Revised FTA Phase II Full Proposal: Annexes

Contents

Annex 3.2 Partnership strategy 2

Annex 3.3 Capacity development strategy 14

Annex 3.4 Gender 17

Annex 3.5 Youth strategy 21

Annex 3.6 Results-based management 24

Annex 3.7 Linkages with other CRPs and site integration 31

Annex 3.8 Staffing of management team and Flagship projects 61

Annex 3.9. Open Access (OA) and Open Data (OD) Management 134

Annex 3.10 Intellectual Asset Management (IA Management) 142

Annex 3.11 Communications tools and approaches 148

Annex 3.12. Assumptions and evidence used to develop aspirational targets 153

Annex 3.13 Accountability Matrix – Caveats to address during development of CRP2 full proposals 165

Annex 3.14 Response to ISPC comments 173

Annex 3.15 Support Platform (SP) on delivering impact and inclusion 183

Annex 3.16 Abbreviations 190

Annex 3.17 Sources cited 194

Annex 3.18 FTA's niche and priority setting 210

Annex 3.19 Sentinel Landscapes: Creating a data-driven network of socio-ecological indicators across the global tropics 214

Annex 3.2 Partnership strategy

Partnerships are critical to achieving research outputs and outcomes at scale for FTA. Co-designing, implementing and delivering FTA research together with strategic partners enhances FTA's internal capacity to generate demand-driven and relevant research results. Participating in creating salient, credible and reliable research results further strengthens the outreach partner's capacity to deliver research findings and approaches in their outreach and influence spheres. In addition, through our strategic partnerships, we develop capacities of relevant actors in FTA geographies at various scales to benefit from and apply FTA-generated research results.

The FTA research portfolio is based on several types and two levels of partnerships: managing/or strategic, contributing and scaling up/out (Figure 1). We distinguish between partners and service providers. Partners are strategic and long term 'allies'; e.g. organizations that share the FTA vision and mission and are willing to contribute their own resources to achieving the mission. Partners bring complimentary research and development skills and/or outreach opportunities that may otherwise be lacking within the FTA team. Based on their strengths and interests, partners have defined roles to play that contribute to achieving FTA's intended outcomes. Partners have mutual accountability to each other and to the mission of FTA. Thus, collectively, the strategic FTA partners are able to influence thinking, practice and attitudes of decision-makers at various levels. Service providers are project/grant-specific organizations or individuals (i.e. consultants) that are sub-contracted for a limited duration to perform one or more defined tasks; there is no guarantee that the relationship will last beyond that specific duration articulated in the contract. Service providers can be engaged and disengaged based on FTA's changing needs and opportunities in the external environment. Accountability is upward only in the sense that service providers are accountable to FTA management for delivering specific outputs and limited to the scope of the assignments/tasks entrusted to them.

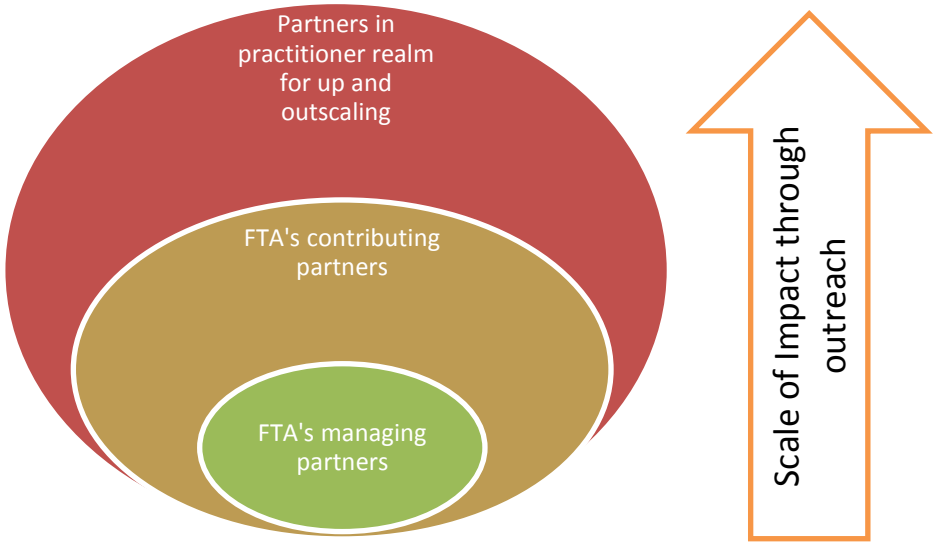


Figure 1. FTA's conceptual partnership model for achieving impacts at scale

The aim of various partnerships may include one or more elements of achieving excellence in research and scientific capacity development (discovery), testing and adaptation of concepts, tools, management options (proof of concept) and scaling (policy advocacy, advice and/or influence and developmental implementation).

We differentiate two levels of partnerships: Partners without whom FTA cannot achieve its mission constitute FTA's strategic or managing partners (Table 1), and all other types of partners are defined as contributing partners.

Managing partners have been closely involved in the design, management and governance through being part of FTA's management team. They co-invest in shared impact pathways, working together at discovery, proof-of-concept and scaling levels. They will be continuously involved in strategic and operational decision-making during FTA II. FTA's managing partners are CIFOR, ICRAF, Bioversity, CATIE, CIRAD, Tropenbos International (TBI) and INBAR. The inclusion criteria for managing partners were a) interest in partnering; b) relevance and criticality to achieving FTA mission; c) degree of alignment of partner's mandate, vision and mission with FTA agenda; d) complementarity of expertise and geographical coverage; e) potential for joint and/or aligned bilateral resources mobilization; and f) potential for sustaining the partnership.

Contributing partnerships have more specific but important roles. They may be limited to a single geography or a single research cluster. FTA's contributing partners participate in implementation and management of their own activities/roles but not in the overall management or governance of FTA. They are involved in the design and implementation of various CoAs under various Flagships. Examples include: CCAFS, WLE, DCL, PIM CRPs, partners that are specific to certain projects in Flagships or Flagships alone, but not to the whole of the program, for example, Ministries of Environment and Climate may be central partners to the Forests and Climate Change FP, and Ministries of Economics may be relevant to FP 3, but not to the other FPs. These partnerships will be continuously reviewed as we progress from design to implementation of FTA II. Contributing partners could be from research, practice or the private sector.

The nature and purposes of various partnerships also vary as do the roles and relationships between FTA and its partners. A typology with the roles of various partnerships is presented in Table 1.

Table 1. Partnerships Typologies relevant to FTA at discovery to scaling stages

Type and levels of partnership		Key role	Stage of Involvement in Research to Impact	Examples for FTA
Managing Partners		To successfully deliver on the FT&A research and development agenda; To advance scientific knowledge, methodologies, theories, state of the art of doing science on FT&A issues as well as integrate research results into global, regional, national and sub-national policies and programs (Discovery)	Discovery, proof of concept; scaling	CIFOR, ICRAF, Bioversity, CIRAD, CATIE, TBI, INBAR
Contributing Partners	Other CRPs	To benefit from each other's work, to develop output and outcomes at a shared geographic location, in a specific research theme, or CRP/cross-CRP activity; To advance scientific knowledge, methodologies, theories, state of the art of doing science on FT&A issues; Capacity development for research and implementation	Discovery; proof of concept	WLE, DCLAS, PIM, CCFAS, AN4H, Livestock, Genebanks

Type and levels of partnership		Key role	Stage of Involvement in Research to Impact	Examples for FTA
	Research: - ARIS - Universities - NARES	To benefit from each other's capacity and work, to develop output and outcomes at a shared geographic location, in a specific research theme, or CRP/cross-CRP activity; To advance scientific knowledge, methodologies, theories, state of the art of doing science on FT&A issues; Capacity development for research and implementation	Discovery; proof of concept	- ARIS(e.g. SEI, IIASA) - Universities in Global North (e.g. ZEF-Bonn, Wageningen, Utrecht, Columbia, Michigan, ETH Zurich, Free University of Brussels, Bangor University of Wales, Norwegian Univ. of Life Sciences (NMBU), North Carolina University, USA, SLU, Cornell) - Universities in developing countries (e.g. University of Kisangani, JKUAT, Kenya; Makerere, Uganda; Mekele, Hawassa and Wondo Genet College of Forestry in Ethiopia; Vietn. Forestry Univ) - NARES: (EMBRAPA Brazil; FORDA, Indonesia; KARI and KEFRI, Kenya; IRAD, Cameroon, IRDC, Cameroon; FRIM (Malaysia)
	Private Sector	To promote sustainable supply of FTA products and equitable and inclusive value chains and services	Piloting and/or Scaling	Unilever, Mars, Pioneer, Dupont, Nestle, the Cocoa Research Association, Clarins, DANONE Livelihoods Fund, Indonesian Estate Crop Fund for Palm Oil, Timber concessionaires, national SMEs

Type and levels of partnership		Key role	Stage of Involvement in Research to Impact	Examples for FTA
Scaling Partners	Regulators: - Ministries - International Conventions - Government forest management agencies - Government environmental agencies - Certifiers	To influence global and national policies relevant to FTA (e.g. reforestation plans, NAMAs, PES, INDCs, REDD+, LED strategies, Genetic Resource Conservation Plans)	Piloting and/or Scaling	- Ministries (e.g. Peru, Indonesia, Cameroon, DRC, Kenya) - International Conventions (CBD, ITTA, UNCBD, UNFCCC, UNCCD) - Governmental national bodies (e.g. local governments of three provinces in Northwest Vietnam, county governments in Kenya-Machakos, Makueni, Laikepia and Kitui) - Certifiers (FSC, Rainforest Alliance, PEFC)
	Policy Fora : - International organizations - Regional fora - Development organizations - Collaborative cross-border networks	- to influence global and national policies relevant to FTA (e.g. reforestation plans, NAMAs, PES, INDCs, REDD+, LED strategies, Genetic Resource Conservation Plans) - to communicate research results that are relevant to member countries / organizations / individuals on common FTA trans-boundary issues	Piloting and/or Scaling	- Collaborative cross-border networks (Governors' Forests and Climate Task Force, Earth Innovation Institute, Global Forest Alliance, Tropical Forest Alliance, SahelEco) - Intergovernmental Organizations (e.g. IUCN, FAO, IFAD), - Development organizations (e.g. World Vision, CARE, Action Aid, SNV) - Regional fora (ANAFE, AFF, SENAFE, EMBRAPA, AWARD)

Consultative Inclusion Process for new managing/strategic partners:

The managing CGIAR and non-CGIAR partners of FTA consult widely and frequently through FTA's management and steering arrangements on issues of strategic importance to FTA. The regulatory mechanisms for such consultations include FTA's monthly management team (MT) meetings, as well as special MTM and ISC meetings on partnership issues. For example, during a one-day dialogue organized at the end of December 2015 between FTA Phase I strategic partners with institutions interested in becoming FTA strategic partners, deliberations resulted in expanding the strategic partnership of FTA to include INBAR and TBI considering their strengths related to FTA's mission, geographical complementarity, national and regional focus, and its ability to mobilize additional financial resources. Other institutions that were considered for inclusion, but were not considered well suited for strategic partnerships at the CRP level, included IUCN, SEI, and IIASA because they did not meet all of the criteria outlined above for becoming strategic partners in FTA. Though IUCN, SEI and IIASA did not qualify as managing partners of FTA, they did qualify as strategic contributing partners for various Flagships based on shared interest and complementarity of mandates. These MT recommendations were subsequently approved by FTA's Independent Steering Committee in February 2016. We intend to continue with a similar approach to the expansion of strategic partnerships, as and when needed.

