from reported achievement and future potential (sensitive to conditions)</p>

Management of Trees on Farms in Mesoamerica Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? Suggestions for additional data collection (for both outcomes and impact).	Prioritization for additional evidence?
<p>Nicaragua–Honduras Sentinel Landscape (NHSL) Initiative (<i>CATIE</i>)</p> <ul style="list-style-type: none"> Nicaragua Honduras 	<ul style="list-style-type: none"> 1 performance story (2020) 1 case study report (2021) 1 OICR (2021) 2 internal webpages (n.d., 2020) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Government outcomes (M) NGO outcomes (L) Researcher outcomes (H) Extensionist outcomes (M) Community outcomes (M) 	<p>Y (target self-reported)</p> <p>[target] The target study area (Nicaragua–Honduras Sentinel Landscape) covers 6,800,000 ha</p> <p>[target] The Catcamas landscape covers 62,500 ha</p>	<ul style="list-style-type: none"> Government outcomes: need more detail of government learning; need more detail of uptake of TonF indicators and data in reporting; need more detail of policy change NGO outcomes: need more detail of continued support in NHSL Extensionist outcomes: need evidence of application of learning and skills in technical assistance; need evidence of practice change promoting uptake of TonF innovations 	<p><i>Outcome level:</i> Preliminary evidence for Honduras makes it a promising case, but key gaps exist</p> <p><i>Impact level:</i> Possible from</p>

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	<ul style="list-style-type: none"> 3 internal blogs (n.d., 2019, 2020) 		<ul style="list-style-type: none"> Community outcomes: need evidence of uptake of TonF management practices <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> Additional document review (project documents, trip reports, external media) Interviews/surveys with governments, partners, NGOs, extensionists, communities, research team Bibliometric analyses 	<p>targets, but requires supporting evidence of outcomes (sensitive to conditions)</p>
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Sustainable Conservation and Management of Protected Areas in Mozambique Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
<p>Sustaining Forest Resources for People and the Environment in the Niassa National Reserve in Mozambique (<i>Bioversity International</i>)</p> <ul style="list-style-type: none"> Mozambique 	<ul style="list-style-type: none"> 1 FTA annual report (2011) 1 midterm report (2012) 1 final report (2014) 1 end-of-project presentation (2014) 	<p>*reliability: low (self-reported sources)</p> <p>*confidence: low-medium</p> <ul style="list-style-type: none"> Reserve manager outcomes (M): need qualification of learning, capacities, and networks National forest agency outcomes (L): only indication of potential learning Researcher outcomes (H) Community outcomes (H) 	N	<ul style="list-style-type: none"> Reserve manager outcomes: need evidence on project influence on new set of forest reserve managers (re: unexpected outcome); need more details on learning and application of learning; need evidence of reserve managers' use of project outputs; need details on community monitoring agents' capacities to monitor National forest agency outcomes: need evidence on learning and influence on practice Researcher outcomes: need more detail on graduate student capacity-building and how applied post-project; evidence of research uptake/use Community outcomes: need update on extent of uptake of changed practices in community <p><u>Impact estimations:</u> Is it possible to determine the area managed within the Niassa National Reserve where improved practices have been applied?</p> <ul style="list-style-type: none"> Additional document review (project documents, trip reports, external media) Interviews/surveys with forest reserve managers, national forest agency, graduate students/research team Bibliometric analyses Quantification for impact estimation: calculate area managed within Niassa National Reserve 	<p><i>Outcome level:</i> Preliminary evidence makes it a promising case (e.g., low-hanging fruit)</p> <p><i>Impact level:</i> Unsure of difficulty to collect/resources available</p>

Sustainable Forest Management in Congo Basin Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
<p>Appui à la politique nationale de conservation et de la diversité en République Démocratique du Congo (REFORCO) (CIFOR)</p> <ul style="list-style-type: none"> • DRC 	<ul style="list-style-type: none"> • 1 final report (2016) • 1 CIFOR annual report (2018) 	<p>*reliability: low to medium (self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> • Government outcomes (L): limited evidence • Donor outcomes (L): limited evidence • Researcher outcomes (H) • NGO outcomes (L): limited evidence • Timber company outcomes (L): limited evidence 	N	<ul style="list-style-type: none"> • Government outcomes: need more detail of capacities built; need evidence of application of learning and skills • Donor outcomes: need more detail of research funding support received and project influence on donors/funders' behaviour change • NGO outcomes: need more detail of capacities built; need evidence of application of learning and skills • Timber company outcomes: need more detail of capacities built; need evidence of application of new knowledge and skills <p><u>Impact estimations:</u> Not possible to derive (project contributions too far-removed and indirect)</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, donors, international institutions, NGOs, timber companies, graduate students, research team</i> • <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Significant evidence gaps remain</p> <p><i>Impact level:</i> Not possible to derive</p>
<p>Formation, Recherche, Environnement dans la Tshopo (FORETS) (CIFOR)</p> <ul style="list-style-type: none"> • DRC 	<ul style="list-style-type: none"> • 3 midterm reports (2017, 2018, 2019) • 3 CIFOR annual reports (2016, 2018, 2019) • 1 CIFOR case study report (2018) 	<p>*reliability: low (self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> • Government outcomes (L): limited evidence • Donor outcomes (L) • Researcher outcomes (H) • NGO outcomes (M) • Timber company outcomes (M) • Community outcomes (M) 	<p>Y (target study area and impacts self-reported)</p> <p>[target] project area covers 400,000 ha in Tshopo province</p> <p>[achieved] two pilot farms established, covering 10 ha (5 ha each)</p> <p>[potential] CFCL arrangements cover 11,000 ha of customary lands</p> <p>[potential] 11 management</p>	<ul style="list-style-type: none"> • Government outcomes: need update on progress on integrated development plan for Yangambi Biosphere Reserve; need update on progress on local development plans; need evidence on PPP negotiations • Donor outcomes: need evidence of donor learning; need update on donor relationships; need update on co-financing results • Researcher outcomes: need more detail on benefits of South-South exchanges • NGO outcomes: need update of sensitization support • Timber company outcomes: need update on SMEs; need update on practice change • Community outcomes: need update on uptake of agroforestry; need update on practice change <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> 	<p><i>Outcome level:</i> Possibly; preliminary evidence is promising though key gaps exist</p> <p><i>Impact level:</i> Possible from reported achievement and future potential (sensitive to conditions)</p>

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			committees plan to plant 1,500 ha by 2022	<ul style="list-style-type: none"> • <i>Interviews/surveys with governments, donors, NGOs, timber companies, SMEs, local associations</i> • <i>Bibliometric analyses</i> 	
<p>Yangambi, pôle scientifique au service de l'homme et des forêts (YPS) (CIFOR)</p> <ul style="list-style-type: none"> • DRC 	<ul style="list-style-type: none"> • 1 midterm report (2019) 	<p>*reliability low (self-reported source)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> • Government outcomes (L): no evidence • Donor outcomes (M) • Researcher outcomes (M) • NGO outcomes (L): no evidence • Timber company outcomes (L): no evidence • Community outcomes (M) 	<p>Y (impact self-reported)</p> <p>[achieved] 11 ha of pilot farms under management</p>	<ul style="list-style-type: none"> • Government outcomes: need evidence of governmental learning; need evidence on PPP negotiations • Donor outcomes: need evidence of donor learning; need update of donor relationships • Researcher outcomes: need more detail on benefits of South-South exchanges • NGO outcomes: need evidence of applied skills • Timber company outcomes: need evidence of learning and application of skills; need evidence of local association support to SMEs; need update on progress for PPP development and business incubator • Community outcomes: need more detail on learning and application of learning; need update on pilot results; need evidence of practice change <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, donors, international institutions, NGOs, timber companies, graduate students, research team, communities</i> • <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Significant evidence gaps remain</p> <p><i>Impact level:</i> Possible from reported achievement (possibility of double-counting the 10 ha reported for FORETS)</p>
<p>Nouveaux Paysages du Congo (NPC) (CIFOR)</p> <ul style="list-style-type: none"> • DRC 	<ul style="list-style-type: none"> • 1 midterm report (2019) *ongoing project 	<p>*reliability: low (self-reported source)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> • Government outcomes (L): limited evidence • Donor outcomes (L) • Researcher outcomes (L): no evidence • NGO outcomes (L) • Timber company outcomes (M) • Community outcomes (M) 	<p>Y (target and impact self-reported)</p> <p>[target] 2,100 ha targeted for adoption of agroforestry management practices</p> <p>[achieved] 894 ha of agroforestry plantations planted (includes 262 ha of community agroforestry systems)</p>	<ul style="list-style-type: none"> • Government outcomes: need evidence of governmental learning; need more detail of PPP progress • Donor outcomes: need more detail of engagement with investment funds (e.g., Blue Orchard, Calvert Impact Capital) • NGO outcomes: need more detail of village committees • Timber company: need more detail of capacity-building and support to producer associations; need more detail of PPP process; need more detail of business incubator • Community outcomes: need more detail of pilot farms and capacity-building <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, donors, international institutions, NGOs, timber companies, research team, communities</i> 	<p><i>Outcome level:</i> Possibly; preliminary evidence is promising though key gaps exist (need to consider the infancy of the project)</p> <p><i>Impact level:</i> Possible from reported achievement and future potential (sensitive to conditions)</p>

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<p>Promouvoir et Formaliser l'Exploitation Artisanale du bois en Afrique Centrale (PROFEAAC) (CIFOR)</p> <ul style="list-style-type: none"> Cameroon DRC 	<ul style="list-style-type: none"> 4 midterm reports (2021, 2021, 2021, 2021) <p>*ongoing project (may be too early to collect evidence)</p>	<p>*reliability: low (self-reported sources [e.g., partner reports])</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Government outcomes (L): limited evidence NGO outcomes (L): limited evidence Timber company outcomes (L): limited evidence Community outcomes (L): no evidence 	N	<ul style="list-style-type: none"> Government outcomes: need evidence of governmental learning; need evidence of output use for monitoring (e.g., geospatial data on deforestation); need more detail of project contribution to conjoint decree; need evidence of monitoring of artisanal logging permits NGO outcomes: need evidence of monitoring of artisanal logging permits; need evidence of support to artisanal operators for legal practices Timber company outcomes: need evidence of artisanal logging permit monitoring; need evidence of SME learning and skill-building; need more detail of practice change to meet consumer demand for legal timber Community outcomes: need evidence of artisanal logging permit monitoring; need evidence of MoUs between artisanal loggers and community customary rights and replication in other countries; need evidence of capacity for legal practices; need more detail of consumer demand for legal timber <p><u>Impact estimations:</u> Not possible to derive (too early in the research process)</p> <ul style="list-style-type: none"> <i>Additional document review (project documents, trip reports, external media)</i> <i>Interviews/surveys with governments, NGOs, timber companies, research team, communities</i> 	<p><i>Outcome level:</i> No evidence (need to consider the infancy of the project and value of preliminary evidence)</p> <p><i>Impact level:</i> Not possible to derive</p>
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Landscape Management in Dryland Areas in Sub-Saharan Africa Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? Suggestions for additional data collection (for both outcomes and impact).	Prioritization for additional evidence?
<p>DRYDEV: A Regional Programme in the Sahel and Horn of Africa, enhancing Food and Water Security for Rural Economic Development (ICRAF)</p>	<ul style="list-style-type: none"> 1 external evaluation (2018) 1 final report (2020) 1 internal webpage (n.d.) 1 external webpage (2021) 3 ICRAF annual reports (2015, 2017, 2018) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Government outcomes (M) Partner outcomes (M) Donor outcomes (L) Private actor outcomes (L) Farmer outcomes (H) 	<p>Y (self-reported by partners)</p> <p>[target] 227,100 farmers transition to more sustainable management practices</p> <p>[achieved] >100,000 farmers practice NRM off-farm</p>	<ul style="list-style-type: none"> Government outcomes: need evidence of government learning; need evidence of output uptake into policy Partner outcomes: need evidence of partner learning; need evidence of partner output uptake; need evidence of partner scaling Donor outcomes: need evidence of support for scaling Private actor outcomes: need evidence of changes in investment decisions <p><u>Impact estimations:</u> Already have.</p>	<p><i>Outcome level:</i> Possibly not because of recent evaluation and additional evidence may take time to materialize (i.e., may not be available)</p>