Partnership modalities

As far as possible, FTA aims to include partners at all stages of the research cycle and impact pathway. This will entail similar modalities regardless of whether partners are research or development partners. Proven mechanisms from FTA I that will be continued are:

- ***Co-leadership of initiatives*** FTA partners are among the founders of the emerging "Landscape Academy" and "African Plant Breeding Academy"
- ***Co-hosting staff*** e.g. with FTA full or part-time staff placements at CATIE, ZEF and Wageningen
- ***Developing joint research agendas and questions*** e.g. with NARS such as EMBRAPA in Brazil, FORDA in Indonesia, IRDC in Cameroon, NORAD
- ***Joint policy agendas*** e.g. Advising UNFCC COPs on the international climate regime (emerging REDD+ mechanisms, NAMAs), advising CBD on the sustainable use of biodiversity; advising IUCN on landscape restoration; COMIFAC; engaging sub-national and national governments and international intergovernmental platforms to inform policy decision-making processes on key issues currently under discussion. For example, in Riau and Kalimantan in Indonesia and Para in Brazil we will build on our contribution to ongoing debates on how to reduce the impacts of palm oil and beef.
- ***Supporting policy:*** At the national level, engaging key government actors, including the Ministries of Forestry, Environment, Agriculture, and Economics, and key state agencies in Indonesia and Brazil and other countries in Latin American and the Congo Basin to support policy-making for improving policy incentives
- ***Shared methodology development and application*** e.g. Simulistics (software SME) co-developing a proprietary modeling environment
- ***Direct support to partners' needs*** e.g. responding to calls from donors for assistance with sustainable intensification options, REDD+, and continuous field-based learning, helping to develop business models and sustainable practices needed for private sector sustainability initiatives to achieve their goals, e.g. World Cocoa Foundation (WCF), the Indonesian Palm Oil Pledge (IPOP), the Indonesian Palm Oil Association (GAPKI), the Brazilian Beef Exporters Association (ABIEC), and timber producers/traders organizations in the Congo Basin and Latin America
- ***Shared strategy, planning and review*** e.g. via bi-annual FTA science conferences
- ***Data sharing agreements*** e.g. FTA maintains several important online resources, databases and web mapping tools available through various portals (FTA website, Landscape portal, Dataverse, Terra)
- ***Shared studentships and degree courses*** e.g. a set of PhD studentships with partner universities in the north and south; Climate Change research with ZEF-Bonn; co-organizing Landscape Academy with Wageningen University; African Plant Breeding Academy with University of California at Davis

- ***Monitoring and evaluation*** of the quality of partnerships during annual f2f MTM meetings, with uplift budget scenario development of outcome challenge and progress markers

Strategic partnership activities

Ongoing engagement, dialogue and review: FTA's ToC and impact pathways require that FTA engages well with various policy processes at the national, regional and global levels to facilitate and interrogate the enabling environment. The ISPC also noted that FTA has built a comprehensive and relevant range of strategic partnerships for key functions (research, capacity development, knowledge sharing, action on practices, policy and institutional change, and management and governance), but that regular review will be essential to improving influence on enabling environment. FTA's Flagships intend to undertake such engagements effectively on issues of importance to their research and development.

FTA partners had been selected during Phase 1 and the Extension Phase through iterative processes of stakeholder analysis and dialogues, from global, regional and national levels, and pilot work together. The most effective of these partnerships are intended to carry forward into Phase II, with inclusion of TBI and removal of CIAT from the managing partnership.

FTA regularly reflects on partnerships through internal learning. For example, at the country level, FTA has reviewed its role in two key areas of partnership for policy influence, within national and sub-national levels and decided to take on board TBI and INBAR. In 2016, FTA has realigned the portfolio management to replace legacy project inclusion. The new rules of engagement require any new bilateral project inclusion based on a recommendation from MTM and subsequent approval by the FTA Director. FTA's strategic partners have been consulted and directly contributed to the pre-proposal and full proposals.

Regional initiatives: FTA's research agenda has evolved through continuous engagement in priority geographies during Phase I with relevant research and development partners for its relevance to national, regional and global demands. Inclusion of TBI as a managing partner further strengthens our capacity to manage the relevance of our research agenda to national needs and priorities in at least 10 countries of priority for FTA in Asia, Africa and Latin America. Besides, FTA's bi-annual science conferences will ensure continuous feedback on research agendas and design from national and regional perspectives. That feedback is considered, assessed, and wherever possible, integrated into FTA. In addition, we will continue to engage with regional organizations relevant to FT&A issues (such as ANAFE, AFF, SENAFE, EMBRAPA, AWARD) on issues of mutual interest at the FP level. Under an uplift budget scenario, we intend to meaningfully engage with forestry and agroforestry-related bodies of COMESA and ECOWAS.

Sustaining partnerships

The most important factors that FTA envisages to sustain and contribute to the success of partnerships are described as partnership modalities above. These include co-hosted staff, co-leadership of initiatives, joint research agendas and methodologies, and joint agendas for policies and outcomes.

One of the underlying principles of FTA's partnership strategy is that common agendas need to entail effective and full participation of partners into FTA's initiatives and goals. Hence in building Phase II FTA has not only invited partners to co-define outcome targets and impact pathways, but also the FPs have held their own f2f as well as virtual co-writing events, where strategic FP level partners have contributed effectively. FTA's managing partners discussed and responded to FTA's evaluation in MTM, and prepared the revised CRP responding to the feedback from SPPC and ISPCs. FTA also strengthens and sustains partnerships with NARS through working together on multiple projects that link across Flagships, for example with EMBRAPA, FORDA, KEFRI and KARI.

Clear lines of communication and responsibility are also critical to sustaining partnerships. FTA maintains lead contact persons in FTA and in partner organizations. Since the extension of Phase 1, the FTA Director has convened monthly MTM meetings to discuss developments and substantive issues affecting FTA. The agendas for these meetings are co-developed by MTM members and nothing is excluded that partners wish to discuss. FTA intends to continue this arrangement into Phase II. In addition, we are proposing a biannual

science seminar to present, discuss and revise, if needed, the science agenda. FTA strives to provide transparent sub-contracts and reporting procedures for partners that receive budget from the program, and memoranda of understanding or other assurances on a flexible basis when required by partners.

Strengthening FTA capacity to partner

FTA equates strength of partnership to strength of investments in the financial and staffing capacity for partnership. In Phase II, FTA will make partnering capacity more explicit through a crosscutting support platform termed Partnerships for Scaling and Impact. Five Flagship Project leaders and three cluster leaders of the support platform – all senior staff with substantial experience and specialized in partnerships – will devote 10 to 20% of their time to this platform closely linked to FTA and CGIAR research.

FTA will use multiple mechanisms to maintain and enhance partnership capacity and quality. First, the CRP will act on the advice of partners given at monthly management meetings. At a more operational level, FTA intends to ensure participation of partners in all key strategy, planning and review events. Partnership administration will entail capacity in – and improvement of processes for – partner sub-contracting, process management and reporting. Finally, FTA will provide technical and financial support to networks, platforms and events that are shared with partners.

Under the optimist scenario of an uplift budget (USD 1.3 billion W1+W2), FTA will use outcome mapping as a monitoring and management tool for contributing and scaling partners. It will be done through developing outcome challenge statements in order to define what we would like to see partners doing in the future to translate FTA outputs to outcomes. Progress markers will be used to monitor whether partners are moving in the direction of accomplishing the outcome challenge.

Some examples of strategic partnerships and modalities are highlighted in Table 2.

Table 2. Illustrative examples of Strategic Partnerships and Modalities

Name	**Tropenbos International (TBI)**
Convener	TBI
Specific focus and objective	FTA-TBI partnership aims to achieve the sustainable management of tropical forest lands for the benefit of people, conservation and sustainable development. This partnership will ensure that knowledge is used effectively in the formulation of appropriate policies and in the management of forests for conservation and sustainable development. The partnership links policy with FTA knowledge, policy makers with corporate and community practitioners, and northern with southern actors and agendas.
Science agenda	To promote and facilitate evidence-based multi-stakeholder dialogue in making knowledge work for sustainable and equitable governance and management of forested landscapes in the global South through applied research in four thematic priorities: productive landscapes, sustainable trade for domestic and international markets, local governance and community management of forests, and financing of sustainable forest management.
Geographic focus/location	Colombia, Democratic Republic of Congo, Ghana, Indonesia, Viet Nam; prospective- 2017 onwards partnerships with NGOs or research institutions in Bolivia, Honduras, Nigeria, Uganda, and Philippines.
Role of partnership in FTA	The role of partnership between TBI and FTA will primarily be in promoting the uptake of FTA research findings in policy and practices at local and national level in demand-driven processes, within selected CoAs and countries, and further participation in identifying relevant research questions for prioritized geographies. In particular, within FP3 TBI will contribute to the development of the research agenda and policy impact in CoA 3.3, support and participate in the development of proposals aligned with that research agenda, and dissemination of research findings. Within FP4 TBI will contribute to the overall ToC by convening, as part of the learning landscapes CoA 4, science-policy dialogues in 10 countries that will provide venues for research results, concerns of civil society and (intended) policies of governments to be discussed, evaluated and enriched as step towards uptake and modification to suit local circumstances. TBI's long-term relationship with Forestry institutions in target countries is key to the chance of success. All other FTA research will contribute to these local, demand-driven processes. TBI will align bilateral programs and projects with FTA CoAs, and engage in relevant international networks including LPFN, TFA2020 in line with the FTA ToC.
Key CGIAR partners and their roles	CIFOR and ICRAF, both will provide research results, and participate in multi-stakeholder platform and policy discussions to offer evidence based insights.
Key 'external' partners and their roles	TBI engages with partners to support several goals: • applying the results of research; • disseminating results to wider audiences; • achieving better decisions on forest policy, forest management and the general field of TBI's activities (research, capacity building, etc.); and • access to funding. Key partners are at local and national level in the program countries: civil society organizations (CBOs, NGOs, Research institutions, Universities, Training Institutes) and public agencies (ministries, forest and landscape sector agencies, local authorities, donors). Other partners include ministries in the Netherlands, a variety of international development, research organizations and (forest) finance providers, and international NGOs and interest groups.
Contribution to impact pathway and theory of change	TBI's contribution is within the FTA's Adoption and Uptake pathways (rather than in the research component). In general this is anticipated to be in the form of multi-stakeholder dialogues for landscape-level learning, and engaging platforms of financial and landscape practitioners and financial service providers for improving the conditions and

	impacts of finance for smallholders.
Name	**Tropical managed Forest Observatory (TmFO)**
Convener	Cirad
Specific focus and objective	TmFO is an international network coordinated by Cirad which aims to assess the resilience of tropical production forests. TmFO aims to assess the impact of logging on forest dynamics, carbon storage and tree species composition at regional level in the Amazon basin, Congo basin and South East Asia. For this, TmFO is carrying out a meta-analysis based on data provided by existing permanent sample plot network in the three main targeted regions (Fig. 2). In these three regions, permanent sample plots have been set up and forest dynamics monitored for now several decades by research institutions involved in TmFO. The results are expected to provide important information on forest dynamics after logging to be used to recommend new forest management practices based on the conciliation of compromises between benefits and environmental services (biodiversity and carbon storage).
Science agenda	While deforestation in the tropics remains a major environmental issue to be tackled, forest degradation deserves more attention from a broad range of stakeholders concerned about social and ecological well-being. Over half of all tropical forests have been cleared or logged, and almost half of standing primary tropical forests, up to 400 million ha, are designated by national forest services for timber production. The portion of tropical forests managed for timber extraction, hereafter referred to as "managed forests", will therefore play key roles in the trade-off between provision of goods and maintenance of carbon stocks, biodiversity, and other services. However, so far, most of our understanding of tropical forest yields from plot networks located in old-growth undisturbed forests or in secondary forests, while the dynamics of managed forests at the regional and continental scale remains poorly studied. Monitoring of managed forests is important for myriad reasons including the need to understand their roles in the global carbon cycle and the trade-offs between environmental impacts and human benefits. In regards to these trade-offs, the results of monitoring can be used to design silvicultural treatments that mitigate any deleterious impacts of forest use and enhance the resilience of forest subjected to unavoidable impacts so as to maximize the conservation values of those forests. Moreover, given that forest management practices, forest structure, and dynamics differ widely among tropical countries and regions, assessments of the impacts of different practices are needed at regional and continental scales to inform policy. TmFO will contribute to better understand the role of tropical managed forest to provide goods (Timber, non-timber forest products) as well as environmental services on a long term and sustainable basis.
Geographic focus/location	Amazon Basin and Guyanas (Brazil, Guyana, Surinam, French Guiana, Peru, Bolivia), Africa (Gabon, CRA), Asia (Indonesia, Malaysia)
Role of partnership in FTA	The role of partnership between TmFO and FTA is to provide based science evidence on how tropical managed forests can contribute to both production of goods and provision of environmental services. TmFO will assess the capacity of the remaining production forests to provide such good and services as well as their capacity to respond to future tropical market demand. Therefore, TmFO is mainly involved in FP 3 (Value Chain) CoA 3.1.
Key CGIAR partners and their roles	CIFOR and Bioversity
Key 'external' partners and their roles	TmFO involves so far 20 forestry research institution which contribute to the network by sharing their data in order to answer the following main research questions: • How resilient are tropical forests to logging disturbance? • What is the conservation value of managed natural forests? • What are the trade-off between benefits of management and resulting impact on environmental services (goods, carbon, biodiversity)?

	• How responses vary across regions and across continents?
Contribution to impact pathway and theory of change	The work of TmFO provides authentic research findings on forest dynamics after logging from various agro-ecological settings, socio-economic and ecological trade-offs, which form the basis for testing and adaptation at the proof of concept stage in other contexts. The network inspires innovation and advancement in research methodologies, research questions amongst the network members.
Name	**ASB Partnership for the tropical forest margins**
Convener	CGIAR (initially established as a system-wide program)
Specific focus and objective	ASB 20-year partnership aims to raise productivity and income of rural households living in the tropical forest margins without increasing deforestation or undermining essential environmental services.
Science agenda	ASB is the only global partnership devoted entirely to research on the tropical forest margins. ASB explores options for shaping land use at forest-agriculture interfaces in the humid tropics that influence trade-offs and synergies between environment, development and climate along tropical forest margins. ASB will focus on three main action research programs between now and 2017 namely: 1. Landscape approaches to Reducing Emissions from Deforestation and forest Degradation (REDD+) and Reduced Emissions from All Land Use (REALU) 2. Swiddens (shifting cultivation) in Poverty Alleviation, Climate and Environmental Services –SPACES. 3. Synergies between Mitigation and Adaptation for Rural landscape Transformations. ASB seeks to contribute to the policy, institutional and knowledge infrastructure for avoided deforestation (REDD+), Nationally Appropriate Mitigation Actions- NAMA and synergies between climate change mitigation and adaptation at the international and national levels in a manner that is effective in reducing net CO2 emissions from tropical forest landscapes, fair to the people dependent on those landscapes for their livelihoods, and sustainable in terms of livelihood benefits, ecological outcomes and financial inflows.
Geographic focus/location	Amazon (Peru, Brazil); South East Asia (Indonesia, Vietnam, Philippines, Thailand); Congo Basin (Cameroon, DRC)
Role of partnership in FTA	The role of ASB partnership in FTA is primarily in co-producing science in a pantropical set of learning landscape, providing the necessary grounding in disparate regional and national contexts and promoting of the uptake of FTA research findings in policy and practices at local and national level in demand-driven processes. It also supports further identification of relevant research questions, support and participate in the development of proposals aligned with these research questions, dissemination of research findings, policy impact as well as science-policy dialogues in ASB countries. ASB also enables to connect across multiple CRP's (FTA, HumidTropics, CCAFS, CGIAR Research Program on Policies, Institutions, and Markets (PIM) and CGIAR Research Program on Water, Land and Ecosystems (WLE)).
Key CGIAR partners and their roles	ASB was founded as a system-wide partnership program of the Consultative Group on International Agricultural Research (CGIAR) and contributed to CGIAR success by facilitating partnership in research among CGIAR Centers in the tropical forest margins. ICRAF, CIAT, IFPRI and IITA are key CGIAR partners of ASB which provide research results, and participate in multi-stakeholder platform and policy discussions to offer evidence based insights.
Key 'external' partners and their roles	ASB is a global partnership (of about 70 organizations) between international and national agricultural research institutes, universities, non-governmental organizations, community and farmers' groups working to address climate change while at the same time improving livelihoods in the agriculture-forest landscape of the humid tropics.

	All partners can be found at http://asb.cgiar.org/page/partnership ASB engages with partners to support several goals: • Co-production of science • Applying the results of research • Catalyzing results into policy • Disseminating results to wider audiences • Capacity building • Access to funding
Contribution to impact pathway and theory of change	ASB's contribution is within the valuable comparative analyses and cross-site learning between the benchmark sites which represent similar agro-ecological environments but with varying socio-economic and political conditions. This is also in generation of multi-stakeholder and science-policy dialogues, generating new knowledge that will shape policies and practices, institutional reforms and technologies that all lead to the production of global public goods.
Name	Collaborative Partnership on Forests
Convener	UN Economic and Social Council (ECOSOC)
Specific focus and objective	The Collaborative Partnership on Forests (CPF) is an informal, voluntary arrangement among 14 international organizations and secretariats with substantial programs on forests. These agencies share their experiences and build on them to produce new benefits for their respective constituencies. They collaborate to streamline and align their work and to find ways of improving forest management and conservation and the production and trade of forest products. The members are also forming increasingly close and valuable strategic partnerships with one another, benefiting from shared expertise and pooled resources. The mission of the Collaborative Partnership on Forests is to promote sustainable management of all types of forests and to strengthen long-term political commitment to this end. The objectives of the Collaborative Partnership on Forests are to support the work of UNFF and its member countries and to enhance cooperation and coordination on forest issues.
Science agenda	This is not a research partnership
Geographic focus/location	Global
Role of partnership in FTA	The CPF is a very important conduit for international policy work related to forests and trees.
Key CGIAR partners and their roles	CIFOR, ICRAF – providing evidence based policy recommendation and scientific backstopping to the CPF
Key 'external' partners and their roles	The complete list of partners is available in the CPR webpage but it gathers the Secretariat of the 3 UN Conventions, The World Bank, The GEF, UNDP, ITTO, IUCN and is chaired by FAO
Contribution to impact pathway and theory of change	The CPF partnership is an essential boundary organization in the uptake stream about international policies, helping disseminate research findings relevant to the international dialogue on forests.

Annex 3.3 Capacity development strategy

The overall aim of FTA's capacity development efforts is to continue to fill critical capacity gaps among research and development actors and their networks to attain a balance of agricultural development with sustainability objectives, as illustrated during FTA Phase I and acknowledged by ISPC[1]. FTA's ToC considers capacity development and high-impact strategic partnerships with development actors and global initiatives instrumental in moving its research results along impact pathways of various FPs. FTA operationalizes Capacity Development (CapDev) as a non-linear complex change process that occurs in and between individuals, organizations, institutions and their networks to strengthen linkages and the (collective) capabilities for innovation in the FTA science of discovery and delivery at various scales, and enables partner research and development organizations to innovate and achieve impacts. FTA as a research for/in development program will strive to create and strengthen capacities of its critical research and development partners, globally, nationally, sub-nationally, and locally. However, FTA's CapDev interventions form only a small part of the change processes in the complex innovation system that requires constant adaptation to internal and external contextual changes and hence a continuous change in capacities.

CapDev Role in impact pathway

For FTA's impact pathways, capacity development acts as an enabler at each stage of research towards achievement of outcomes. At the discovery stage, capacity to frame right research questions, choose appropriate methodologies, and collect and analyze data is required, which is achieved through developing individual capacities in partner research organizations through developing future research leaders. At the same time, FTA's research in development and co-learning with development partner paradigms require capacity to frame credible and relevant science from which development partners' knowledge needs are met. This is achieved through engaging development partners at global, national and sub-national scales from the beginning in an action research mode. For the proof of concept stage, FTA delivers innovative learning materials and delivery approaches. For scaling up and out, FTA develops capacity to innovate, strengthens relevant innovation/multi-stakeholder platforms and communities of practice.

FTA's first target is the global and regional multi-stakeholder innovation platforms and business fora through knowledge provision on thematic issues that FTA research addresses (FP 1, 3, 5). FTA's second target will be enabling national and sub-national governments, and partnering INGOs to collaborate in the generation and use of research results and piloting of solutions, as well as co-developing tools and materials for outscaling (FP 1, 2, 3). Third, FTA will target local level NGOs and CBOs to experiment with research-based solutions, learn from experiences and refine approaches for testing at larger scales of landscapes (FP4). The strategic actions to operationalize CapDev as an enabler along the impact pathway emphasize four elements: strengthening partner capacity to design and deliver scientific solutions through development of future research leaders, innovative learning materials and approaches, and institutional strengthening.

The individual Flagships provide the mechanisms whereby increasing abilities to demand, undertake and utilize research lead to incremental improvements in capacity to manage FTA resources sustainably. FTA intends to work at individual, organizational and institutional levels of capacity development, and with both researchers and research users, including organizations and networks. FTA is committed to improving its monitoring and evaluation of capacity development outcomes and impacts during Phase II, by integrating it into its overall MEL system.

Overall, FTA aims to contribute to three capacity-related sub-IDOs as indicated in Table 1 through a set of high intensity CapDev interventions supported by several medium and low intensity interventions in specific geographies (see section on indicators below).

1 Sources cited are listed in Annex 3.17.

Table 1. FTA's CapDev interventions contributing to various capacity-related Sub-IDOs of the SRF

CapDev Element (intensity)	Capacity Related Sub-IDOs			
	Increased institutional capacity of partner research organizations	Increased individual capacity in partner research organizations	Increased capacity for innovation in partner research organizations	Increased capacity for innovation in partner development organizations
1. Capacity needs assessment and intervention design (medium)	√		√	√
2. Learning materials and approaches (high)		√		√
3. Develop CRP's and Centers' partnering capacity (low)				
4. Develop future research leaders (high)	√	√		
5. Gender sensitive approaches (medium)	√			
6. Institutional strengthening (high)	√			
7. Monitoring and evaluation (medium)	√	√	√	√
8. Organizational development (low)				
9. CapDev research (low)				
10. Capacity to innovate (high)				√

Strategic CapDev actions

The major target audience of FTA encompass academic and applied research institutions (FP 1,2,3,5) to communities of practice (FP2, 4), multi-stakeholder platforms working on innovative value chains for FTA products, functions and services for smallholders (FP1,2,3) global processes, frameworks and networks on global climate and FT&A policies. Table 2 provides an overview of the intensity of CapDev actions within various FTA Flagships.

Table 2. Targeted CapDev interventions by FTA Flagship Projects

CapDev Element	FTA's Flagship Projects					
	Tree Diversity	Livelihood Systems	Value Chains	Landscapes	Climate Change	Other cross-cutting
1. Capacity needs assessment and intervention design		√				√
2. Learning materials and approaches	√	√	√	√	√	
3. Develop CRP's and Centers' partnering capacity						√
4. Develop future research leaders	√	√	√	√	√	
5. Gender sensitive approaches	√		√			√
6. Institutional strengthening		√	√		√	
7. Monitoring and evaluation						√
8. Organizational development						
9. CapDev research						√
10. Capacity to innovate	√	√	√	√		

Most of the capacity development actions will take place within various Flagships. In order to foster learning for impact across FTA, and with other CRPs, a Capacity Development Coordination CoA in the FTA's supporting platform (SP) is intended to support the FTA Flagships by a) aligning capacity development research and interventions to the CGIAR Capacity Development Framework elements; b) nurturing a vibrant FTA CapDev working group from among the staff engaged in CapDev activities within various Flagships which will share and learn from CapDev experiences across the FTA portfolio, c) further operationalizing systems and tools to facilitate quality CapDev and monitor and assess CapDev interventions across the entire portfolio; d) support capacity needs of FTA's managing partners to move research results along FTA's impact pathway; e) supporting strategic capacity development interventions for the partnering CGIAR and non-CGIAR research and development partners, and f) where feasible, commission FTA-specific ex-post impact assessments of CapDev interventions in select FTA projects. The cluster will be coordinated by ICRAF, which will also act as a liaison between CGIAR's CoP on CapDev. Wherever needed, the five Flagships will link capacity development actions for greater effectiveness and efficiency, and work with other CRPs (see Annex 3.15 for more information about the Support Platform).