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<ul style="list-style-type: none"> • Ethiopia • Kenya • Mali • Niger • Burkina Faso 	<ul style="list-style-type: none"> • 3 FTA annual reports (2017, 2018, 2019) 		<p>[achieved] 163,745.55 ha off-farm under improved NRM</p> <p>[achieved] 143,067 farmers applying SWC to 105,592 ha on-farm</p> <p>[achieved] 105,481 farmers applying climate-smart production options to 60,835 ha on-farm</p>	<ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, forest cooperatives, partners, graduate students/research team</i> • <i>Bibliometric analyses</i> 	<p><i>Impact level:</i> Possible from policy targets and reported achievements (sensitive to conditions)</p>
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Forest Monitoring in Central Africa Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? Suggestions for additional data collection (for both outcomes and impact).	Prioritization for additional evidence?
<p>Contribution à l'observatoire des forêts d'Afrique centrale (OFAC 3) (CIFOR)</p> <ul style="list-style-type: none"> • DRC • Equatorial Guinea • Gabon • Rwanda • Sao Tome & Principe • Burundi • Cameroon • Central African Republic • Chad • Congo 	<ul style="list-style-type: none"> • 1 final report (2016) 	<p>*reliability: low (self-reported source)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> • COMIFAC outcomes (L): limited evidence • Partner outcomes (M) • Researcher outcomes (L): limited evidence • International actor outcomes (M) • Government outcomes (M) 	N	<ul style="list-style-type: none"> • COMIFAC outcomes: need evidence of uptake of OFAC for decision-making; need evidence of influence on COMIFAC's convergence plan • Partner outcomes: need more detail of output use; need evidence of CBFP's role as a boundary partner to share OFAC data • Researcher outcomes: need evidence of OFAC data use • International actor outcomes: need more detail of OFAC data use • Government outcomes: need update on MoU with DRC, Congo, and Gabon; need evidence of uptake of OFAC for decision-making in other COMIFAC states <p><u>Impact estimations:</u> Is it possible to quantify the area of MoU signatory countries' forests monitored by OFAC (e.g., DRC, Congo, Gabon)?</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, COMIFAC, partners, CBFP, research team</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: calculate forest area under OFAC monitoring</i> 	<p><i>Outcome level:</i> Significant evidence gaps remain</p> <p><i>Impact level:</i> Unsure if possible/feasible to collect</p>

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<p>Technical Assistance for the Facilitation of the Congo Basin Forest Partnership (CIFOR)</p> <ul style="list-style-type: none"> • DRC 	<ul style="list-style-type: none"> • 3 midterm reports (2016, 2017, 2017) 	<p>*reliability: low (self-reported source)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> • COMIFAC outcomes (L): limited evidence • Partner outcomes (L): limited evidence • Researcher outcomes (M) • International actor outcomes (M) 	N	<ul style="list-style-type: none"> • COMIFAC outcomes: need more detail of technical assistance provided • Partner outcomes: need more detail on outcomes of multi-stakeholder fora; need evidence of CBFP being equipped for forest governance • Researcher outcomes: need more detail of strengthening of research network • International actor outcomes: need more detail of policy influence; need evidence of implications of policy change (e.g., roadmap) <p><u>Impact estimations:</u> Are targets for forest management listed in the roadmap?</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with COMIFAC, EU, CBFP, research team</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: policy review</i> 	<p><i>Outcome level:</i> Significant evidence gaps remain</p> <p><i>Impact level:</i> Unsure if possible/feasible to collect</p>
<p>Renforcement et Institutionnalisation de l'Observatoire des Forêts d'Afrique Centrale (RIOFAC) (CIFOR)</p> <ul style="list-style-type: none"> • DRC • Equatorial Guinea • Gabon • Rwanda • Sao Tome & Principe • Burundi • Cameroon • Central African Republic • Chad • Congo 	<ul style="list-style-type: none"> • 5 midterm reports (2017, 2018, 2019, 2019, 2020, 2021) <p>*ongoing project (may be too early to collect evidence)</p>	<p>*reliability: low (self-reported source)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> • COMIFAC outcomes (L): limited evidence • Partner outcomes (M) • Researcher outcomes (M) • Government outcomes (M) 	N	<ul style="list-style-type: none"> • COMIFAC outcomes: need more detail on institutionalization of OFAC • Partner outcomes: need evidence of linking with partners' databases; need more detail on partners' capacity-building • Researcher outcomes: need update on research collaborations • Government outcomes: need evidence of results of national data collection campaigns; need more detail on capacity-building <p><u>Impact estimations:</u> Is it possible to quantify the forest area under OFAC monitoring?</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, COMIFAC, partners, research team</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: calculate area of OFAC monitoring</i> 	<p><i>Outcome level:</i> Significant evidence gaps remain</p> <p><i>Impact level:</i> Unsure if possible/feasible to collect</p>

FLEGT Mechanism for Illegal Logging in Sub-Saharan Africa Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
Appui technique au Ministère des Forêts et de la Faune pour l'opérationnalisation de la page web et la collecte de données dans le cadre de la mise en œuvre de l'Annexe VII de l'APV/FLEGT (CIFOR) • Cameroon	<ul style="list-style-type: none"> 1 output report (2015) 1 external website (2020) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> Policy-maker outcomes (L): only evidence of establishment of website 	N	<ul style="list-style-type: none"> Policy-maker outcomes: need evidence of government learning; need evidence of output use; need evidence of licensing implementation Timber company outcomes: need evidence of effect of website <p><u>Impact estimations:</u> Is it possible to derive from Cameroon's VPA policy targets or changes in hectares licensed under FLEGT concessions?</p> <ul style="list-style-type: none"> Additional document review (project documents) Interviews/surveys with policy-makers, research team, timber companies Bibliometric analyses Quantification for impact estimation: policy review and/or calculate changes in licensing (hectares managed) between 2016-2020? 	<p><i>Outcome level:</i> Likely not, limited initial evidence base; requires intensive data collection</p> <p><i>Impact level:</i> Unsure if available; unsure if can link to project/CIFOR's contributions</p>
Collecting evidence of FLEGT VPA-impacts for improved FLEGT communication (CIFOR) • Ghana • Cameroon • Indonesia	<ul style="list-style-type: none"> 1 output report (2019) 	<p>*reliability: low (self-reported source)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> Policy-maker outcomes (L): no evidence; only mentions expected outcomes Timber company outcomes (L): no evidence Smallholder/SME outcomes (L): limited evidence 	N	<ul style="list-style-type: none"> Policy-maker outcomes: need evidence of learning, evidence of policy change; evidence of output use Timber company outcomes: need evidence of learning; need evidence of implemented management plans; need evidence of practice change (i.e., decreased illegal logging) Smallholder/SME outcomes: need evidence of learning; need evidence of practice change <p><u>Impact estimations:</u> Is it possible to derive from Ghana/Cameroon's VPA policy targets or changes in hectares licensed under FLEGT concessions?</p> <ul style="list-style-type: none"> Additional document review (project documents) Interviews/surveys with policy-makers, research team, timber companies, smallholders/SMEs Bibliometric analyses Quantification for impact estimation: policy review and/or calculate changes in licensing (hectares managed) between 2016-2020? 	<p><i>Outcome level:</i> Likely not, limited initial evidence base; requires intensive data collection</p> <p><i>Impact level:</i> Unsure if available; unsure if can link to project/CIFOR's contributions</p>
Réalisation d'une étude de caractérisation des différents types d'offres et de demandes en bois	<ul style="list-style-type: none"> 1 midterm presentation (2018) 	<p>*reliability: low (self-reported source)</p> <p>*confidence: low</p>	N	<ul style="list-style-type: none"> Policy-maker outcomes: need evidence of learning, need evidence of policy change; need evidence of output use 	<p><i>Outcome level:</i> Likely not, limited initial evidence base;</p>

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et produits dérivés dans les marchés publics en Côte d'Ivoire (CIFOR) • Côte d'Ivoire	<ul style="list-style-type: none"> • 2 midterm reports (2019, 2019) • 1 final report (n.d.) 	<ul style="list-style-type: none"> • Policy-maker outcomes (L): no evidence; only mentions expected outcomes 		<p><u>Impact estimations:</u> Is it possible to derive from Côte d'Ivoire's policy targets?</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents)</i> • <i>Interviews/surveys with policy-makers, research team</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: policy review</i> 	<p>requires intensive data collection</p> <p><i>Impact level:</i> Unsure if available; unsure if can link to project/CIFOR's contributions</p>
Essor des demandes publiques et privées camerounaises en sciages d'origine légale (CIFOR) • Cameroon	<ul style="list-style-type: none"> • 1 midterm report (2018) • 1 final report (2019) • 1 CIFOR press release (2017) 	<p>*reliability: low (self-reported source) *confidence: low</p> <ul style="list-style-type: none"> • Policy-maker outcomes (L): limited evidence • NGO/CSO outcomes (L): limited evidence • Timber company outcomes (L): limited evidence 	N	<ul style="list-style-type: none"> • Policy-maker outcomes: need evidence of learning; need evidence of policy change (i.e., adoption of inter-ministerial decree); need evidence of output use • NGO/CSO outcomes: need update of ANCOVA advocacy for legal timber • Timber company outcomes: need evidence of learning and awareness; need evidence of policy change; need evidence of practice change <p><u>Impact estimations:</u> Is it possible to derive from policy targets?</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media, review)</i> • <i>Interviews/surveys with policy-makers, ANCOVA representatives, research team, timber companies</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: policy review</i> 	<p><i>Outcome level:</i> Likely not, limited initial evidence base; requires intensive data collection</p> <p><i>Impact level:</i> Unsure if available; unsure if can link to project/CIFOR's contributions</p>
Policy and regulatory options to recognise and better integrate the domestic timber sector in tropical countries (PRO-FORMAL) (CIFOR) • Cameroon • Gabon • DRC • Ecuador • Indonesia	<ul style="list-style-type: none"> • 1 outcome story (2016) • 1 evaluation report (2014) • 3 FTA annual reports (2013, 2014, 2015) 	<p>*reliability: medium (external and self-reported sources) *confidence: low-medium</p> <ul style="list-style-type: none"> • Policy-maker outcomes (M) • NGO/CSO outcomes (L): limited evidence • Researcher outcomes (M) • Timber company outcomes (L): limited evidence 	N	<ul style="list-style-type: none"> • Policy-maker outcomes: need more detail of learning; need evidence of output use • NGO/CSO outcomes: need more detail of output use • Researcher outcomes: need more qualitative detail of graduate student capacity-building • Timber company outcomes: need update on companies' timber traceability contracts; need evidence of practice change <p><u>Impact estimations:</u> Is it possible to derive from policy targets?</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with policy-makers, NGOs, CSOs, research team, timber companies</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: policy review</i> 	<p><i>Outcome level:</i> Possibly, preliminary evidence is promising though key gaps exist</p> <p><i>Impact level:</i> Unsure if available</p>