FTA intends to collaborate closely with DCL and WLE CRPs' CapDev teams for exchange of ideas, lessons, approaches and MEL systems. The collaboration is in principle agreed between the relevant experts in the three CRPs and will be further operationalized during the implementation.

Indicators that track progress and contribution to CapDev sub-IDOs

Though several indicators could be used to track the progress of FTA towards achievements, FTA will only focus on tracking progress against the four high intensity CapDev elements, which align with FTA's overall ME&L framework. FTA proposes to assess progress by using a combination of output, process and outcome indicators. The proposed CapDev indicators that FTA intends to track are:

a) CapDev Element 1: number of CRP managing partners adapting and using methodologies and approaches
b) CapDev Element 2: Number of targeted users and organizations include learning materials and approaches into their CapDev processes; number of frameworks/models approaches adopted/adapted by targeted organizations
c) CapDev Element 4: Number of ISI publications co-authored by students and young scientists; number of funded research proposals involving fellows, post-docs and alumnae of FTA
d) CapDev Element 5: Proportion of women among students and post-docs involved in FTA research at partner organizations; gender-sensitive sustainability standards proposed by FTA used/adapted/included in monitoring tools accepted and used by respective organizations
e) CapDev Element 6: Number of networks that institutionalize their standards based on FTA recommendations; and proportion of communities of Practice/Multi-stakeholder platforms inspiring innovation in FTA research, practice and policies
f) CapDev Element 10: Impact resulting from adoption of innovation: Indicators to be picked up in broader CRP impact assessment

The progress along these indicators will be tracked through FTA's MELIA system and/or as well as appropriate ex-post impact assessments, where feasible.

Budget

On an overall basis, FTA intends to spend at least 10% of its resources on CapDev, though the levels of investments may vary across various FPs (see Section 1.0.10). With the current budget planning, CapDev represent 13% of the whole CRP budget (excluding management costs).

Annex 3.4 Gender

Synthesis of gender analyses and contribution to Phase II priority setting

The first phase of the CGIAR Research Program *Forests, Trees and Agroforestry* had a robust institutional architecture in place very early for gender mainstreaming. The CRP Gender Strategy produced in 2013 was one of the first to be approved by the ISPC and the Consortium office. Subsequently, a Gender Integration Team (GIT) representing the four participating Centers was created to ensure the implementation of the strategy and lead gender integration efforts across component Flagships.

Gender research led by FTA focal points in Phase I generated substantive gender-relevant knowledge, research outputs and insights that enhanced understandings of key institutional, cultural and attitudinal elements that influence gender inequality and hinder sustainable management of forest and tree resources. FTA focal points at the same time provided sustained, tailored support to Flagship science collaborators and partners across participating Centers in the research program.

In 2013, four cross-country[1,2,3,4], comparative studies set baselines for research in three major Flagship areas (climate mitigation/REDD+, NTFP value chains, and forest use and management). The studies illustrated how gender disparities in information, credit and institutional design (e.g. elections as mechanisms for selecting forest committee members) constrain women's participation in decision-making as well as in benefits capture. The findings and learning from these studies inform the gender research questions developed in Flagships 3 and 5.

Analysis of data by Coleman and Mwangi (2013) across 10 countries in Africa, Asia and Latin America shows that a history of women's participation, especially when women are seated on forest councils or attain leadership positions, is highly correlated with less disruptive conflict. The study substantiates earlier research on forest user groups in South Asia. Building on these findings, research in Phase II will study different approaches to forest management, the institutional arrangements that promote meaningful participation of both men and women, and their impact on smallholder livelihoods at the forest margin.

Ethnographic research in Southeast Asia and sub-Saharan Africa by gender scientists in FTA also documented the highly uneven effects of agribusiness expansion on women's and men's relative capabilities, access to land and capital, and employment prospects in Indonesia[5]. This, among other findings, supported the creation of a broad research theme within Flagship 5 that focuses on socially inclusive and gender responsive business model development. Other research in South Asia has explored how migration influences forest governance and decision actors, shedding light on the implications of migration and multi-local livelihoods on women and men in forested landscapes[6]. Moving forward in Phase II, these insights will guide and shape directions for further research on migration and gendered livelihoods in forested landscapes in this region.

As part of the cross-CRP global comparative study 'Gennovate'[7], an FTA-led case study on gender norms and agency shaping forest and tree management processes in Kyrgyzstan showed that barriers to informal sharing of knowledge across and within gender groups, coupled with men's overreliance on a poorly functioning formal extension system, critically inhibit the dissemination of innovation in natural resource management. Results from the study contrasted with those arising from two similar case studies in Vietnam, another post-socialist context, where highly dynamic informal knowledge-sharing systems were observed. These findings are prompting renewed attention to strengthening informal and formal systems for knowledge sharing in Phase II. Other research that focused on community forestry in Mesoamerica threw light on the potential risk for forest user associations whose members are aging and that lack a succession plan as part of community planning processes. Similar research in Kyrgyzstan revealed the important role age plays in shaping access to 'rented' forest lands – given the shortage of land available to newly married couples. Phase II research will build on these findings to further explore how young women and men can be supported to pursue sustainable livelihoods and participate in joint forest management.

Innovative gender research approaches and participatory methods developed and tested in Phase I brought into sharp focus the highly differentiated nature of knowledge, management and preferences for forest

genetic resources across different sex and age groups. One example is the application of agent-based models and role-playing games in the study of gendered behavior in land-use decisions and analysis of gendered dynamics that shape the multi-functionality of landscapes. Flagship 4 will deepen the understanding of these dynamics in CoA 4.4 using participatory land use planning methods that support effective and inclusive negotiations in multifunctional landscapes, thus ensuring representation of women and young people.

Innovative participatory methods were also used to enrich a quantitative impact evaluation of Nepalese home gardens with in-depth qualitative analysis comprising detailed contextual analyses, focus group discussions and life histories of women and men from marginalized communities. Mixing methods brought into relief the specific experiences of different gender, age, ethnic or socio-economic groups and the unexpected outcomes as well as processes of empowerment that were achieved. The approach will influence impact assessments in FTA Phase II research.

In Uganda and Nicaragua, FTA researchers employed a participatory research tool, Adaptive Collaborative Management (ACM)[8], to work with local communities to jointly identify and address barriers to gender inclusive participation in decision-making. The approach helped to generate new spaces for women to participate and build understanding between women and men from different socioeconomic backgrounds about the benefits of inclusiveness in forest management. The project has also increased women's confidence, while improving men's attitudes toward women's leadership. As a consequence, women have benefitted from greater opportunities to plant their preferred trees (including taboo ones) on farms that they now have secure tenure over. This approach will be adapted for future work on joint forest management in Phase II.

A FTA-supported gender research fellowship program facilitated the design and testing of a harmonized participatory research approach for studying social inclusion across multiple countries. In five countries, working in groups segregated by gender, age and in some cases ethnicity created an opportunity to share knowledge across groups, promote inter-group understanding and respect, confidence among women and marginalized groups, and research quality. This approach will be scaled out in the second phase of the CRP.

Efforts to develop gender analytical capacities in relevant forestry and agroforestry research programs and projects during the last four years of CRP implementation yielded substantive results: at least 180 scientists and partners were trained in gender concepts and research methods, and more than 20 toolkits and guidelines for gender sensitive research have been developed.

In addition, robust communication products developed by the gender team contributed significantly to communicating FTA gender research in language and formats accessible to a wide range of stakeholders at various levels. One example was a CIFOR-led collaboration with thirteen different organizations, including UN bodies and international non-governmental organizations, for the compilation and dissemination of a series of briefing notes showcasing FTA collective contributions to promoting gender equality in climate change during COP2015 in Paris.

The second phase of the CRP will build on the capacities developed and lessons learned through the gender mainstreaming process, and will broaden its focus to areas that had not been developed in Phase I. This will include: moving forward from the traditional understanding of gender issues, incorporating the latest thinking on gender and development in capacity-building efforts, creating learning and knowledge-sharing platforms, and supporting the integration of gender dimensions in monitoring and evaluation frameworks. Related activities and expected results are referred to in the gender research strategy section of the proposal (see Annex 3.15 for more information about the Support Platform and its work with gender).

The results, experiences and capacities built from engagement in these early research and knowledge generation activities in Phase I have crucially informed research priority setting and the thrust of the gender research strategy for Phase II, setting critical baselines for strategic research that will directly contribute to the gender IDO and sub-IDOs.

Overview of gender operationalization in research agenda in Phase II FTA agri-food systems research

The gender strategy for FTA includes a strand to support gender integration and strategic research across component Flagships, and a complementary strand that will continue to focus on gender mainstreaming and coordination efforts across the Flagships. The operationalization of gender dimensions within each Flagship narrative is summarized below and described in greater detail within each Flagship narrative.

Flagship 1 – Genetic Resources for Production and Resilience: Gender aspects of tree germplasm production and delivery will be addressed by exploring the preferences of men, women and other social groups with respect to tree species and traits for conservation, domestication and utilization as well as inclusive and gender responsive delivery systems.

Flagship 2 – Enhancing trees and forest contribution to smallholder livelihoods: Research will identify gender-specific contexts underpinning decisions and choices over trees, crops, livestock and other livelihood components at the household and community levels. Approaches will be tested to lift barriers impeding the participation of women and marginalized groups in community forestry so as to promote more inclusive joint forest management.

Flagship 3 – Sustainable Global Value Chains and Investments: Gender research will be operationalized in Phase II through assessments of the gendered implications of cash-crop expansion and various private commitments, such as zero-deforestation and product certification schemes. Research will also focus on analysis of appropriate tools and methodologies that promote inclusive and equitable business models and value chains, highlighting benefit-sharing mechanisms relevant to gender, age and ethnicity aspects, and their use for ensuring sustainable forest development.

Flagship 4 – Landscape Dynamics, Productivity and Resilience: Research will explore gender-specific decisions and influences over changes in land-use patterns; and the heuristics that men and women use in regards to their livelihoods, and how these relate to their expectations of landscape functions. Research in this Flagship will deepen understanding of contexts underpinning men's and women's choices in relation to external drivers/actors shaping decisions over land use and landscape management.

*Flagship 5 – Climate change mitigation/adaptation opportunities in forests & agroforestry***:** Research in the new Cluster of Activities on forests and energy will address gender aspects of producing, transporting and dealing with wood energy, and will investigate the differential impacts of emissions reduction in schemes that prioritize the role of men and women, and indigenous and marginalized communities in forest management. There will also be a continued focus on developing recommendations for gender sensitive Nationally Appropriate Mitigation Actions (NAMAs) and policy making on REDD+. Strong collaboration with CCAFS is envisaged to identify trends in men's and women's use of forests and trees to support gender-sensitive climate-smart agricultural (CSA) practices.

Monitoring progress, measuring results

Monitoring will be done on two levels, (i) gender integration in research and action across Flagship portfolios, and (ii) contribution of strategic gender research to transformative outcomes on equity and inclusion in particular Flagships.

In (i), the Gender Equality in Research Scale (GEIRS) will be used to monitor and track gender integration in relevant Flagship projects. GEIRS is based on a set of minimum standards for gender integration that should be applied in all projects assessed as relevant from a gender perspective. Application of the tool will facilitate systematic assessment of the application of gender analyses and collection of sex-disaggregated data, and will also identify projects that will require support from the GIT.

In (ii), the GIT will work closely with the Monitoring and Impact Assessment team to conduct impact studies on selected projects. Selected studies will examine gender-differentiated impacts and gender relations in forests and agroforestry landscapes. The focus of the studies will be twofold: i) to identify which specific types of interventions support or foster greater equality between men and women of different ages and

sociocultural backgrounds in forests and agroforestry landscapes; and ii) to monitor progress and contributions toward sub-IDOs 1 and 3.

Target beneficiary populations

Gender research and capacity development efforts are integrally connected to research work in and across component Flagships. Thus, target beneficiary populations for gender research and capacity development will be the men, women and other social groups in the selected geographies in which Flagship research clusters of activities will be conducted. These particular geographies are well aligned with the site integration strategy developed by the CGIAR consortium.

Budget

On an overall basis, FTA intends to spend at least 10% of its resources on Gender, though the levels of investments may vary across various FPs (see FP budget narratives). With the current budget planning, Gender represents 12% of the whole CRP budget (excluding management costs)

Annex 3.5 Youth strategy

Landscapes, including forested and tree-based landscapes, serve as the superstructure on which the world's population – nine billion people by 2050 – depends to meet the full range of human needs[1]. FT&A systems have an important role in solving many of today's global change problems while creating sustainable livelihoods and greener growth. But the world's youth (young men and women between 15-35 years of age), especially in developing regions, have only recently been recognized as a critical human asset base that needs to be mobilized to drive greener rural economies and social transformations and as potential beneficiaries of better FT&A resources' management to enhance their livelihoods and opportunities. Evidence suggests that many youth are choosing not to pursue livelihoods as farmers. This has implications for national and international efforts to drive economic growth through investments in agriculture. An understanding of the aspirations of rural youth and the links between aspirations and career decisions will be critical if agricultural policies are to achieve their intended outcomes[2].

A wide range of demographic projections converge on the determination that the number of young people, the majority of who are domiciled in developing regions, would increase by 1.3 billion by 2050[3,4]. This places them squarely at the heart of today's strategic opportunities to secure sustainable futures through agri-food systems rooted in strong stewardship of the natural resource base and propelled by inclusive value chain opportunities. Figure 1 shows a snapshot of demographic trends across three of the developing regions of the world: sub-Sahara Africa, South Asia and Southeast Asia.

Capitalizing on this demographic dividend requires youth-responsive programs and policies that strengthen capacities of young men and women to engage in remunerative activities in the agriculture and natural resource sector, including forest management. Research e.g. on cocoa production in Ghana demonstrates the importance of taking into account restrictions on youth's increased engagement for questions of sustainability and intensification[5]. Consistent with the "do no harm" principle, robust research on youth engagement in FT&A landscapes is a critical element in this effort to inform evidence-based policy and responsive interventions.

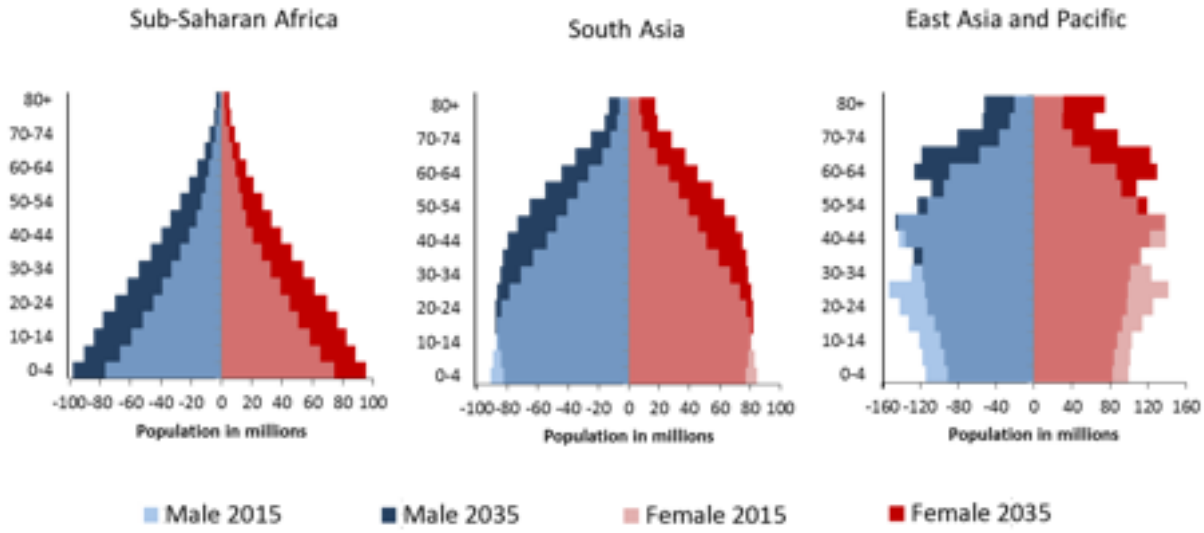


Figure 1. Demographic trends in three developing regions of the world
Source: World Bank, 2014

Although studies indicate that young men and women are moving to cities in significant numbers[4], many are staying in rural areas to become rural agro- and forest-based entrepreneurs mixing farm and non-farm based options. Recent reports show that youths share a growing concern about the environment and are increasingly attracted towards green business models. Many are also involved in increasing awareness about sustainable landscape management in the communities they live, and are becoming more interested in

research for development in sectors related to forestry, landscape management and climate change[6]. Formal education coupled with new ICTs that are gaining in popularity among youth can make them a key group for promoting the development, adoption and adaptation of innovations. What has been lacking so far is a clearly laid out strategy informed by robust evidence on how the vast majority of the youthful human capital could be mobilized and capacitated to drive sustainable development and green growth. The GDP in sub-Saharan Africa, for example, would rise by 12-19% if young people were employed in productive work[4].

Consistent with the CGIAR SRF goal to "focus explicitly on the role of the youth in agri-food systems to embrace the dynamism of agriculture and innovation to create growth, income and jobs, particularly in rural areas", FTA research on youth will identify entry points for deeper and more sustained engagement of youths in remunerative activities across agriculture and natural resource sectors. This strategic focus is rationalized on the grounds that agriculture, including production at the forest margins, is the major preoccupation of rural people in sub-Saharan Africa and South Asia, and is up to four times more effective than other sectors in reducing poverty. Importantly, while this role has been recognized, the nexus between rural youth and agriculture in developing regions has not been sufficiently developed and translated into public policies at all levels. This missed opportunity needs to be urgently tapped through robust research to identify policy options and interventions that can optimize the youth dividend across these sectors and make sure FT&A systems continue playing a role in enhancing well-being of future generations.

The FTA research strategy for transforming youth opportunities in productive landscapes

The FTA strategy for engaging youths aims at identifying and analyzing the structural and socio-psychological obstacles that hinder the effective engagement of young men and women in FT&A value chains for sustainable livelihoods. This includes 1) identifying and facilitating a better understanding of the roles of young people in productive landscapes, illuminating their aspirations and identifying the factors that inhibit or motivate youth engagement; 2) identifying and testing models for developing capacities of rural youth in developing regions, recognizing that they are not a homogenous entity. Youth differ by gender with socially differentiated roles, geography and stage in the life cycle. These unique differences and social locations will be analytically examined as important intersecting dimensions. The FTA research on youth addresses the CGIAR crosscutting issue gender and youth and contributes to the sub-IDO equity and inclusion achieved (see Annex 3.15 on the Support Platform for more on how youth will be addressed).

A strand of research will address structural and institutional factors across the following thematic areas:

Analyzing the effects of different sector policies in creating constraining or enabling environments for young men and women's access to and control over forests, trees and other productive resources. Policies are an integral part of the contextual conditions that enable or hinder the capacity of different actors to participate and capture benefits from the management of forests and tree-based production landscapes.

Identifying and analyzing social, economic and cultural barriers to the participation of youth (young women and men between 15-35 years old) in tree and forest product value chains. What types of products and markets are most suitable, and what interventions are most likely to optimize the engagement of youth in forest and tree product value chains in different geographies? How can access to and control over productive assets by the youth be improved? How do social and cultural norms constrain or enable youth access to assets and productive resources, including land?

Identifying the factors that influence youth access to financial services and their participation in small- and medium-scale enterprises. Identifying options for reducing market barriers that limit young men's and women's participation in tree and forest product value chains including innovative business models. A related thrust will be the assessment and development of options for innovative financing and robust strategies that support entry and sustainability of young men and women in the forests and agroforest value chains.

Assessing and strengthening national partner incentives and mechanisms for stimulating youth engagement in rural non-farm entrepreneurial activities and investments.

Identifying businesses models for young men and women in the establishment of tree nurseries, and analyzing factors that facilitate or constrain their access to logistical services including rural advisory services.

Identifying and analyzing the types of policies, institutional arrangements and interventions that foster enabling environments for young women and men to benefit from migration and multi-local livelihoods in forested landscapes.

A second strand focusing on socio-psychological and individual aspects will:

- “Unpack” youth as a category and researching on how social differences within youth influence their aspirations, knowledge, access/rights/entitlements
- Facilitate understanding of the aspirations and interests of young men and women in tree and forests management value chains and how to better engage them – including through ICT based innovations, in tree-based livelihood activities.
- Identify technical skills and knowledge required to improve youth participation in forests and agroforest value chains; developing youth-responsive tools, methods to raise awareness, build capacities to engage in decision-making processes in NRM; and to improve investments and decisions by youth on forest and agroforest landscapes.
- Identify and test models and innovations for developing skills and capacities of largely rural youth in developing regions. In collaboration with national partners, assess training models that integrate knowledge and skills on sustainable landscape management, agribusiness models and forest product value-chains for the training of young men and women in technical and vocational schools.

Since youth-related research questions are embedded in Flagships, work will be undertaken in the selected geographies in which Flagship research activities will be conducted. These geographies are well aligned with the site integration strategy developed by the CGIAR consortium and directly contribute to the IDO ‘equity and inclusion achieved’.

FTA will actively seek partnerships with organizations that have identified youth as a particular focus. Findings from FTA research will be used by these partners to address the constraints that youth in all their diversities face in accessing opportunities in the natural resource sectors including forests and agroforestry landscapes. Studies under this theme will take place in geographies where partnerships with research and boundary partners can be leveraged to achieve scale though the adoption of practices and influencing youth responsive policy. The FTA youth strategy is complementary to the WLE and PIM strategies. In implementing youth responsive research, FTA scientists will collaborate with these two programs thus consolidating efforts in similar geographies to amplify outcomes and impacts.

The FTA Gender Integration Team (GIT) GIT recognizes the critical need for robust research to generate knowledge and insights on the role of youth in forests and tree-based productive landscapes. While the theme sits well within the gender cross-cutting platform, the team currently lacks the in-house expertise, experience and capacity to lead and manage a youth responsive research strategy. We expect to invest about USD 17.4 million (4% of the whole CRP budget excluding management costs) to support the implementation of our youth strategy.

Annex 3.6 Results-based management

Monitoring, Evaluation, Learning and Impact Assessment (MELIA) Purpose and Approach

In order to effectively implement the RBM framework, strengthening monitoring, evaluation, learning and impact assessment (MELIA) will be necessary at both project and program levels in order to depict nested impact pathways and theory of changes that will enable FTA to deliver against the CGIAR SRF and its IDOs. A robust and strategic plan is proposed and will support the CRP cycle of planning, budget allocation and reporting steps. The original CRP FTA proposal recognized that natural resource management research operates in complex systems, with long impact pathways, multiple actors, and long time lags. There are large "attribution gaps" between research interventions and ultimate impacts, so impact assessments based on experimental or quasi-experimental designs are, in many cases, inappropriate for evaluating the impact of this kind of research. We therefore proposed to use theory-based approaches for monitoring and evaluating outcomes and impacts. This concept was well received by reviewers at the time, and the approach has subsequently gained considerable traction in the CGIAR as a whole, with all CRPs required to develop "theories of change" (ToC). There has also been a groundswell of interest in theory-based evaluation in the evaluation community. We have been actively developing and refining our approach, promoting a system in which the intended contributions of research are deliberate, explicit and testable. This improves our ability to gather evidence, assess and communicate our outcomes and impacts for enhanced accountability, and our ability to learn from our experience.