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<p>Governing multifunctional landscapes (GML) in Sub Saharan Africa: Managing trade-offs between social and ecological impacts (<i>CIFOR, ICRAF</i>)</p> <ul style="list-style-type: none"> Cameroon Ghana DRC Gabon Zambia Kenya 	<ul style="list-style-type: none"> 1 midterm report (2020) 1 CIFOR annual report (2019) 1 FTA annual report (2019) 2 CIFOR press releases (2021, 2021) <p>*ongoing project</p>	<p>*reliability: low (self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Policy-maker outcomes (H) NGO/CSO outcomes (M) Researcher outcomes (L): no evidence Timber company outcomes (M) Smallholder/SME outcomes (M) Unexpected outcome: international influence (e.g., call for joint effort) 	N	<ul style="list-style-type: none"> Policy-maker outcomes: need more detail of learning; need more detail of policy change; need evidence of output use NGO/CSO outcomes: need more detail of output use; need evidence of support for FLEGT Researcher outcomes: need evidence of output use Timber company outcomes: need more detail of learning and practice change SME outcomes: need evidence of practice change <p><u>Impact estimations:</u> Is it possible to derive from policy targets?</p> <ul style="list-style-type: none"> Additional document review (project documents, trip reports, external media) Interviews/surveys with policy-makers, NGOs, CSOs, research team, timber companies, SMEs/ smallholders Bibliometric analyses Quantification for impact estimation: policy review 	<p><i>Outcome level:</i> Possibly, preliminary evidence is promising though key gaps exist; should consider that the project is in progress (availability of preliminary evidence/outcome realization).</p> <p><i>Impact level:</i> Unsure if available</p>
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Sustainable Forest Enterprises in Cameroon Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? Suggestions for additional data collection (for both outcomes and impact).	Prioritization for additional evidence?
<p>Improving Livelihoods and Land Use in Congo Basin Forests - Financing Sustainable Community Forest Enterprises in Cameroon (DRYAD) (ICRAF)</p> <ul style="list-style-type: none"> Cameroon 	<ul style="list-style-type: none"> 1 internal blog (2020) 1 end-of-project presentation (2020) 1 final report (2020) 1 ICRAF annual report (2017) 3 FTA annual reports (2017, 2018, 2019) 	<p>*reliability: medium (self-reported, but based on FMS data)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (L) Investor outcomes (L): no evidence Implementing organization outcomes (L) CFE outcomes (H) 	<p>Y (self-reported, but based on FMS data)</p> <p>[target] 105,000 ha of community forests will be sustainably managed</p> <p>[achieved] 85,250.5 ha under CFE management</p>	<ul style="list-style-type: none"> Government outcomes: need evidence of policy change; need evidence output use Investor outcomes: need evidence of changes in decision-making; need evidence of uptake of performance data in decision-making; need evidence of scaling investment Implementing organization outcomes: need evidence of learning and capacity-building; evidence of support to CFEs <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> Additional document review (project documents, trip reports, external media) Interviews/surveys with governments, implementing organizations, investors, research team, participating CFEs Bibliometric analyses 	<p><i>Outcome level:</i> Possibly not as there is already substantial recent evidence</p> <p><i>Impact level:</i> Possible from project target and reported achievement (sensitive to conditions)</p>

Support to Landscape Restoration and Management in Asia Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
<p>Opportunities for tropical forest and land restoration: A public forum by Sarawak State Government (<i>Bioversity International</i>)</p> <ul style="list-style-type: none"> Malaysia 	<ul style="list-style-type: none"> 1 workshop report (2017) 1 outcome story (n.d.) 1 external website (2021) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (H) Practitioner outcomes (L): no evidence Private sector outcomes (L): limited evidence Community outcomes (L): limited evidence 	<p>Y (impact reported on external government website)</p> <p>[achieved] 14 FMUs, covering 1,319,057 ha, have received certification under the MTCS</p>	<ul style="list-style-type: none"> Government outcomes: need more detail of learning and output use; need evidence of policy implementation; need evidence of capacity-building Practitioner outcomes: need evidence of technical and institutional capacity-building Private sector outcomes: need more detail of licensing; need demonstration of commitment to sustainable forestry through practice; need evidence of attracted investments Community outcomes: need more detail of community involvement in multi-stakeholder processes; need evidence of improved management practices <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> <i>Additional document review (project documents, trip reports, external media)</i> <i>Interviews/surveys with governments, practitioners, private sector actors, community</i> <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Preliminary evidence of policy influence is promising, but key gaps remain</p> <p><i>Impact level:</i> Possible from reported achievement (sensitive to conditions)</p>
<p>Alliance for Forestry Innovation in India – Innovation in Ecosystem Management and Conservation (<i>Bioversity International</i>)</p> <ul style="list-style-type: none"> India 	<ul style="list-style-type: none"> 1 midterm report (2017) 1 external website (2017) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (L): limited evidence Partner outcomes (L): no evidence CBO outcomes (H) Community outcomes (M) 	<p>N</p>	<ul style="list-style-type: none"> Government outcomes: need more detail of learning and attitudinal change Partner outcomes: need evidence of learning; need evidence of NGO support to communities post-project CBO outcomes: need more detail of JFMC adoption of monitoring system Community outcomes: need more detail on changed practices and applied learning/skills <p><u>Impact estimations:</u> Is it possible to determine the area being monitored or where improved NTFP management practices have been applied?</p> <ul style="list-style-type: none"> <i>Additional document review (project documents, trip reports, external media)</i> <i>Interviews/surveys with governments, partners, research team, CBOs, community</i> <i>Bibliometric analyses</i> <i>Quantification for impact estimation: calculate area under 4 JFMC community-based monitoring systems and/or study sites</i> 	<p><i>Outcome level:</i> Significant evidence gaps remain; likely requires intensive data collection</p> <p><i>Impact level:</i> Unsure if possible/feasible to collect</p>

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<p>Sloping Lands in Transition: Land Use Change and Smallholder Adaptive Capacity in Bhutan (SLANT 2) (CIFOR)</p> <ul style="list-style-type: none"> Bhutan 	<ul style="list-style-type: none"> 1 brief (2019) 1 midterm report (2019) 1 final report (2019) 	<p>*reliability: low (self-reported sources)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> Government outcomes (L): no evidence Partner outcomes (L): limited evidence Researcher outcomes (M) Practitioner outcomes (L): limited evidence Community outcomes (M) 	<p>Y (area of study sites self-reported)</p> <p>[area of study sites] 10,571 ha in Lingmethang FMU; 7,265 in Khaling-Kharungla FMU; 6,401 in Rongmanchhu FMU; 7,852 in Chendebji FMU; 2,460 in Kekhar Working Scheme</p>	<ul style="list-style-type: none"> Government outcomes: need evidence of government learning and attitudinal change; need evidence of inclusive and evidence-based policy development; need evidence of uptake of project outputs Partner outcomes: need evidence of uptake of project outputs; need evidence of support for SFM planning Researcher outcomes: need update of research partner support to communities; need evidence of uptake of project outputs; need evidence of follow-up research and support Practitioner outcomes: need more detail of learning and capacity-building; need evidence of applied learning and skills in practice; need evidence of enhanced expertise/career prospects Community outcomes: need more detail of community participation in forest governance <p><u>Impact estimations:</u> Is it possible to determine the hectareage of study sites?</p> <ul style="list-style-type: none"> Additional document review (project documents, trip reports, external media) Interviews/surveys with governments, partners, research team, practitioners, community Bibliometric analyses Quantification for impact estimation: calculate area of study sites 	<p><i>Outcome level:</i> Significant evidence gaps remain; likely requires intensive data collection</p> <p><i>Impact level:</i> Possible from reported area of study sites (may be too early to assess realized impact; sensitive to conditions)</p>
<p>Rewards for, use of and shared investment in pro-poor environmental services, phase 2 (RUPES 2) (ICRAF)</p> <ul style="list-style-type: none"> China India Indonesia Nepal Philippines Vietnam 	<ul style="list-style-type: none"> 1 donor report (2011) 1 final report (2013) 1 FTA annual report (2012) 1 OICR (2019) 2 internal press releases (2018, 2019, 2020) 3 external press releases (2017, 2017, 2019) 	<p>*reliability: low to medium (self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Government outcomes (H) Partner outcomes (H) Researcher outcomes (M) CBO outcomes (M) Practitioner outcomes (L) Private sector outcomes (M) Community outcomes (M) 	<p>Y (area of study sites self-reported)</p> <p>[area of study sites] Project sites in Ba Be district cover 54,876 ha</p> <p>[potential] Pilot planned on 100 ha in Bac Kan province</p>	<ul style="list-style-type: none"> Government outcomes: need more detail of policy influence; need uptake of policy implementation Partner outcomes: need update of communities of practice, policy advocacy, and implementation support post-project CBO outcomes: need update of co-investment Practitioner outcomes: need evidence of applied knowledge and skills; need evidence of RES monitoring and rehabilitation practices Private sector outcomes: need more detail of company learning and changed practices; need update of co-investments Community outcomes: need update of co-investments and changed practices; need evidence of RES benefits <p><u>Impact estimations:</u> Is it possible to derive from policy targets and/or determine the hectareage of study sites?</p>	<p><i>Outcome level:</i> Preliminary evidence makes it a promising case (e.g., low-hanging fruit)</p> <p><i>Impact level:</i> Possible from reported area of study sites in Vietnam (may be too early to assess realized impact; sensitive to conditions)</p>

				<ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, partners, research team, CBOs, practitioners, private sector actors, community</i> • <i>Quantification for impact estimation: policy review and/or calculate area of study sites</i> 	
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Expanding Market Options via Landscape Management Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? Suggestions for additional data collection (for both outcomes and impact).	Prioritization for additional evidence?
<p>Development of timber and non-timber forest products' production and market strategies for improvement of smallholders' livelihoods in Indonesia (KANOPPI Phase 1) (<i>ICRAF</i>)</p> <ul style="list-style-type: none"> • Indonesia 	<ul style="list-style-type: none"> • 1 external outcome evaluation (2017) • 2 midterm reports (2015, 2016) • 1 final report (2019) • 1 FTA annual report (2017) • 1 internal webpage (n.d.) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> • Government outcomes (H) • Partner outcomes (L) • Researcher outcomes (L): limited evidence • Extensionist outcomes (L): limited evidence • Community outcomes (H) 	<p>Y (impact self-reported)</p> <p>[achieved] 1,218 ha of demonstration plots were established by the project</p> <p>[achieved] 75,566 ha under improved land use planning (Sumbawa district)</p>	<ul style="list-style-type: none"> • Government outcomes: need more detail of government learning; need more detail of uptake of project outputs (e.g., into Grand Design for NTFP Development, Sumbawa District planning) • Partner outcomes: need update of post-project support for training; need evidence of influence on Thousand Bamboo Villages program • Researcher outcomes: need update on local university collaboration; need evidence on FOERDIA research progress • Extensionist outcomes: need evidence of application of new knowledge and skills to improve community practice <p><u>Impact estimations:</u> Is it possible to derive high-end estimate from policy targets (e.g., Grand Design for NTFP)?</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, partners, research team, extensionists</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: policy review</i> 	<p><i>Outcome level:</i> Preliminary evidence makes it a promising case (e.g., low-hanging fruit)</p> <p><i>Impact level:</i> Possible from reported achievement and policy targets</p>
<p>KANOPPI 2: Developing and promoting market-based agroforestry options and integrated</p>	<p>No evidence</p> <p>*ongoing project (may be too early to collect evidence)</p>	<p>No evidence</p>	<p>N</p>	<ul style="list-style-type: none"> • Government outcomes: need more detail of uptake of project outputs; need update of policy change and implementation • Partner outcomes: need evidence of support to multi-stakeholder processes and training • Researcher outcomes: need evidence of output use 	<p><i>Outcome level:</i> Possibly not; likely requires intensive data collection and should consider that the project is</p>