FTA developed an integrated Monitoring, Evaluation, Learning, and Impact Assessment (MELIA) system in 2015. The system will be refined to address changes in CRP Phase II. Being a cluster of activity in the Support Platform on Delivering Impact and Inclusion, the MELIA supports the FTA Director and the Independent Steering Committee in managing the CRP, and conducts research to assist FTA in achieving impact at scale (see Annex 3.15 for more on the Support Platform). In addition, the evaluation and assessment results inform the planning of future FTA projects, closing the feedback loop from learning to planning.

The MELIA system is designed to:

- Encourage an 'impact culture' within FTA in which research, engagement and capacity development activities are explicitly defined, designed and implemented to contribute to transformative change
- Ensure that FTA's work remains relevant and useful in rapidly changing and complex circumstances, by ensuring that ex-ante and ex-post evaluations and impact assessments are incorporated in future project design
- Guide ongoing research, engagement and capacity development to maximize effectiveness
- Provide a framework for FTA to learn from its own experience about what works best and how to focus, design and manage its work in the future
- Provide evidence that FTA's work is effective and that investments in FTA contribute to better livelihoods and greater environmental sustainability
- Contribute to research and methodology development for evaluating research, capacity strengthening, and communications for natural resources management research, poverty alleviation and environmental sustainability
- Integrate impact assessment as a genuine research activity, by explicitly linking it to research activities implemented by the Flagships.

The FTA MELIA system has the following components:

- The CRP-level theory of change (Section 1.0.3) that explains the main pathways and mechanisms from FTA research to IDOs

- Flagship Project theories of change that illustrate and explain more detailed hypotheses about key impact pathways, specifying main intermediate and end-of-program outcomes
- Specific theories of change at the activity levels
- An overall approach and step-by-step guide to planning, monitoring, and learning at activity FP and Program scales, described below
- A detailed and harmonized project information database (ICT platform) that explicitly records data on partnerships, engagement, expected outcomes and associated impacts allowing for a proactive management of the portfolio

Planning

In addition to the FTA and FP ToCs described in this proposal, all FTA activities are encouraged to develop an explicit theory of change that articulates the cause-and-effect relationships between research, capacity building and engagement activities and their outputs and intended outcomes. The theory of change must also provide a clear rationale for the activity focus and approach. These ToCs model specific knowledge production and knowledge translation contributions at the activity level, complementing the higher-level FP-level ToCs. ToC development at this scale supports planning, improving problem definition, identifying and engaging key partners, clarifying the current/starting state and specifying intermediate and end-of-program outcomes. This in turn supports activity-scale monitoring and adaptive management, and facilitates regular, incremental testing of our theory of change and is fundamental to our learning approach.

Monitoring

Intended outcomes and indicators of those outcomes are identified within ToCs and monitored. All activities larger than USD 500,000 are required to have an M&E framework. Wherever relevant, M&E frameworks and tools will include explicit attention to potential gender differences in interests, participation and benefits.

In Phase 1, FTA developed a set of qualitative monitoring tools that are light, user friendly and efficient, such as an influence log, event feedback tool, and outcome stories. These data collection tools are designed to be applied by research teams on an ongoing basis throughout the life of an activity. These tools facilitate systematic collection of data about engagement with stakeholders, knowledge generation and co-generation, uptake and use, and progress toward higher-level outcomes and impacts. Collectively, such data facilitate project reporting and provide a robust evidence base to test theories of change and to demonstrate progress. These data are also integrated with the FTA Project Database (discussed below).

Sub-IDO Indicators and Explanation of Collection

In addition to monitoring along the theory of change as described above, FTA will contribute to continuous collection and analysis of data at the sub-IDO level organized through the MEL CoP.

The definition of indicators to assess these above elements will be conducted using a two-pronged approach. First, the CRP will seek already-existing indicators that are credible, well-recognized, accessible and monitored by national statistics or other better-positioned organizations (e.g., FAO, WB). Second, in cases where there are no suitable indicators, the CRP will develop new indicators with an efficient monitoring system in close collaboration with Flagship teams. Furthermore, the CRP will support and seek to use, where possible, standardized indicators established by the MEL CoP and other communities of practice.

A tentative set of indicators for sub-IDOs to which the CRP will be contributing is proposed in the below table. These indicators, as well as indicators for other sub-IDOs or at other levels, will be developed and finalized during the operational phase after proposal submission, through the MEL CoP.

Proposed Indicator	Sub-IDO(s)	How	Where	Frequency
Greenhouse gas emissions – CO2 equivalent	Reduced net greenhouse gas emissions from agriculture, forests and other forms of land use	Primary data collection at FTA research sites; secondary data from global datasets; research publications	Globally and in countries/sites where FTA operates	At least every 2-3 years
Reforestation area – hectares	Reduced net greenhouse gas emissions from agriculture, forests and other forms of land use; Land, water and forest degradation (including deforestation) minimized and reversed	Remote sensing secondary data; donor and government official statistics; research publications	Globally and in countries where FTA operates	Annually
Adoption of improved varieties, breeds or trees, and/or management practices	Increased livelihood opportunities	Primary data collection at FTA research sites	In FTA research sites	At least every 3 years
Income levels	Increased livelihood opportunities	Donor and government official statistics; global datasets	In countries where FTA operates	Annually, as available
Areas of tropical forest providing timber and NTFPs under integrated management plans - hectares	More productive and equitable management of natural resources; Increased resilience of agro-ecosystems and communities, especially those including smallholders	Donor and government official statistics; global datasets	In countries where FTA operates	As available
Avoided annual deforestation – hectares	Land, water and forest degradation (including deforestation) minimized and reversed	Remote sensing secondary data; donor and government official statistics; research publications	Globally and in countries where FTA operates	Annually
Tree food 'cultivars' in the public domain and taken up for upscaling and commercial use	Increased genetic diversity of agricultural and associated landscapes	Primary data collection at FTA research sites; secondary data from global datasets; research publications	In FTA research sites/countries where FTA operates	At least every 4-5 years

Proposed Indicator	Sub-IDO(s)	How	Where	Frequency
National action plans using ecosystem-based adaptation principles	Enhanced adaptive capacity to climate risks	Donor and government reports	Globally and in countries where FTA operates	Annually
Dietary diversity	Increased access to diverse nutrient-rich foods	Primary data collection at FTA research sites; secondary data from global datasets; research publications	Globally and in countries/sites where FTA operates	At least every 2-3 years
Proportion of value added captured by producers in a particular value chain	Increased value capture by producers	Primary data collection at FTA research sites; input-output tables from national statistics	In FTA research sites and in countries/commodities where FTA works	At least every 3 years

In addition to the targets identified for SLOs, the CRP will identify targets to indicators, to the extent possible and where appropriate, drawing from existing baselines, studies, and thematic and regional context expertise. The methodology used to identify the targets and to measure progress, as well as key assumptions, will be detailed to ensure transparency.

ICT Platform: The FTA Project Database (https://sharepoint.foreststreesagroforestry.org/#/)

The Project Database provides an overview the FTA project portfolio, allowing results based management to be implemented. The database stores data such as: (i) project budgetary information, including a breakdown of cross cutting activities; (ii) geographic and site locations; (iii) keywords; (iv) partners, along with classifying what type of partner they are (research, knowledge sharing, policy and practice partners); (v) the intended outcomes and impacts, as well as a means to record progress in achieving them; (vi) data collection methods and data management plans; (vii) scientific outputs; (viii) capacity development information, including events, students and partner interaction.

The database provides detailed information on individual activities and a summary view. The database also treats W1/W2-funded activities as discrete activities, providing a holistic view of the CRP. The web-based application has advanced search capabilities combined with visual representations of the data in to help identify patterns and trends.

Other highlights of the system include: (i) full integration into the FTA Operational Plan, which reduces manual data entry and facilitates easier reporting to the CGIAR and other interested parties; (ii) a web-based mechanism for scientists and FTA Flagship leaders to record knowledge uptake via the influence log. Additionally scientists can record achievements via recording outcome stories; (iii) as a way to facilitate better collaboration between scientists, the project database automatically identifies other projects that share the same keywords, partners, donors or locations.

In 2016 and 2017, the database will be enhanced to allow: (i) capturing of baseline project knowledge uptake data as well as capturing mid-point and final project knowledge uptake, so that clear impact pathways can be identified and measured; (ii) incorporating the gender survey tool developed by the FTA Gender Integration Team to measure a project's gender relevance; (iii) Integration with DSpace installation

for storing FTA publications and other research outputs as well as automatically capturing and displaying publication statistics, such as downloads and citations.

The database is designed to be interoperable with other CRPs. In 2016, a schema will be developed so that structured data can be sent to the consortium office. FTA will also collaborate with other CRPs to provide shared reference data services.

Evaluation, Impact Assessment and Learning

FTA's contributions can be assessed on two levels: outcomes and impact. Outcome is defined as a change in knowledge, attitudes and skills, manifest as changes in discourse, institutions, policy, and practice that result in part or in whole from FTA research and associated activities (i.e. behavior change). Impact is defined as a change in flow or state resulting in whole or in part from a chain of events to which research has contributed, directly or indirectly, intended or unintended. These effects can be economic, socio-cultural, institutional, environmental, or technological.

Ex Ante impact assessments

FTA undertakes *ex ante* impact assessments on selected topics to estimate the potential impacts on development goals that FTA research contributes to. Such assessments will inform priority setting and contribute to overall CRP-level impact estimates.

As discussed above, impact at this level takes a long time to materialize, and (likely) involves multiple actors and contributing factors. *Ex ante* impact assessments will use the best available theory and data to estimate impacts at scale.

It should be noted that the term *ex ante* refers to the fact that the assessment is predictive in nature. It is *ex ante* relative to the impact, not necessarily relative to a particular project or research activity.

Currently, in collaboration with CRP PIM, CRP RTB (Impact at Scale CoA) and the International Institute for Applied Systems Analysis (IIASA), FTA is developing an *ex ante* impact assessment model that integrates the development impacts that it is contributing to. Trade-offs will also be built into the model, allowing a simulation of the winners and losers in a particular policy innovation or practice adoption.

Ex Post outcome evaluation and impact assessment

Ex post outcome assessments and impact assessments assess the achievements of completed activities, Clusters of Activity and, at some point, Flagship Projects. The theory of change and impact pathway will be the main point of reference for *ex post* assessments. Although all *ex post* assessments will have the same guiding principles, the scope and depth of an assessment will depend on scale and scope of the activity or project being assessed.

Ex post assessments have four interrelated purposes:

- To assess FTA's effectiveness in achieving intended outcomes, and eventually impacts. In addition to answering the question of "did it work", the assessment should also address the "why" question, document the context in which the outcomes or impacts occurred or did not occur.
- To develop and test assessment methods applicable for policy research, in order to achieve the above purpose.
- To ensure learning takes place by using the lessons learned from the assessments to design new projects such that the potential to achieve outcomes and impacts is improved.
- To document FTA's achievements.

Where it is feasible to quantitatively identify a counterfactual comparator – for example in cases where the scale is limited and impact pathway reasonably direct – it is possible to use experimental or quasi-experimental impact assessment approaches to quantify the benefits of the innovation, which can then be compared with the costs. Such impact assessment information can then be used to argue for and inform a

process of scaling up and out, and the data can be used in ex ante assessments of the impact of large-scale adoption. In the past three years, FTA has conducted quasi-experimental impact assessments on the issue of sustainable forest management, forest co-management, agroforestry fertilizer trees, and forest conversion moratorium.

The bulk of FTA's work aims to contribute to and support change in policy and practice. Knowledge produced, co-produced and shared, and capacity building achieved through FTA's work contributes through longer and more complex impact pathways. For this kind of work, we need to assess outcomes and evaluate achievements within clearly and explicitly articulated theories of change. As discussed above, every project should have a clear plan for what they are aiming for, what it will look like if they succeed (outcomes), and how it will contribute to the IDOs and SLOs (impacts). Outcome assessments will evaluate whether or not intended outcomes have been realized. As the work progresses, we will build on these outcome and impact assessments and activity level ToC testing to test FP-level theories of change.

There are four guiding principles for an *ex post* assessment at FTA: (i) objective and rigorous; (ii) determine causality; (iii) understand context; (iv) partnership with scientists.

Rolling Evaluation and Impact Assessment Plan

Under the CGIAR Policy for Independent External Evaluation, several types of evaluations have been identified to support the system, including IEA commissioned External Evaluation, CRP-Commissioned External Evaluations (CCEEs), and impact assessments. The CCEEs and impact assessments will also serve as data points for IEA, as they are considered the building blocks to the external evaluations conducted by the Independent Evaluation Arrangement.

The CCEEs will most likely be at the Flagship level but could also include other programming elements to evaluation. The conduct of these CCEEs will be spread over the cycle to minimize the burden on management and researchers. The CCEEs will cover at least half of the budgeted activities of a Flagship in a cycle in line with the CGIAR Independent Evaluation Arrangement's Guidance for CRP-Commissioned External Evaluations (January 2015). Joint CCEEs will be sought to leverage the resources of multiple CRPs and to assess performance within a geographic focus (likely in line with the site integration plans) or thematic area (e.g., seed systems, nutrition, and gender). They will be conducted in line with the CGIAR Evaluation Standards.

The CRP will operationalize a three-year rolling evaluation plan, with annual updated, to build credible evaluative evidence to support decision-making and lessons for improved and more cost-effective programming. This rolling plan will include CCEEs, impact assessments and other studies identified by CRP management.

Ex-post evaluation and impact assessments require significant time and financial resources. It will not be possible to cover all projects/programs. Proposed selection criteria are:

- The importance of the assessment for FTA, or in other words whether the activity is in a high priority research area or geographic region for FTA.
- The existence of preliminary evidence of achievements or potential for outcomes or impacts.
- The timing between the end of projects and the assessment, whether there is ample time for the projects to generate outcomes and impacts.
- The feasibility of rigorously assessing FTA contribution to the outcomes or impacts.
- The potential for the assessment to showcase the outcomes and impacts of policy-oriented research, or to develop new assessment methods.
- The potential for the results of the assessment to help FTA to mobilize additional resources.
- The potential for the results of the assessment to be applicable to other FTA projects.
- The cost of the assessment relative to the cost of the activity to be assessed.
- The capacity within FTA to undertake the assessment.

The selection criteria will be revisited periodically and revised as required.

For 2017-2022, the following tentative list of CRP-Commissioned External Evaluations have been identified, with a budget of up to USD 300,000 each:

- Gender integration in FTA: asking how is it being done, how we can be more effective.
- Sentinel Landscapes: assessing the approach and implementation to guide future development. This evaluation will also examine the Landscape Flagship of FTA Phase 1.
- FTA Science quality/research environment: conceptualizing the meaning of science quality in a policy-relevant research for development organization and assessing whether and how support, incentives and rewards could be improved.
- Smallholder Flagship of FTA Phase 1
- Value Chains Flagship of FTA Phase 1
- Joint CCEE (with CCAFS, WLE, Drylands) on Burkina Faso joint CRP initiative

Learning

Contemporary social and environmental problems are complex and multi-dimensional, often cross scales, and usually involve many different stakeholders with differing and often conflicting interests and perspectives. Solving these problems will require combinations of new knowledge and innovation, action and engagement. New and evolving research approaches of the kind being done by FTA cross-disciplinary and academic boundaries, integrate methodologies and engage a broad range of research participants as a way to make research more relevant and effective. Theoretically, such approaches appear to offer great potential to contribute to transformative change. However, because these approaches are new and because they are multidimensional, complex and often unique, it has been difficult to know what works, how and why.

The FTA MELIA strategy includes at its core a research agenda. The overall FTA portfolio of activities includes a range of concurrent research approaches being developed and implemented that aim to contribute to reduced poverty, improved food security and nutrition and improved natural resources and ecosystem services through technical, institutional and policy innovation. The research activities work within a shared overall Theory of Change, but each has its own particular context, design and implementation and specific ToC. This variation creates an excellent opportunity for learning how research contributes to transformative change within complex social and environmental systems.

As discussed above, FTA is developing and testing: 1. Research planning based on deliberate and explicit theories of change; 2. Monitoring, based on a range of tools for capturing and analyzing evidence of outcomes and progress toward outcomes; 3. Outcomes and impact evaluation for research in complex systems; 4. Ex ante impact assessment methods for policy-oriented research; 5. Independent Program Evaluation. The basic protocols will be further developed and refined in use.

This research will contribute strongly to testing, refining and advancing the FTA impact pathways and theories of change and to improved research effectiveness within the program.

Budget Allocation to MELIA

Properly implementing MELIA requires significant time and financial resources. At FTA, MELIA has relied on a combination of W1/W2 budget (currently 2% of W1/W2) and also bilateral/W3 budget, for example from UKAID and Bill and Melinda Gates Foundation.

In the current funding environment, it is not possible to solely rely on W1/W2 funds to cover all MELIA activities. The 2% W1/W2 allocation will be maintained, mainly to fund CCEEs and staff time. In addition, the MELIA team will continue efforts to raise bilateral funds.

Annex 3.7 Linkages with other CRPs and site integration

Linkages with other CRPs

We are providing the two requested tables and also specific narrative for CCAFS and DCL.

Table 1. ***Overview of Inter-CRP collaboration: Provide and receive***

	CRP: Forests, Trees and Agroforestry					
	SP Inclusion and Impact	**FP1 Tree Genetic Resources**	**FP2 Livelihood Systems**	**FP3 Value Chains**	**FP4 Landscapes**	**FP5 Climate Change**
AN4H Phase II, new partnership with Wageningen University and Research Center (WUR) as leader of FP3 (**Food systems for healthy diets-FSHD**)		*Provides:* 1) i) indicators and tracking tools for monitoring change, ii) decision support tools for prioritizing domestication and cultivation 2) data and recommendations for fruits: inter- and intra-specific genetic diversity among and between food tree species for genetic gains, 3) scalable models and standards for germplasm production/delivery 3) policy recommendations and guidelines to improve safeguarding, domestication and delivery of TGR			*Provides:* 1) characterization and assessment in countries/ landscapes of diets, gaps and current food systems and environmental impacts; biodiversity, water quality, soil fertility, land degradation, climate change to healthy food systems 2) information to land planners, decision makers, development agencies and communities on the contribution of forests and trees on farms to local food security and strengthening rural-urban food system	

	CRP: Forests, Trees and Agroforestry					
	SP Inclusion and Impact	**FP1 Tree Genetic Resources**	**FP2 Livelihood Systems**	**FP3 Value Chains**	**FP4 Landscapes**	**FP5 Climate Change**
		Receives: open source data and recommendations for prioritized food tree species in target countries, food systems innovations which include these species, and scalable policy actions which can incorporate TGR			linkages *Receives:* access to partnerships and networking to deliver on the linkage between landscapes and healthier diets within a food systems approach	
CCAFS	*Provides*: gender expertise on use of forests and trees in CSA and REDD+ schemes *Receives*: expertise on gender differentiated impacts of climate change	*Provides*: knowledge to ensure climate smart sourcing of reproductive material both for current and future climates *Receives*: climate associated model development to study tree distributions and help describe tree-planting-material delivery systems to meet future location-specific climates	*Provides:* knowledge about livelihood dimensions of integrating trees with coffee and cocoa *Receives*: predictions of future climate impacts on suitable areas for growing coffee and cocoa	*Provides:* analysis with emphasis on tree-crops, input on the identification and scaling up of supply chain governance arrangements and mechanisms to avoid deforestation, with emphasis on private sector initiatives *Receives:* analysis with emphasis on agricultural crops; input on the identification and scaling up of supply chain governance arrangements and mechanisms to avoid deforestation, with		*Provides*: a focus on climate policies, an entry point to UNFCCC, and research is linked to development in and sustainability of multifunctional landscapes *Receives*: adaptation options based on climate-smart agriculture to enhance food security and improved nutrition under climate change that feed into our EbA (Ecosystem-based adaptation) approach and risk, and vulnerability assessment

	CRP: Forests, Trees and Agroforestry					
	SP Inclusion and Impact	**FP1 Tree Genetic Resources**	**FP2 Livelihood Systems**	**FP3 Value Chains**	**FP4 Landscapes**	**FP5 Climate Change**
				emphasis on private sector initiatives		
PIM	*CRP Provides:* gender expertise on tree-based value chains, foresight analyses *Receives:* gender expertise on equitable access to markets, bilateral funds	*Provides:* 1) aims to influence policy concerns based on TGR case studies 2) aims to provide new tree products for integration into value chains *Receives*: 1) best practices for integrating seed/seedling and other input supplies into value-chains 2) best approaches in market development of new tree products framework for dealing with tenure, ownership and governance	*Provides*: evidence about the effects of specific market and policy interventions on livelihoods *Receives*: research frameworks and methods	*Provides:* findings on improved business models for increased smallholder integration in forest and tree-crop product value chains and financial schemes, with most potential for achieving improved social, economic and environmental outcomes *Receives:* methods and findings on ways to address market failures and improve value chains efficiency	CoA "Adaptive Landscape Institutions" interacts: with CoA1 of PIM Flagship 5 on 'Enhancing Tenure Security' and *provides* studies on institutional arrangements that strengthen tenure over land, water, and other natural resources in different contexts with CoA2 of PIM Flagship 5 on 'Governing Shared Landscapes' and *provides* case studies of how negotiation support for common interests can work in contested forest mosaic landscapes *Receives*: research frameworks and methods	*Provides*: evidence from policy implementation on the ground, tools and data from performance assessment, and input on how to mainstream climate change-related policies at the country level (INDCs) into general policy environments *Receives*: research frameworks and methods
WLE	*CRP Provides*: capacity development	*Provides*: relevant information for site appropriate tree	*Provides:* knowledge about impacts of tree cover on farms and		*Provides:* data from Sentinel Landscapes; knowledge on forest	*Provides:* forests and carbon reference levels for specific ecosystems

	CRP: Forests, Trees and Agroforestry					
	SP Inclusion and Impact	**FP1 Tree Genetic Resources**	**FP2 Livelihood Systems**	**FP3 Value Chains**	**FP4 Landscapes**	**FP5 Climate Change**
	activities tabulated combined progress towards delivering against CGIAR target, combining both forest and agricultural land restoration. *Receives*: capacity development	germplasm and delivery systems to promote use of the right trees for the right place and purpose *Receives*: integrating framework for restoration	management on soil carbon and health *Receives:* evaluation of tree options within the broader context of other restoration approaches		landscape restoration *Receives*: 1) integrating framework for restoration assessment and monitoring 2) quantification of the business cases for agroforestry interventions and assessment of impacts of out-scaling of FTA technologies	(carbon storage for climate change) into 20X20 initiative for forest restoration in Latin America
Genebanks		*CRP Provides*: tree genetic resources for research and related information *Receives*: 1) feedback on germplasm evaluation. Interaction with FP cluster 1 will lead to collaboration on collection where there threats to in situ conserved tree genetic resources 2) resources and support to deal with ABS issues				

	CRP: Forests, Trees and Agroforestry					
	SP Inclusion and Impact	**FP1 Tree Genetic Resources**	**FP2 Livelihood Systems**	**FP3 Value Chains**	**FP4 Landscapes**	**FP5 Climate Change**
Genetic Gains Platform		*Platform Provides:* decision support advice for best fitting genomics and breeding tools, connections with outsourcing partners, common analytical platforms *Receives:* management support from existing Centers				
Maize			*FTA provides*: understanding of impacts of trees on soils and micro-environment including nutrient and water cycling; testing of maize varieties in agroforestry contexts; data for developing and validating tree-maize interaction models *FTA receives*: understanding of crop response to soil and micro-environmental amelioration by trees; maize varieties potentially useful for agroforestry contexts; data on physiological			