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landscape management for smallholder forestry in Indonesia (ICRAF) • Indonesia				<ul style="list-style-type: none"> • Extensionist outcomes: need evidence of application of new knowledge and skills to improve community practice • Community outcomes: need evidence of practice change <p><u>Impact estimations:</u> Is it possible to derive from policy targets?</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, partners, research team, extensionists, communities</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: policy review</i> 	<p>in progress (availability of preliminary evidence/outcome realization)</p> <p><i>Impact level:</i> Unsure if possible/feasible to collect</p>
AFLI-I: Agroforestry for livelihoods of smallholder farmers in Northwest Vietnam (ICRAF) • Vietnam	<ul style="list-style-type: none"> • 1 final report (2019) 	<p>*reliability: low to medium (self-reported source)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> • Government outcomes (H) • Partner outcomes (M) • Researcher outcomes (M) • Extensionist outcomes (M) • Community outcomes (H) 	<p>Y (impact self-reported)</p> <p>[achieved] 300 ha of EL implemented</p> <p>[achieved] 300 ha of FDT implemented</p>	<ul style="list-style-type: none"> • Government outcomes: need update on exemplar landscape co-investment • Partner outcomes: need more detail on knowledge exchange • Researcher outcomes: need more detail on student capacity-building; need evidence of networking; need evidence of output use • Extensionist outcomes: need evidence of application of new knowledge and skills to improve community practice; need evidence of uptake of project outputs • Community outcomes: need evidence of public-private partnership development <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, partners, research team, extensionists, communities</i> • <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Preliminary evidence makes it a promising case (e.g., low-hanging fruit)</p> <p><i>Impact level:</i> Possible from reported achievement (though negligible)</p>
AFLI-II: Developing and promoting market-based agroforestry and forest rehabilitation options in Northwest Vietnam (ICRAF)	<ul style="list-style-type: none"> • 1 OICR (2021) <p>*ongoing project</p>	<p>*reliability: medium to high (external source)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> • Government outcomes (H) • Partner outcomes (L): limited evidence • Researcher outcomes (L): no evidence • Extensionist outcomes (L): limited evidence • Community outcomes (M) 	<p>Y (impact and scaling potential reported)</p> <p>[achieved] 3,820 ha of son tra plantations placed under improved management</p> <p>[potential] 1.4 million ha could be placed under son</p>	<ul style="list-style-type: none"> • Government outcomes: need update on policy implementation • Partner outcomes: need more detail on knowledge exchange • Researcher outcomes: need update on research partner capacity-building; need evidence of output use • Extensionist outcomes: need evidence of application of new knowledge and skills to improve community practice; need evidence of uptake of project outputs; need evidence of market-linkage support; need evidence of smart phone app development 	<p><i>Outcome level:</i> Preliminary evidence makes it a promising case (e.g., low-hanging fruit)</p> <p><i>Impact level:</i> Possible from reported achievement and</p>

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<ul style="list-style-type: none"> • Vietnam 			tra-based agroforestry management (by 123,000-247,000 households)	<ul style="list-style-type: none"> • Community outcomes: need update of practice change <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, partners, research team, extensionists, communities</i> • <i>Bibliometric analyses</i> 	scaling potential (sensitive to conditions)
<p>Development of 2021-2030 Green Growth Action Plan for Lam Dong Province (ICRAF)</p> <ul style="list-style-type: none"> • Vietnam 	<ul style="list-style-type: none"> • 1 technical report (2019) • 1 final report (2019) • 1 training report (2021) • 1 internal blog (2021) 	<p>*reliability: low (self-reported sources)</p> <p>*confidence: low to medium</p> <ul style="list-style-type: none"> • Government outcomes (L): limited evidence • Community outcomes (L): no evidence 	<p>Y (derived from project data – reliable as was scientifically calculated)</p> <p>[potential] Green Growth scenarios place 37,680 ha under sustainable farming practices</p> <p>[potential] Green Growth scenarios place 169,977 ha under SFM</p>	<ul style="list-style-type: none"> • Government outcomes: need more detail of policy influence process; need evidence of government learning; need more detail of government capacity-building; need evidence of policy implementation • Community outcomes: need evidence of practice change (e.g., adoption of green alternatives, sustainable management practices) <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, research team, communities</i> • <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Significant evidence gaps remain</p> <p><i>Impact level:</i> Possible from calculated project projection (sensitive to conditions)</p>

Community Forest Management in Indonesia Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
<p>Agroforestry in Sulawesi: Linking Knowledge with Action (AgFor) (ICRAF)</p> <ul style="list-style-type: none"> • Indonesia 	<ul style="list-style-type: none"> • 2 internal blogs (2016, 2017) • 2 final reports (2017, 2017) • 1 outcome story (2016) • 2 FTA annual reports (2015, 2017) • 1 internal webpage (n.d.) 	<p>*reliability: low to medium (self-reported sources, triangulated with external sources in outcome story)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> • Government outcomes (M) • Partner outcomes (L): limited evidence • Researcher outcomes (L): limited evidence • Enterprise outcomes (L): limited evidence • Community outcomes (H) 	<p>Y (impact self-reported; needs verification because of inconsistent reporting)</p> <p>[achieved] 780,273 ha placed under improved sustainable NRM</p>	<ul style="list-style-type: none"> • Government outcomes: need evidence of government learning; need more detail of policy change and FTA influence • Partner outcomes: need update of partner practice • Researcher outcomes: need evidence of output use • Enterprise outcomes: need evidence of practice change <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, partners, research team, enterprises</i> • <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Preliminary evidence is limited for some pathways</p> <p><i>Impact level:</i> Possible from reported achievement (sensitive to conditions)</p>

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<p>Protecting biodiversity through improved community forest management and agroforestry (ICRAF)</p> <ul style="list-style-type: none"> Indonesia 	<ul style="list-style-type: none"> 2 midterm reports (2013, 2014) 1 final report (2016) 	<p>*reliability: low (self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Government outcomes (H) Partner outcomes (M) Researcher outcomes (L): limited evidence Community outcomes (M) 	<p>Y (policy target and impact self-reported)</p> <p>[target] KHLK aim to designate 500,000 ha into village forest</p> <p>[achieved] 49,703 ha of village forest permits awarded</p>	<ul style="list-style-type: none"> Government outcomes: need update of policy influence and implementation Partner outcomes: need update of progress on advocacy (e.g., CBFM); need evidence of NGO/CBO support for village forest monitoring Researcher outcomes: need evidence of output use Community outcomes: need evidence of changed agroforestry and management practices (e.g., applied learning and skills); need update on progress of village forest governance <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> Interviews/surveys with governments, NGOs, research team, community representatives Bibliometric analyses 	<p><i>Outcome level:</i> Preliminary evidence makes it a promising case (e.g., low-hanging fruit)</p> <p><i>Impact level:</i> Possible from policy targets and reported achievement (sensitive to conditions)</p>
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Watershed Management in South-east Asia Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
<p>Integrated watershed management for enhancing local livelihoods and biodiversity conservation in Indonesia (CIFOR)</p> <ul style="list-style-type: none"> Indonesia 	<ul style="list-style-type: none"> 3 midterm reports (2016, 2017, 2018) 1 final report (2018) 	<p>*reliability: low to medium (self-reported sources)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Government outcomes (H) NGO outcomes (H) Donor outcomes (L): no evidence Private sector outcomes (L): limited evidence Community outcomes (L): limited evidence 	<p>Y (areas of target watersheds self-reported)</p> <p>[target] Sumbawa Watershed covers 20,756 ha</p> <p>[target] Nipa-Nipa Forest Reserve covers 7,877.5 ha</p> <p>[target] Bialo Watershed covers 10,948 ha</p> <p>[target] Biang Loe Watershed covers 5,260.5 ha</p> <p>[target] Tangnga Watershed covers 9,798.5 ha</p>	<ul style="list-style-type: none"> Government outcomes: need update of policy change and implications of implementation NGO outcomes: need update of post-project advocacy Donor outcomes: need evidence of donor investment in watershed management; need evidence of donors' ongoing support in study areas post-project Private sector outcomes: need evidence of practice change (improved water management) in response to changed policy Community outcomes: need evidence of implications of policy implementation (improved water management practices) <p><u>Impact estimations:</u> do any of the policies influenced include impact targets or hectareage covered?</p> <ul style="list-style-type: none"> Additional document review (policy review) Interviews/surveys with governments, NGOs, donors, private sector actors, communities Bibliometric analyses Quantification for impact estimation: policy review 	<p><i>Outcome level:</i> Possibly, preliminary evidence is promising though key gaps exist</p> <p><i>Impact level:</i> Possible from target area (may be too early to assess realized impact; sensitive to conditions)</p>

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			<p>[target] Raowa Watershed covers 4,408.5 ha</p> <p>[target] Labien-Leyboyan Watershed covers 106,925.5 ha</p>		
<p>Sustainable, Low Carbon Emission Agriculture and Water Resource Co-investment of Rejoso Watershed (Gerakan Rejoso Kita) (ICRAF)</p> <ul style="list-style-type: none"> Indonesia 	<ul style="list-style-type: none"> 1 internal webpage (n.d.) 1 brief (2018) <p>*ongoing project (may be too young to evaluate)</p>	<p>*reliability: low (self-reported sources)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> Government outcomes (L): limited evidence NGO outcomes (L): limited evidence Donor outcomes (L): no evidence Private sector outcomes (L): no evidence Local association outcomes (L): limited evidence Community outcomes (L): no evidence 	<p>Y (area of target watershed self-reported)</p> <p>[target] Rejoso Watershed covers an area of 62,773 ha</p>	<ul style="list-style-type: none"> Government outcomes: need evidence of PFES pilot progress; need evidence of changed policy NGO outcomes: need evidence of pilot progress; need more detail on implications of forum Donor outcomes: need evidence of donor investment in watershed management Private sector outcomes: need evidence of involvement in forum; need evidence of PFES pilot progress; need evidence of environmental awareness in industry; need evidence of changes in watershed management practices Local association outcomes: need more detail on forum; need evidence of CBO monitoring; need evidence of HIPPA adoption of good waste management practices Community outcomes: need evidence of involvement in second phase activities and demonstration plots; need evidence of increased awareness; need evidence of community self-regulation of water use; need evidence of communities applying for PFES scheme; need evidence of agricultural practice change to protect watershed <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> <i>Additional document review (project documents, trip reports, external media)</i> <i>Interviews/surveys with governments, NGOs, donors, private sector actors, local association representatives, communities</i> <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Likely not, limited initial evidence base; requires intensive data collection and should consider that the project is in progress (availability of preliminary evidence/outcome realization)</p> <p><i>Impact level:</i> Possible from target area (may be too early to assess realized impact; sensitive to conditions)</p>
<p>Integrated Natural Resource and Environmental Management Program (INREMP) (ICRAF)</p>	<ul style="list-style-type: none"> 1 internal webpage (n.d.) 2 internal blogs (2020, 2021) 1 evaluation report (2020) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: medium to high</p> <ul style="list-style-type: none"> Government outcomes (L): limited evidence Private sector outcomes (L): no evidence 	<p>Y (reported by partners)</p> <p>[target] 138,601 ha of watersheds across four upper river basins</p>	<ul style="list-style-type: none"> Government outcomes: need evidence of learning and governance support; need evidence of watershed management and investment plan development; need evidence of policy incentives Private sector outcomes: need evidence of partnership support; need evidence of watershed management and investment plans; need evidence of pursuit of policy incentives 	<p><i>Outcome level:</i> Preliminary evidence makes it a promising case (e.g., low-hanging fruit)</p>

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<ul style="list-style-type: none"> Philippines 		<ul style="list-style-type: none"> Local association outcomes (H) Community outcomes (M): limited preliminary evidence 	[achieved] 124,507 ha placed under NRM	<ul style="list-style-type: none"> Local association outcomes: need evidence of uptake of ESS monitoring Community outcomes: need evidence of learning; need evidence of community monitoring <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> Additional document review (project documents, trip reports, external media) Interviews/surveys with governments, private sector actors, local associations, communities Bibliometric analyses 	<p><i>Impact level:</i> Possible from policy targets and reported achievement (sensitive to conditions)</p>
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Fire Management in Indonesia Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
<p>Improving the way knowledge on forests and climate is used and understood internationally (Political Economy Study of Fire and Haze in Indonesia) (CIFOR)</p> <ul style="list-style-type: none"> Indonesia 	<ul style="list-style-type: none"> 1 outcome story (n.d.) 2 midterm reports (2016, 2017) 1 article (external theory-based outcome evaluation) (2019) 3 CIFOR annual reports (2015, 2016, 2017) 1 FTA annual report (2015) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (H) NGO outcomes (H) Researcher outcomes (M) Private sector outcomes (M) Public outcomes (M) Smallholder outcomes (L) 	<p>Y (target reported in policy)</p> <p>[target] 'Grand Design for Fire Prevention (2017-2019)': Ensure that the peatland working area of BRG as large as 2.4 million ha are not burned</p>	<ul style="list-style-type: none"> Government outcomes: need evidence of learning; need update on policy implementation Researcher outcomes: need update on output use Private sector outcomes: need update on changes in private sector practice Smallholder outcomes: update on practice changes <p><u>Impact estimations:</u> Derive from policy targets.</p> <ul style="list-style-type: none"> Additional document review (project documents, trip reports, external media, policy review) Interviews/surveys with government, research team, private sector Bibliometric analyses, Scopus review Quantification for impact estimation: policy review 	<p><i>Outcome level:</i> Possibly (update could be possible low-hanging fruit)</p> <p><i>Impact level:</i> Possible from policy targets (sensitive to conditions)</p>
<p>DFID Know-for 2: Political economy of fire and haze (CIFOR)</p> <ul style="list-style-type: none"> Indonesia 	<ul style="list-style-type: none"> 1 external performance story (2017) 	<p>*reliability: high (external source)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Government outcomes (H) NGO outcomes (M) Researcher outcomes (L) Private sector outcomes (M): evidence points to influence being low and 	<p>Y (target reported in policy)</p> <p>[target] 'Grand Design for Fire Prevention (2017-2019)': Ensure that the peatland working area of BRG as large as 2.4 million ha are not burned</p>	<ul style="list-style-type: none"> Government outcomes: need evidence of learning; need update on policy implementation NGO outcomes: need evidence of NGO learning, need more detail on NGO support Researcher outcomes: need update on output use Private sector outcomes: need update on outcomes assessed to be partially achieved Smallholder outcomes: update on practice changes <p><u>Impact estimations:</u> Derive from policy targets.</p> <ul style="list-style-type: none"> Additional document review (project documents, trip reports, external media) 	<p><i>Outcome level:</i> Possibly (update could be low-hanging fruit)</p> <p><i>Impact level:</i> Possible from policy targets (sensitive to conditions)</p>

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		<p>outcomes partially achieved</p> <ul style="list-style-type: none"> Public outcomes (L) Smallholder outcomes (L) 		<ul style="list-style-type: none"> <i>Interviews/surveys with government, NGOs, research team, private sector</i> <i>Bibliometric analyses</i> <i>Quantification for impact estimation: policy review</i> 	
<p>Disaster Preparedness Specific Discipline Integrated Programme in Riau, Indonesia (CIFOR)</p> <ul style="list-style-type: none"> Indonesia 	<ul style="list-style-type: none"> 1 final report (2020) 	<p>*reliability: low (self-reported source)</p> <p>*confidence: medium</p> <ul style="list-style-type: none"> Government outcomes (M): preliminary evidence of governmental support NGO outcomes (L) Researcher outcomes (L) Private sector outcomes (L) Smallholder outcomes (H) 	<p>Y (impact self-reported)</p> <p>[achieved] Project piloted community-based fire prevention models on 11.4 ha</p> <p>[achieved] 56 ha were rewetted; 7 ha planted with sago</p> <p>[achieved] 11.1 ha monitored by CO-PROMISE system</p>	<ul style="list-style-type: none"> Government outcomes: need update on support, need evidence of learning NGO outcomes: need more detail on NGO support, need evidence of NGO learning Researcher outcomes: need update on output use Private sector outcomes: more detail needed Smallholder outcomes: update on practice changes <p><u>Impact estimations:</u> Derive from models? (possibly negligible?)</p> <ul style="list-style-type: none"> <i>Additional document review (project documents, trip reports, external media)</i> <i>Interviews/surveys with government, NGOs, research team, private sector</i> <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Possible (low-hanging fruit)</p> <p><i>Impact level:</i> May be too early to assess (consider recent conclusion of project)</p>

Sustainable Oil Palm Management in Indonesia Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? Suggestions for additional data collection (for both outcomes and impact).	Prioritization for additional evidence?
<p>Supporting local regulations for sustainable oil palm in East Kalimantan (CIFOR)</p> <ul style="list-style-type: none"> Indonesia 	<ul style="list-style-type: none"> 1 final report (2017) 1 outcome evaluation (2021) 	<p>*reliability: medium to high (external & self-reported sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (H) Partner outcomes (H) Researcher outcomes (M/L) Corporations outcomes (L): no evidence to date 	<p>Y (likely reliable; scientifically-derived projections)</p> <p>[potential] 2 million ha in East Kalimantan is eligible for HCV classification</p>	<ul style="list-style-type: none"> Government outcomes: need update on related policy changes (e.g., EK PERGUB), resulting governance changes from policy implementation Partner outcomes: need update on continuation and involvement of FKPB Researcher outcomes: need update on involvement of UNMUL in EK PERDA/PERGUB process Corporations outcomes: need update on whether companies in EK accommodate the PERDA's policy changes (e.g., companies conserve/manage HCV areas) <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> <i>Interviews/surveys with governments, FKPB, UNMUL, oil palm companies</i> 	<p><i>Outcome level:</i> Possibly not as recent evidence is substantial and additional evidence may take time to materialize (i.e., may not be available)</p> <p><i>Impact level:</i> Possible from calculated project projection (sensitive to conditions)</p>

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<p>Governing Oil Palm Landscapes for Sustainability (GOLS) (CIFOR)</p> <ul style="list-style-type: none"> Indonesia 	<ul style="list-style-type: none"> 1 CUF evaluation report (2019) 1 outcome evaluation (2021) 1 CIFOR annual report (2017) 	<p>*reliability: medium to high (external sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (M): policy changes are too nascent Partner outcomes (H) Researcher outcomes (H) Corporations outcomes (L): no primary evidence from oil palm companies 	N	<ul style="list-style-type: none"> Government outcomes: need evidence of additional uptake of GOLS outputs; need update on related policy changes (ISPO, RANKSB) Corporations outcomes: evidence of company learning/attitude change; need indications or evidence of company uptake/use of GOLS outputs; need evidence of changes in company policy and/or practice <p><u>Impact estimations:</u> do ISPO or RANKSB contain targets for forests protected or under better management?</p> <ul style="list-style-type: none"> Interviews/surveys with governments, oil palm companies Quantification for impact estimation: policy review 	<p><i>Outcome level:</i> Possibly not as recent evidence is substantial and additional evidence may take time to materialize (i.e., may not be available); prioritize corporation outcomes (low-hanging fruit)</p> <p><i>Impact level:</i> Unsure if available, unsure if can link to project/CIFOR's contributions</p>
<p>Oil Palm Adaptive Landscapes (OPAL) (CIFOR)</p> <ul style="list-style-type: none"> Indonesia 	<ul style="list-style-type: none"> 1 outcome evaluation (2021) 1 CIFOR annual report (2017) 	<p>*reliability: high (external source)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Government outcomes (M/H): some policy changes are too nascent Partner outcomes (H) Researcher outcomes (H) Smallholder outcomes (L/M): low primary evidence from smallholders/farmers associations 	N	<ul style="list-style-type: none"> Government outcomes: need update on related policy changes (ISPO, RANKSB) Smallholder outcomes: need more detail on smallholder learning and changed practices <p><u>Impact estimations:</u> do ISPO or RANKSB contain targets for forests protected or under better management?</p> <ul style="list-style-type: none"> Interviews/surveys with governments, research team, smallholders/farmer associations Quantification for impact estimation: policy review 	<p><i>Outcome level:</i> Possibly not as recent evidence is substantial and additional evidence may take time to materialize (i.e., may not be available)</p> <p><i>Impact level:</i> Unsure if can link to project/CIFOR's contributions</p>
<p>Engendering RSPO Standards (CIFOR)</p> <ul style="list-style-type: none"> Indonesia 	<ul style="list-style-type: none"> 1 outcome evaluation (2021) 1 FTA annual report (2016) 	<p>*reliability: high (external source)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> Partner outcomes (H) Researcher outcomes (H) RSPO outcomes (H) Corporation outcomes (L): no primary evidence from corporations Smallholder outcomes (L): no primary evidence 	N	<ul style="list-style-type: none"> Partner outcomes: need update on advocacy efforts Researcher outcomes: need update on output use or transfer of learning to other projects on gender RSPO outcomes: need update on implementation of RSPO P&C on gender Corporation outcomes: need update on adherence to RSPO P&C on gender Smallholder outcomes: need evidence of enhanced participation in oil palm decision-making and governance; need evidence of improved equality and conditions in the oil palm sector 	<p><i>Outcome level:</i> Possibly not as recent evidence is substantial</p> <p><i>Impact level:</i> Unsure if can link RSPO-related impacts to project/CIFOR's contributions</p>

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		from smallholders/ farmers associations		<p><u>Impact estimations:</u> is it possible to report area under RSPO certification (to date or following end-of-project)?</p> <ul style="list-style-type: none"> • Interviews/surveys with partners, research team, RSPO, corporations, smallholders • Bibliometric analyses • Quantification for impact estimation: borrow estimates from RSPO? 	
<p>Impacts of large-scale land acquisitions on local women's land and forest tenure rights: Case studies from Indonesia (CIFOR)</p> <ul style="list-style-type: none"> • Indonesia 	<ul style="list-style-type: none"> • 1 midterm report (2016) • 1 final report (2017) 	<p>*reliability: low (self-reported sources)</p> <p>*confidence: low</p> <ul style="list-style-type: none"> • Government outcomes (L): no evidence • Partner outcomes (L) • Researcher outcomes (H) • RSPO outcomes (L): no evidence • Corporation outcomes (L): no evidence • Smallholder outcomes (L): no evidence 	N	<ul style="list-style-type: none"> • Government outcomes: need evidence of government learning; need evidence of influence on ISPO; need evidence of output use • Partner outcomes: need evidence of influence on RRI's advocacy; need evidence of output use; need evidence of SNV and IFC's development of smallholder responsive business models • RSPO outcomes: need evidence of influence on RSPO • Corporation outcomes: need evidence of corporations' learning; need evidence of changes in corporate policy and practice; need evidence of project influence • Smallholder outcomes: need evidence of enhanced participation in oil palm decision-making and governance; need evidence of improved equality and conditions in the oil palm sector <p><u>Impact estimations:</u> does ISPO contain targets for forests protected or under better management?</p> <ul style="list-style-type: none"> • Additional document review (project documents, trip reports, external media) • Interviews/surveys with governments, partners, research team, RSPO, corporations, smallholders • Bibliometric analyses • Quantification for impact estimation: policy review 	<p><i>Outcome level:</i> Limited evidence</p> <p><i>Impact level:</i> Unsure if available; unsure if can link to project/CIFOR's contributions</p>

Climate Change Management Cluster

Project	Evidence Sources	Level of Outcome Evidence (L, M, H), Reliability Assessment, & Confidence	Impact (Y/N) & Reliability Assessment	What additional evidence is required? <i>Suggestions for additional data collection (for both outcomes and impact).</i>	Prioritization for additional evidence?
Participatory Monitoring by Civil Society of Land-use Planning for Low-emissions Development Strategies (ParCiMon) (ICRAF) • Indonesia	<ul style="list-style-type: none"> • 3 midterm reports (2013, 2014, 2015) • 1 final report (2016) • 1 news bulletin (2014) • 1 FTA press release (2017) • 1 ICRAF annual report (2017) 	*reliability: low to medium (self-reported sources) *confidence: medium <ul style="list-style-type: none"> • Government outcomes (H) • Partner outcomes (L) • Researcher outcomes (M) • CSO outcomes (M) 	Y (policy target reported) [target] Low-emissions development strategies target 31.3 million ha of Papuan landscapes [target] Land-use plans cover 25.8 million ha	<ul style="list-style-type: none"> • Government outcomes: need update of policy implementation; need update of INSTANT pilot; need update of implemented monitoring system • Partner outcomes: need update of post-project support; need update of multi-stakeholder working groups • Researcher outcomes: need evidence of application of technical capacities; need evidence of uptake of outputs and methods/tools • CSO outcomes: need evidence of participation in land-use planning and monitoring; need evidence of application of technical capacities <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with governments, partners, research team, CSOs</i> • <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Preliminary evidence makes it a promising case (e.g., low-hanging fruit)</p> <p><i>Impact level:</i> Possible from policy targets (sensitive to conditions)</p>
Locally-appropriate Mitigation Actions in Indonesia (ICRAF) • Indonesia	<ul style="list-style-type: none"> • 2 midterm reports (2015, 2017) • 1 final report (2018) • 1 news bulletin (2014) • 1 FTA press release (2017) • 1 ICRAF annual report (2017) 	*reliability: low (self-reported sources) *confidence: low to medium (inconsistent reporting) <ul style="list-style-type: none"> • Government outcomes (H) 	N	<ul style="list-style-type: none"> • Government outcomes: need update of low-emissions development strategy and action plan development and implementation <p><u>Impact estimations:</u> is it possible to report area under the regency or district policies influenced by FTA?</p> <ul style="list-style-type: none"> • <i>Additional document review (policy review)</i> • <i>Interviews/surveys with governments, research team</i> • <i>Bibliometric analyses</i> • <i>Quantification for impact estimation: policy review</i> 	<p><i>Outcome level:</i> Possibly, preliminary evidence for government pathway is promising though key gaps exist</p> <p><i>Impact level:</i> Unsure if available</p>
ASEAN-Swiss Partnership on Social Forestry and Climate Change (ASFCC-II) (ICRAF) • Indonesia • Philippines • Thailand	<ul style="list-style-type: none"> • 1 FTA annual report (2015) • 1 end-of-project presentation (2016) • 1 internal webpage (n.d.) 	*reliability: low (self-reported sources) *confidence: low <ul style="list-style-type: none"> • Government outcomes (N): no evidence • Partner outcomes (L): limited evidence • Researcher outcomes (M) 	N	<ul style="list-style-type: none"> • Government outcomes: need evidence of government learning; need evidence of policy influence • Partner outcomes: need evidence of knowledge-sharing and capacity-building of partner network; need evidence of implications of ASEAN policy influence • Researcher outcomes: need more detail on partnerships; need update of implications for graduate student capacity-building <p><u>Impact estimations:</u> See latest project phase below.</p>	<p><i>Outcome level:</i> Not possible with current evidence for this project phase; may be possible for latest project phase</p> <p><i>Impact level:</i> Not possible with</p>

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<ul style="list-style-type: none"> • Vietnam 				<ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with research team, research partners, ASEAN representatives</i> • <i>Bibliometric analyses</i> 	current evidence for this project phase; may be possible for latest project phase
<p>ASEAN-Swiss Partnership on Social Forestry and Climate Change (ASFCC-III) (<i>ICRAF</i>)</p> <ul style="list-style-type: none"> • Indonesia • Philippines • Thailand • Vietnam • Cambodia • Myanmar 	<ul style="list-style-type: none"> • 2 ICRAF annual reports (2017, 2018) • 2 FTA annual reports (2018, 2019) • 1 OICR (2019) • 1 FTA press release (2019) • 1 external evaluation report (2020) 	<p>*reliability: medium (external & self-reported sources)</p> <p>*confidence: high</p> <ul style="list-style-type: none"> • Government outcomes (H) • Partner outcomes (H) • Researcher outcomes (M) • CSO outcomes (M) 	<p>Y (policy target and progress on target reported)</p> <p>[target] ASEAN member states committed to allocate 30 million ha as social forests</p> <p>[achieved] 7.22 million ha placed under social forestry arrangements in 6 ASEAN member states</p>	<ul style="list-style-type: none"> • Government outcomes: need update of progress of policy implementation • Partner outcomes: need update on partner involvement and support to ASEAN policy; need update on partner network • Researcher outcomes: need update on partnerships; need update of implications for graduate student capacity-building • CSO outcomes: need evidence on changed agroforestry practices (e.g., applied learning/ skills) <p><u>Impact estimations:</u> Already have.</p> <ul style="list-style-type: none"> • <i>Additional document review (project documents, trip reports, external media)</i> • <i>Interviews/surveys with ASEAN representatives, governments, partners, research team, CSOs</i> • <i>Bibliometric analyses</i> 	<p><i>Outcome level:</i> Preliminary evidence makes it a promising case (e.g., low-hanging fruit)</p> <p><i>Impact level:</i> Possible from policy targets and reported achievement (sensitive to conditions)</p>

Appendix 3. Challenge 3 Impact Estimates Disaggregated by Cluster and Region

Cluster	Geography			Number of Hectares Under Improved Management	Supporting Evidence of FTA's Contribution to Impact	Key Conditions and Caveats Underpinning Impact Realization
	Region	Country	Province			
REDD+ Policy Mechanism	Asia	Vietnam	Son La, Cat Tien, Dak Lak, Thua Thien Hue, Bac Kan	[low-end potential] 1,016,057ha [high-end potential] 6,644,508ha	<p>The PFES forest area in Son La, Cat Tien, Dak Lak, and Thua Thien Hue provinces where CIFOR conducted research and supported implementation of the PFES M&E system is 1,015,760 ha (15% of total PFES potential). From latest PFES annual report (2019), total PFES forest area is 6,576,508 ha at national level.</p> <p>In Bac Kan province, 212 ha of forest were put under a CFM regime in the SECURED Landscapes pilots. Na Thau village obtained a land use rights certificate for 85 ha of community forest with ICRAF assistance. The LUWES tool was used to develop low emissions development strategies for the Ba Be district, covering 68,000 ha, but these plans have yet to be enacted.</p>	<ol style="list-style-type: none"> 1. PFES is properly implemented and supported by the M&E system to ensure that payments are accurate 2. Large amounts of land are not lost to fire/flooding or other natural disasters 3. Other provinces implement the M&E system to ensure PFES payments are more accurate (scaling up) 4. PFES payments are high enough to change people's behaviour (i.e., an incentivizing factor) 5. Low emissions development strategy plans are enacted, implemented, and enforced. 6. Community forestry schemes sufficiently incentivize communities to better manage land and forests 7. Land and forests under various community forestry schemes in Vietnam are properly/ sustainably managed (i.e., communities with community forestry contracts and/or land use rights certificates adhere to/comply with requirements, etc.)
REDD+ Policy Mechanism	Asia	Indonesia	National, Jambi	[low-end potential] 22,500,714ha [high-end potential] 66,500,000ha	<p>Strong evidence of CIFOR's contribution the LoI and FCM. 66 million ha of production forest are covered under the Indonesian moratorium. The 66m ha [high-end] include 43.5m ha that were already under the protection of other protections schemes in parallel. Hence the size of area newly and fully covered by the moratorium is only 22.5m ha [low-end].</p> <p>The SECURED Landscapes project supported a participatory mapping exercise used to develop sustainable land use plans for 714 ha of</p>	<ol style="list-style-type: none"> 1. The Indonesian Moratorium is effectively enforced/there are consequences for deforesting land under the Moratorium 2. Indonesian Moratorium targets are realized 3. Plantation companies do not take advantage of loopholes 4. GoI does not change the land area protected (does not make exceptions for food estate program) 5. Land is not lost to fires or other natural disasters 6. Sustainable land use/management plans are implemented and monitored 7. Community forestry schemes sufficiently incentivize communities to better manage land and forests

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					community forest area in the Tanjabar district (Jambi province) . There are 500,000 ha in Tanjabar that have potential to be better managed under sustainable management plans.	8. Land and forests under various community forestry schemes in Indonesia are properly/ sustainably managed (i.e., communities adhere to/comply with requirements, etc.)
REDD+ Policy Mechanism	Global	Peru	Padre Abad, National	[low-end potential] 6,000ha [high-end potential] 3,560,000ha	As part of the SECURED Landscapes project, ICRAF influenced 6,000 ha of forested areas in Irazola district (Padre Abad province) to be managed under a sustainable land use management plan. CIFOR's MMRV activities in Peru and corresponding outputs (i.e., precise and reliable data on peatlands [<i>aguajales</i>]) informed the update of Peru's National Wetland Conservation Plan and Loreto's PDCR that involves sustainable management of <i>aguajales</i> . The recent 2020 Law of Multisectoral and Decentralized Management of Wetlands formally recognizes and protects Amazonian peatlands, which cover 3.56m ha .	1. Sustainable land use/management plans are implemented and monitored 2. Land and forests under various community forestry schemes in Indonesia are properly/ sustainably managed (i.e., communities adhere to/comply with requirements, etc.) 3. The Law of Multisectoral and Decentralized Management of Wetlands is effectively implemented and enforced to protect peatlands in the Peruvian Amazon
REDD+ Policy Mechanism	Global	Ethiopia	National	[low-end potential] not available [high-end potential] 17,068,500ha	In 2018, FTA supported revisions of the 2007 Ethiopian Forest Law, including the formulation of a new national forest regulation and development of the REDD+ MRV system, FREL, and SIS. Over 17m ha of forest are covered and governed by Ethiopia's Forest Law.	1. The revised Forest Law is effectively implemented and enforced to better managed forests in Ethiopia 2. Existing policy implementation gaps in Ethiopia are addressed (e.g., social unrest, tenure issues, low institutional capacity in decentralized bodies, accountability, transparency, etc.) 3. The MRV system is effectively implemented to monitor forests in Ethiopia
REDD+ Policy Mechanism	Global	Cameroon	Mvila	[low-end potential] 3,000ha [high-end potential] 76,234ha	As part of the SECURED Landscapes project, a total of 76,234 ha in Efoulan (Mvila province) were targeted for improved management of cocoa farms (5,771 ha) and forest areas (70,463 ha). 3,000 ha of farms (managed by 600 people) adopted new cocoa management models.	1. Improved management practices are implemented in targeted cocoa farms and forest areas 2. Project engagement and capacity-building was sufficient to equip communities for better management practices

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						3. Communities are sufficiently incentivized to sustainably manage their cocoa farms and surrounding forest areas
REDD+ Policy Mechanism	Global	DRC	Bas-Congo, Kinshasa	[low-end potential] 10,000ha [high-end potential] not available	SECURED Landscapes pilots were implemented in 10,000 ha in Mvululun and Kasangulu villages (Bas-Congo province) and Menkao, Kwango Bridge, and Kingakati villages (Kinshasa province) , where sustainable practices and landscape management were implemented.	1. Project pilots were successful to influence uptake and scaling of sustainable management practices 2. Successful/sustainable scaling of management practices are supported by project partners and allies
Forest Tenure Management	Global	Indonesia (GCS FTR Tier 1 country)	Lampung, Central Java National	[low-end potential] 1,142ha [high-end potential] 21,700,000ha	Project reach in study sites in Lampung province (Pahawang) and Central Java (Purworejo, Margasari) may have influenced management practices, which cover 1,142 ha of mangrove forest area. KHLK's new policy on social forestry aims to support the realization of the 2015-2019 RPJMN, which has a target to allocate 12.7m ha of forest estate for communities and 9m ha of land for agrarian reform. <ul style="list-style-type: none"> Indications the project supported the social forestry programme and development of action plans 	1. The GCS FTR project's influence on government understanding of tenure reform issues eventually translates to effective tenure reform that ensures improved management 2. Eventual tenure reform is evidence-based and informed by FTA findings/recommendations/guidelines 3. 2015-2019 RPJMN for social forestry is effectively implemented and enforced 4. 2015-2019 RPJMN's targets are eventually realized 5. Social forestry schemes sufficiently incentivize communities to better manage land and forests 6. Land and forests under various social forestry schemes in Indonesia are properly/sustainably managed (i.e., communities with social forestry contracts adhere to/comply with tenure requirements, etc.) 7. By conducting research on forest governance and tenure in the study sites, communities would learn and adopt better management practices
Forest Tenure Management	Global	Uganda	Buganda	[low-end estimate, actual achievement to date] 103ha [high-end potential] not available	Through uptake of ACM by participating communities, 82 acres (~ 33 ha) of degraded forest reserves were replanted by communities who had been allocated land in the Central Forest Reserve following negotiations supported by FTA. An additional 175 acres (~ 70ha) were allocated to two community groups by the NFA.	1. Project capacity-building in ACM is sufficient to inform sustainable management practice 2. Replanted forest reserves continue to be sustainably managed by communities

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Forest Tenure Management	Global	Nicaragua, Peru, Tanzania		–	No targets listed. No evidence.	
Agroforestry Concessions in Peru	Latin America	Peru	San Martín, Ucayali	[low-end estimate, actual achievement to date] 193ha [high-end potential] 1,452,000ha	As part of the SUCCESS project findings, it was estimated that 1m ha of land and 452,000 ha of forests in the Peruvian Amazon were eligible for AFCs (total potential: 1.452 million ha), that would benefit 120,000 households. The total area of the 33 concessions in San Martín is 193 ha (realized).	<ol style="list-style-type: none"> 1. AFC model is taken up (i.e., all eligible smallholders register for an AFC) 2. AFCs are properly zoned and implemented (i.e., all areas within the Peruvian Amazon eligible for an AFC are managed under a concession contract) 3. AFCs are properly/sustainably managed (i.e., concession holders adhere to/comply with AFC regulations, maintain required forest cover, practice agroforestry, etc.) 4. Follow-up projects to SUCCESS (e.g., PARA) are implemented as planned and build on the previous pilot of 14 AFCs 5. Successful/sustainable scaling of AFC in study provinces are supported by NGO and government partners
Sustainable Resource Management of Non-Timber Forest Products in Peru	Latin America	Peru	Madre de Dios	[low-end potential] 4,000ha [high-end potential] 1,000,000ha	<p>5 Brazil nut concessions (covering 4000 ha) served as the study locations in Madre de Dios.</p> <p>2.6 million ha of forests in Madre de Dios are rich with Brazil nuts; the total area under Brazil nut concessions is estimated to cover 1m ha (Perales & Guariguata, 2015).</p>	<ol style="list-style-type: none"> 1. Project influenced the practices of concessionaires who participated in the project by sharing findings (i.e., sustainable limit of timber extraction [1-2 trees per ha]) and capacity-building activities 2. FTA's recommended sustainable timber extraction limit (1-2 trees per ha) is not removed from current reference in national regulations/norms for timber extraction in Brazil nut concessions 3. All areas eligible for Brazil nut concessions in Madre de Dios are managed under a concession contract 4. Brazil nut concessions are properly/sustainably managed (i.e., concession holders adhere to/comply with Brazil nut regulations/norms) 5. Brazil nut concessionaires follow stricter limitations for timber extraction (i.e., FTA's recommendation) for sustainable Brazil nut management
Community Forest Management in Mesoamerica	Latin America	Guatemala	Petén (Maya Biosphere Reserve)	[low-end estimate, actual achievement to date] 53,597ha	The project aimed to feed input into renewal of community forest concessions in one of the study sites (Maya Biosphere Reserve) (up for renewal in 2019); 1 successful	<ol style="list-style-type: none"> 1. Other active community forestry concessions will be renewed for another 25 years 2. Active community concessions adhere to regulatory requirements and better management practices

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				[high-end potential] 352,807ha	renewal to date covering 53,597 ha (actual achievement figure) and potential renewal of all 8 other active concessions (covering 352,807 ha across 9 concessions in total).	
Management of Trees on Farms in Mesoamerica	Latin America	Nicaragua, Honduras	Catacamas (Nicaragua-Honduras Sentinel Landscape)	[low-end potential] 62,500 ha [high-end potential] 6,800,000 ha	The target study area of the Nicaragua-Honduras Sentinel Landscape covers 6.8m ha , supporting 822,175 smallholder households. The Catacamas landscape in Honduras covers 62,500 ha . Approximately 650 farmers in Honduras applied ShadeMotion to inform their practices Chocolate4All Project (~500 farmers) and IKI-TonF-Honduras Project (~150 livestock farmers).	<ol style="list-style-type: none"> 1. Potential for policy uptake of TonF management in Catacamas is realized 2. MNGS' planned pilots are successful to influence uptake and scaling of TonF management practices 3. Uptake of FTA tools (e.g., LDSF, ShadeMotion, TonFanalyzer) result in changed TonF management practices on-the-ground 4. FTA TonF tools/recommendations are scaled throughout NHSL and beyond 5. Successful/sustainable scaling of TonF management practices are supported by project partners, allies, research synergies, and future research in the NHSL
Sustainable Conservation and Management of Protected Areas in Mozambique	Africa	Mozambique	Cabo Delgado/ Niassa (Niassa National Reserve)	[low-end potential] not available [high-end potential] 4,200,000ha	The Niassa National Reserve covers 4.2m ha of land that have potential to be better managed as a result of FTA's influence on policy and practice.	<ol style="list-style-type: none"> 1. Project influence on Reserve managers' understanding and capacity-building was sufficient to improve management and monitoring within the Reserve 2. FTA engagement with new organization responsible for Reserve management during the transition period (before conclusion of project) was sufficient to influence uptake of project recommendations to improve management practice 3. The (unexpected) turnover of actors responsible for Reserve management is smooth and causes little disruption to progress made by FTA
Sustainable Forest Management in the Congo Basin	Africa	DRC, Cameroon	Tshopo (Yangambi Biosphere Reserve)	[low-end potential] 14,600ha [low-end estimate, actual achievement to date] 1,714ha	11 ha of pilot farms used to demonstrate sustainable management practices established in YPS Project. 10 ha of pilot farms established in surrounding areas of the Yangambi Biosphere Reserve by the FORETS Project (actually realized). The project area covers 400,000 ha [high-end potential].	<ol style="list-style-type: none"> 1. Pilot farms continue to be sustainably managed and maintained 2. There is no overlap in area of the pilot farms associated with the FORETS and YPS projects 3. Villages' application for CFCL arrangements are approved by government 4. Villages sustainably manage the customary land allocated by the CFCL

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				[high-end potential] 400,000ha	<p>Successful approval of 5 villages' CFCL arrangements will place 11,000 ha under community management. 11 management committees aim to plant 1,500 ha of customary lands with agroforestry systems by 2022.</p> <p>A total of 1,693 ha of agroforestry plantations planted and under improved management practices (actually realized) through the NPC Project. Project target was 2,100 ha (1,800 ha with INERA, 300 with Yanonge villages; low-end potential).</p>	<p>5. Management committees meet 2022 goal</p> <p>6. Management committees sustainably manage and maintain agroforestry on customary lands</p> <p>7. NPC training was sufficient for beneficiaries (i.e., extensionists, villagers) to learn agroforestry management</p> <p>8. NPC beneficiaries apply learning to better manage the plantations</p> <p>9. INERA stakeholders and Yanonge villagers continue to practice agroforestry management on the plantations post-project</p> <p>10. Awareness-raising and capacity-building were sufficient to stimulate uptake of sustainable management practices in the Yangambi Biosphere Reserve and other project target areas in Tshopo province</p>
Landscape Management of Dryland Areas in Sub-Saharan Africa	Africa	Ethiopia, Kenya, Mali, Niger, Burkina Faso	Not specified.	<p>[low-end estimate, actual achievement to date] 163,745ha</p> <p>[high-end potential] 269,337ha</p>	<p>>100,000 farmers practice landscape-level NRM off-farm</p> <p>•163,745 ha of off-farm land are under improved NRM</p> <p>143,067 farmers applying promoted SWC management options on-farm</p> <p>•105,592 ha of on-farm areas are under improved SWC</p> <p>105,481 farmers applying promoted climate-smart production options on-farm</p> <p>•60,835 ha of on-farm areas are under climate-smart management</p>	<p>1. Project reach and training leads to uptake of better management practices (e.g., NRM, SWC management, climate-smart management)</p> <p>2. [for high-end potential] There is no overlap in land where different management practices have been taken up on- and off-farm (potential for double-counting in practices adopted on-farm has been taken into account²⁹)</p>
Forest Monitoring in Central Africa	Africa	DRC, Cameroon, Central African Republic, Congo, Equatorial Guinea, Gabon, Chad, Sao Tome and Principe, Burundi, Rwanda	–	–	No targets listed. No evidence.	
FLEGT Mechanism for Illegal Logging	Africa	Cameroon, Ghana, DRC, Zambia, Kenya, Côte d'Ivoire, Mozambique, Liberia, Tanzania, Uganda	–	–	No targets listed. No evidence.	1. Consumer awareness and market demand drive sustainable production and management

²⁹ n.b. There is potential overlap in the on-farm areas where both SWC and climate-smart management options have been applied; to avoid double-counting, the high-end estimate was derived by adding the higher estimate of on-farm area together with the off-farm area.

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Sustainable Forest Enterprises in Cameroon	Africa	Cameroon	National	<p>[low-end estimate, actual achievement to date] 85,250.5ha</p> <p>[high-end potential] 1,300,000ha</p>	<p>DRYAD activities enhanced community participation in the management of 85,250.5 ha of community forests (project targeted 105,000 ha). Final report notes there is 'potential for 260 community forests covering >1.3m ha of secondary forest in Cameroon' (but most are not operational).</p>	<ol style="list-style-type: none"> 1. Project target is eventually achieved 2. Community forests are fully operational 3. Uptake and scaling of the approach as part of the ToC logic: with eventual scaling of the performance-based financing approach and Field Monitoring System by CFEs in Cameroon's community forests
Support to Landscape Restoration and Management in Asia	Asia	Malaysia	Sarawak	<p>[low-end estimate, actual achievement to date] 1,319,057ha</p> <p>[high-end potential] not available</p>	<p>As an immediate follow up to a FTA workshop, the Sarawak Government announced in March 2017 review of policies for managing Licensed Planted Forests in the state.</p> <p>The Sarawak Government has since enforced a new policy on forest management certification (requiring long-term forest timber licensees (FTL) obtain certification by 2022), in line with FTA recommendations for an action plan to expand certification to cover all FMU. As of May 1st, 2020, 14 FMUs have been certified covering a total area of 1,319,057 ha.</p>	<ol style="list-style-type: none"> 1. The new policy was developed as a result of the Sarawak Government's policy review stimulated by the FTA workshop 2. The policy requiring long-term FLT certification is properly enforced 3. Certification processes do not encounter administrative bottlenecks or delays 4. All remaining long-term FTLs will be certified by 2022
Support to Landscape Restoration and Management in Asia	Asia	Bhutan	Zhemgang, Trongsa, Trashigang, Mongar, Lhuntse	<p>[low-end potential] 35,549ha</p> <p>[high-end potential] not available</p>	<p>FTA's study sites across the five FMUs in Bhutan (Kekhar Working Scheme, Chendebji FMU, Khaling-Kharungla FMU, Lingmethang FMU, and Rongmanchhu FMU) cover 34,549 ha, which have potential to be better managed if future negotiations for PFES succeed.</p>	<ol style="list-style-type: none"> 1. Research partners (e.g., UWICE) continued to support ecosystem service assessments and PFES negotiations 2. All five FMUs successfully negotiate a PFES scheme 3. The PFES scheme is properly enforced and monitored 4. Communities are incentivized to apply for PFES 5. Certification processes do not encounter administrative bottlenecks or delays 6. Better management of upland forests and landscapes ensures provision of ecosystem services to local and downstream users
Support to Landscape Restoration and	Asia	Vietnam	Bac Kan	<p>[low-end estimate, actual achievement to date] 100ha</p>	<p>FTA's study sites in Ba Be district cover 54,876 ha, which have potential to be better managed. The proposed</p>	<ol style="list-style-type: none"> 1. Pilot is successfully implemented 2. Successful piloting expands PFES implementation in study sites

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Management in Asia				[high-end potential] 54,876ha	piloting of Decree 99 is planned for 100 ha in Bac Kan province.	3. Communities are incentivized to apply for PFES
Support to Landscape Restoration and Management in Asia	Asia	China, India, Indonesia, Nepal, Philippines		–	No targets listed. No evidence.	
Expanding Market Options via Landscape Management in Asia	Asia	Indonesia	West Nusa Tenggara, East Nusa Tenggara, Yogyakarta	[low-end estimate, actual achievement to date] 76,784ha [high-end potential] not available	1,218 ha of demonstration plots were implemented in Yogyakarta as part of the KANOPPI I&II projects. 75,566 ha under improved land use planning and environmental governance by Sumbawa District Planning Agency (West Nusa Tenggara), who drew upon FTA findings and scenarios to inform strategic district planning.	<ol style="list-style-type: none"> 1. KANOPPI trainings and demonstration plots were sufficient for beneficiaries to learn how to better manage NTFPs 2. KANOPPI beneficiaries apply learning and skills for better agroforestry, silvicultural, and apicultural management 3. Communities continue to maintain good management practices post-project 4. FTA findings and scenario projections from KANOPPI are accurate 5. Sumbawa District Planning Agency continues to apply FTA's findings/scenarios to inform future strategic district planning
Expanding Market Options via Landscape Management in Asia	Asia	Vietnam	Son La, Yen Bai, Dien Bien, Lam Dong	[low-end estimate, actual achievement to date] 4,420ha [high-end potential] 1,607,657ha	<p>Six AFLI FDT were established in three provinces (Son La, Yen Bai, Dien Bien), covering a total of 300 ha. AFLI established 300 ha of EL.</p> <p>AFLI activities supported 3,820 ha of existing son tra plantations to be rehabilitated and put under better management practices.</p> <p>Across Son La, Yen Bai, and Dien Bien provinces, an estimate of 1.4 million ha could be brought under son tra-based agroforestry management.</p> <p>In Lam Dong, FTA supported the development of the 2021-2030 Green Growth Action Plan (Decision No.68/QD-UBND) for the province. Based on ICRAF's scenario models, successful realization of the modelled</p>	<ol style="list-style-type: none"> 1. AFLI trainings, FDTs, and EL were sufficient for beneficiaries to learn how to better manage their plantations 2. AFLI beneficiaries apply learning to better manage their plantations 3. Plantation owners continue to maintain good agricultural and management practices post-project 4. [AFLI high-end potential] Other plantation owners are incentivized to adopt son tra-based agroforestry management practices 5. The potential area of land and forests modelled by the green growth scenario is governed and realized by Lam Dong Province's 2021-2030 Green Growth Action Plan 6. Lam Dong Province's 2021-2030 Green Growth Action Plan is implemented and enforced 7. Land and forests under Lam Dong Province's 2021-2030 Green Growth Action Plan are properly/ sustainably managed by

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					predictions indicates there is potential for 37,680 ha of agricultural areas to be put under sustainable farming practices and 169,977 ha of forests to be put under SFM.	stakeholders adhering to and implementing the action plan
Community Forest Management in Indonesia	Asia	Indonesia	South Sulawesi, Southeast Sulawesi, Gorontalo	[low-end estimate, actual achievement to date] 780,587ha [high-end potential] not available	In South Sulawesi, the Bulukumba district government allocated 314 ha of customary forest to the Ammatoa Kajang community. Through AgFor, 780,273 ha were placed under improved sustainable NRM, including agroforestry, agricultural, and forestry systems.	<ol style="list-style-type: none"> 1. Kajang community's customary rights are protected by policy and enforced 2. Kajang community sustainably manage the natural resources within the customary forest 3. AgFor trainings were sufficient for participating stakeholders to learn NRM and agroforestry practices 4. AgFor participants apply learning to better manage their land and natural resources 5. AgFor participants continue to maintain good agroforestry and management practices post-project
Community Forest Management in Indonesia	Asia	Indonesia	Jambi	[low-end estimate, actual achievement to date] 49,703ha [high-end potential] 500,000ha	In Jambi, KHLK's target for CBFM aims to designate 500,000 ha as village forest. 49,703 ha of village forest permits (HPHD) have been awarded under a 35-year license. There is strong evidence of FTA's involvement in both HPHD and RKHD processes through the 'Protecting biodiversity through improved CFM and agroforestry' Project.	<ol style="list-style-type: none"> 1. Village forest management plans (RKHD) are implemented and monitored 2. Community forestry schemes sufficiently incentivize communities to better manage land and forests 3. Land and forests under various community forestry schemes are properly/sustainably managed (i.e., communities adhere to/comply with HPHD requirements, etc.) 4. Other areas identified by the project as having potential for community/social forestry are eventually licensed and sustainably managed 5. Governments are equipped to effectively process, approve, and monitor HPHD and RKHD 6. KHLK target for village forest designation is fully reached
Watershed Management in South-east Asia	Asia	Indonesia	East Java, South Sulawesi, Southeast Sulawesi	[low-end potential] 228,747.5ha [high-end potential] 2,500,000ha	Project study areas: The Sumbawa Watershed covers an area of 20,756 ha . The watershed in the Nipa-Nipa Forest Reserve covers 7,877.5 ha . The Bialo Watershed covers 10,948 ha . The Biang Loe Watershed covers 5,260.5 ha . The Tangnga Watershed covers 9,798.5 ha . The Raowa Watershed covers 4,408.5 ha . The Labien-Leyboyan Watershed covers	<ol style="list-style-type: none"> 1. CIFOR and partner engagement through the 'Integrated Watershed Project' stimulates evidenced-based decision-making 2. Partner advocacy influences uptake of findings in policy and implementation 3. Policies and local-level regulations are properly implemented and enforced 4. Multi-stakeholder fora established through the projects continue to function effectively post-

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					<p>106,925.5 ha. The Rejoso Watershed covers 62,773 ha.</p> <p>According to Pratiwi et al. (2013), there are 2.5m ha* [potential] of heavily degraded forest lands across 108 watersheds. The KHLK adopted the IWMA to support management of these areas; CIFOR and NGO partners have supported the development of district regulations as well as municipal/regional development plans that will govern the implementation of watershed management on-the-ground.</p>	<p>project (via ongoing partner support/engagement)</p> <p>5. Multi-stakeholder fora effectively support integrated governance for the protection and preservation of the watershed(s) in question, facilitate monitoring, and hold stakeholders accountable to their responsibilities in the watershed</p> <p><u>*Important note:</u> Potential overlap with the area protected/managed under the Forest Moratorium (implies possible double-counting).</p>
Watershed Management in South-east Asia	Asia	Philippines	Apayao, Ifugao, Kalinga, Mt. Province, Benguet, Bohol, Lanao del Sur, Bukidnon, Misamis Oriental	<p>[low-end estimate, actual achievement to date] 124,507ha</p> <p>[high-end potential] 138,601ha</p>	<p>INREMP targeted 138,601 ha of watersheds (Chico River Basin, Wahig-Inabanga River Basin, Lake Lanao River Basin, Upper Bukidnon River Basin) [high-end potential]. To date, uptake of sustainable agroforestry and NRM practices in partnering CBOs' sub-projects have been applied to 124,507 ha (met ~90% of target).</p>	<p>1. Partnering CBOs continue to apply and maintain sustainable agroforestry and NRM practices in sub-projects and post-project</p> <p>2. Project target is fully reached</p>
Fire Management in Indonesia	Asia	Indonesia	National, Riau	<p>[low-end estimate, actual achievement to date] 85.5ha</p> <p>[high-end potential] 2,400,000ha</p>	<p>[high-end potential] 2.4m ha of peatland are protected under the 2017-2019 Grand Design for Fire Prevention.</p> <p>In Bengkalis Regency, Riau, community-based fire models have been applied on 11.4 ha of land. In addition, rewetting practices have been applied to 56 ha in Dompas village (1 big pond, 42 small ponds, canal blocking applied to 6 areas, 54 monitoring dipwells), along with sago planting on 7 ha. 11.1 ha are under community-based monitoring via CO-PROMISE.</p>	<p>1. 2017-2019 Grand Design policy is perfectly implemented and enforced</p> <p>2. No burning (anthropogenic or natural forest fires) occurs</p> <p>3. Successful demonstration of fire management practices leads communities to adopt and apply fire management practices in the long-term (e.g., monitoring system, rewetting, etc.)</p>

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Sustainable Oil Palm Management in Indonesia	Asia	Indonesia	East Kalimantan	[low-end potential] not available [high-end potential] 2,000,000ha	Potential area of HCV in East Kalimantan is 2m ha . Clear FTA influence on inclusion of HCV in East Kalimantan PERDA (PERDA No.7/2018 on sustainable plantation in Kalimantan Timur) through the 'Supporting Local Regulations for Sustainable Oil Palm in East Kalimantan' Project.	<ol style="list-style-type: none"> 1. PERDA is perfectly implemented and enforced 2. All areas eligible for HCV status are properly classified as HCV 3. HCV areas are properly protected, managed, and monitored 4. Oil palm companies adhere to PERDA regulations and set aside HCV areas 5. Oil palm companies do not take advantage of loopholes
Sustainable Oil Palm Management in Indonesia	Asia	Indonesia		–	No targets listed. No evidence.	<ol style="list-style-type: none"> 1. Consumer awareness and market demand drive sustainable production and management 2. Smallholders and companies pursue certification (e.g., ISPO, RSPO) 3. ISPO and RSPO are effectively implemented, enforced, and monitored 4. Smallholders and companies are incentivized to adhere to and comply with ISPO and/or RSPO regulations (i.e., benefit from certification schemes)
Climate Change Management in Asia	Asia	Indonesia	Papua	[low-end potential] 25,800,000 [high-end potential] 31,300,000ha	ParCiMon contributed to the low-emissions development strategies for Jayapura, Merauke, and Jayawijaya regencies targeting climate change management of 31.3m ha [high-end] of Papuan landscapes. The respective land-use plans cover 25.8m ha [low-end] .	<ol style="list-style-type: none"> 1. Low-emissions development strategies and corresponding land-use plans are effectively implemented and enforced 2. Provincial-level policies (e.g., RPJMD) supporting regency regulations are enforced 3. Targets listed in strategy and land-use plans are accurate and realized 4. Monitoring systems are effectively implemented and scaled to other regencies
Climate Change Management in Asia	Asia	Indonesia, Philippines, Thailand, Vietnam, Cambodia, Myanmar	National	[low-end potential] 7,220,000ha [high-end potential] 30,000,000ha	<p>Through the ASFCC Project, the area managed under social forestry arrangements in ASEAN member states doubled over the past decade, from 6.7m (in 2010) to 13.9m ha (in 2020) (putting 7.22m ha under newly improved management).</p> <p>If realized, additional social forestry target commitments of ASEAN member states will bring this to a total of at least 30m ha by 2030 [high-end potential].</p>	<ol style="list-style-type: none"> 1. ASEAN Working Group, ASEAN member states, and partners continue to support social forestry policy and action plans at the international and national levels 2. Social forestry arrangements are effectively implemented and enforced at the national and sub-national levels 3. Social forestry schemes sufficiently incentivize communities to better manage land and forests 4. The 2021-2025 Plan of Action for ASEAN Cooperation on Social Forestry is prepared and adopted by ASEAN member states and targets are realized

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					<p>5. Other ASEAN members are motivated and incentivized to implement social forestry</p> <p>6. By 2030, ASEAN member states' additional commitments for social forestry are realized and sustained</p>
TOTAL:				<p>Low-end estimate potential: 59,560,441.5 ha</p> <p>High-end estimate potential: 204,046,600 ha</p>	<p>1. FTA holds a credible position (i.e., viewed as a trusted partner), and is therefore able to exert influence over the way research agendas and policies advance</p> <p>2. FTA delivers effective training and capacity-building to target audiences, the learning and skills of which are successfully taken up, applied in practice, and scaled</p> <p>3. FTA's contributions to landscape management policy and practice change are significant enough to have bearing on the associated impact estimates</p> <p>4. External factors and processes do not interfere with, halt, or reverse FTA-influenced policy decisions and/or practice change</p> <p>5. Evidence sources containing impact estimates (i.e., targets, achieved impacts, potential impacts) consulted in the review are valid, accurate, credibly derived, and reliable</p>



Landscape view; the Yangambi Research Station is located along the banks of the Congo River.
(Photo: Ahtziri Gonzalez/[CIFOR](#))

The CGIAR Research Program on Forests, Trees and Agroforestry (FTA) is the world's largest research-for-development program to enhance the role of forests, trees and agroforestry in sustainable development and food security and to address climate change. CIFOR leads FTA in partnership with ICRAF, the Alliance of Bioversity International and CIAT, CATIE, CIRAD, INBAR and TBI.

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