	CRP: Forests, Trees and Agroforestry					
	SP Inclusion and Impact	**FP1 Tree Genetic Resources**	**FP2 Livelihood Systems**	**FP3 Value Chains**	**FP4 Landscapes**	**FP5 Climate Change**
			responses of maize to trees and modeling thereof			
Rice			*Provides:* understanding of impacts of trees on soils and micro-environment including nutrient and water cycling; testing of rice varieties in agroforestry contexts; data for developing and validating tree-rice interaction models *Receives:* understanding of crop response to soil and micro-environmental amelioration by trees; rice varieties potentially useful for agroforestry contexts; data on physiological responses of rice to trees and modeling thereof			
Wheat			*Provides:* understanding of impacts of trees on soils and micro-			

	CRP: Forests, Trees and Agroforestry					
	SP Inclusion and Impact	**FP1 Tree Genetic Resources**	**FP2 Livelihood Systems**	**FP3 Value Chains**	**FP4 Landscapes**	**FP5 Climate Change**
			environment including nutrient and water cycling; testing of wheat (and teff) varieties in agroforestry contexts; data for developing and validating tree-wheat (and teff) interaction models *Receives:* understanding of crop response to soil and micro-environmental amelioration by trees; wheat varieties potentially useful for agroforestry contexts; data on physiological responses of wheat to trees and modeling thereof			
DCL	*CRP Provides*: capacity development activities *Receives*: capacity development		*FTA Provides*: tree-based options for land restoration and intensification in dryland regions *FTA Receives:* 1) DCL crop varieties or hybrids			

	CRP: Forests, Trees and Agroforestry					
	SP Inclusion and Impact	**FP1 Tree Genetic Resources**	**FP2 Livelihood Systems**	**FP3 Value Chains**	**FP4 Landscapes**	**FP5 Climate Change**
			for tree-based systems 2) FTA and DCL jointly model impacts of tree-based options on livelihood outcomes and their implications for scaling across landscapes and develop the options-by-context approach co-developed by FTA and DS in Phase 1			
Livestock	*CRP Provides*: data for impact activities *Receives*: data for impact collaboration		*Provides:* knowledge, tools and methods for systems where trees and livestock interact with a particular focus on West African Parklands, Eastern and Southern Africa and seasonally dry Central America *Receives:* cultivars and management practices relevant to silvopastoral systems			

Table 2a. FTA illustrative partnerships with other CRPs (activities, mode, geographies and outcomes sought)

Partner CRP	Activity [Country(ies) in Which This Takes Place]	FTA Role	Collaborating CRP Role	Collaboration Mode	Output; Added Value; Target Countries
AN4H	Research on nutritional value of tree food	Conducts research and provides knowledge on nutrient-rich tree crop varieties, shares research on nutritional value and management of foods from	Provides input	Equal partnership	Congo Basin countries
CCAFS	Collaboration on gender; Knowledge on climate change mitigation and adaptation policies and actions; Knowledge to ensure climate smart sourcing of reproductive material both for current and future climates; institutional arrangements for supply chain governance (Brazil and Indonesia)	Provides input (data and tools) to the analyses; shared research with complementary methods; joint development of tools and approaches	Provides input (data and tools) to the analyses; exchange of methods and approaches; foster policy innovations through their partners and impact pathways	Equal partnership	Integrated analysis, knowledge and tools for efficient, effective and equitable climate mitigation (REDD+, JMA, SFM) and adaptation policies with specific regard to countries' INDCs/NDCs and subsequent global-level learning (e.g. feedback to UNFCCC, GCF, IPCC). Public and private frameworks for supporting sustainable supply in soy, beef in Brazil, and palm oil in Indonesia; metrics, methods and tools for monitoring impacts; and approaches for scaling up
PIM	Foresight analyses on oil palm (global); collaboration on gender; in policy regulation of germplasm management and movement; business models and finance mechanisms with most	Provides input to and approaches for the analyses, shared research, inputs to the PIM- supported Value Chain Hubs; co-implement case studies on tenure and natural resources governance	Provides input to the analyses	Equal partnership	Approaches and mechanisms for scaling up sustainable and inclusive business models to inform strategies under PIM-supported Value Chain Hubs

Partner CRP	Activity [Country(ies) in Which This Takes Place]	FTA Role	Collaborating CRP Role	Collaboration Mode	Output; Added Value; Target Countries
	potential for scaling up; and natural resources governance				
WLE	Capacity development Restoration activities Ecosystem Services partnership, Hydroclimate 20 X 20 Initiative Latin America, Design of restorative options in Ethiopia, Peru, Colombia; engagement in dialogues at regional and global levels on landscape restoration	Provide developments and learning within FTA; exchange of M&E tools and systems; focus on: - forest & climate policy mainstreaming - forest and carbon monitoring and MRV; on landscape restoration and planting materials, Provide Design of tree-based restorative options; Provides research data and methodologies on sustainable forest and agroforestry management practices and the specific measures of agricultura and environmental externalitie of these measures. Convenes and avails its partner networks of decision-makers and experts for participatory decision analysis processes	Provide developments and learning within FTA; exchange of M&E tools and systems; focus on restoration of agricultural landscapes; monitor FTA contributions to restoration of degraded landscapes, Design of agricultural system based restorative options; Provide targeting and valuation tools that facilitate quantification of the positive and negative impacts of agroforestry and forest restoration activities when scaled.	Equal partnership Joint research and application of jointly developed analysis tools and indicators	Integrated analysis and consolidated policy frameworks for implementation, joint analysis of tree-based AFS externalities with UNEP TEEB, integration of forest and agroforest-based interventions in large landscapes scale interventions in Ghana, Burkina Faso, Tanzania, Ethiopia and Vietnam
DCL	Options-by-context approach co-developed by FTA and DS in Phase 1 taken forward with a link to systems analysis, synthesis and scaling CoA in the FTA FP2 livelihood systems.	Collaborative use of results in DCL target sites	Collaborative use of results in DCL target sites	Co-invested bilateral projects, DryDev and BioDev	Improved natural resource management

Partner CRP	Activity [Country(ies) in Which This Takes Place]	FTA Role	Collaborating CRP Role	Collaboration Mode	Output; Added Value; Target Countries
	Co-development of tree options for land restoration and intensification	Collaborative research and development of options	Collaborative research and development of options	Co-invested bilateral projects, IFAD/EU Dryland Restoration	Improved natural resource management
	Modeling impacts of tree-based options on livelihood outcomes and implications for scaling across landscapes	Collaborative research and development of options	Collaborative research and development of options	Co-invested bilateral projects, AfricaRising, Trees4FoodSecurity	Improved livelihood options from tree-based systems
Livestock	Collaboration in research on silvopastoral systems focusing mainly on the West African Parklands, Eastern and Southern Africa and seasonally dry Central America.	Develop knowledge, tools and methods for systems where trees and livestock interact Research on forage cultivars and management practices relevant to silvopastoral systems	Research on forage cultivars and management practices relevant to silvopastoral systems	Joint projects and resource mobilization	Higher livestock productivity and improved animal welfare in tropical pastures
Maize	Ethiopia, Kenya, Uganda and Zambia and Tanzania	Conducts research on understanding of impacts of trees on soils and micro-environment including nutrient and water cycling; testing of maize varieties in agroforestry contexts; data for developing and validating tree-maize interaction models	Conducts research on understanding of crop response to soil and micro-environmental amelioration by trees; maize varieties potentially useful for agroforestry contexts; data on physiological responses of maize to trees and modeling thereof	Joint bilateral project funding and PhD studentships supported from w1/w2 to measure and model tree-maize interactions with a focus on Sub-Saharan Africa in order to improve livelihood resilience and food security among smallholder farm households	Integrated understanding of impacts of trees on maize yield across Africa and the capacity to model this for current and future climates leading to better management of tree cover in crop fields that improves livelihood resilience and food security of smallholder households
Wheat	Ethiopia	Conducts research on understanding of impacts of trees on soils and micro-environment including	Conducts research on understanding of crop response to soil and micro-environmental amelioration by	Joint bilateral project funding and PhD studentships supported from w1/w2 to measure and model tree-	Integrated understanding of impacts of trees on wheat (and teff) yield in Ethiopia and the capacity to model this for

Partner CRP	Activity [Country(ies) in Which This Takes Place]	FTA Role	Collaborating CRP Role	Collaboration Mode	Output; Added Value; Target Countries
		nutrient and water cycling; testing of wheat (and teff) varieties in agroforestry contexts; data for developing and validating tree-wheat (and teff) interaction models	trees; wheat varieties potentially useful for agroforestry contexts; data on physiological responses of wheat to trees and modeling thereof	wheat interactions with a focus on Sub-Saharan Africa in order to improve livelihood resilience and food security amongst smallholder farm households	current and future climates across Africa leading to better management of tree cover in crop fields that improves livelihood resilience and food security of smallholder households
Rice	Initially Senegal and Tanzania with a view to scale out across Africa and complement with research in selected countries in Asia	Conducts research on understanding of impacts of trees on soils and micro-environment including nutrient and water cycling; testing of rice varieties in agroforestry contexts; data for developing and validating tree-rice interaction models	Conducts research on understanding of crop response to soil and micro-environmental amelioration by trees; rice varieties potentially useful for agroforestry contexts; data on physiological responses of rice to trees and modeling thereof.	Joint bilateral project funding and PhD studentships supported from w1/w2 to measure and model tree-wheat interactions with a focus initially in Senegal and Tanzania with a view to scale out across Africa and complement with research in select countries in Asia	Integrated understanding of impacts of trees on rice yield initially in Senegal and Tanzania and the capacity to model this for current and future climates across Africa and Asia leading to better management of tree cover in crop fields that improves livelihood resilience and food security of smallholder households
Genebanks	*In situ* conservation and research, contribution to new germplasm for *ex situ* conservation	Research on best propagation methodologies and breeding approaches for priority species, promoting use of this germplasm		Equal partnership	

FTA-CCAFS linkages

Climate change research in CCAFS and FTA addresses both mitigation of and adaptation to climate change in a coherent approach. CCAFS focuses on the 40% of tropical land-based emissions that come from agriculture. FTA focuses on emissions from deforestation, forest degradation and land-clearing fires, which account for 60%.

However, the two programs have developed **distinct characteristics** in Phase II, differing from and complementing each other (Figure 1, Table 1). While the emphasis in CCAFS is on climate-smart agriculture, enhanced food security and improved nutrition under climate change has been increased, the emphasis in FTA is providing an integrated approach to joint bio-production and environmental services provisions through FT&A resource management at the landscape scale. In particular, FTA-FP5 focuses on mitigation of and adaptation to climate change using FT&A resources in landscapes, mainly through policies and measures that link climate mitigation and adaptation to development (e.g. rural income generation), and is expanding its work in FTA-FP3 on governance arrangements for sustainable supply that avoids deforestation. CCAFS addresses mitigation through low emissions agricultural development in CCAFS-FP3, and FTA addresses adaptation of peoples and forests to climate change in FTA-CoA 5.2.

FTA has added a new activity (FTA-CoA 5.3) on **bioenergy** to support adaptation and mitigation goals as well as rural income goals, by integrating bioenergy production in FT&A production cycles. The rationale is that renewable bioenergy reduces fossil fuel emissions and provides income to the rural poor. FTA has further developed its focus on performance assessment (providing hard data of how climate aspirations translate into achievements) that is expected to provide services to CGIAR as a whole (FTA-CoA 5.4).

Both programs work on **low-emission development strategies** LED(S): CCAFS addresses LED as a broad strategy to encompass its mitigation work in CCAFS-FP3; FTA addresses LEDS as a specific area where FT&A resources will be managed (FTA-CoA 5.1). Through its FTA-FP3 work on sustainable global value chains and investments, FTA aims to contribute to LEDS by supporting public-private governance arrangements that ensure sustainable commodity supply, thus avoiding deforestation and reducing GHG emissions, while also increasing social inclusion, and leveraging the role of finance for stimulating greater adoption of environmental, social and governance frameworks. Both programs will coordinate their LEDS research.

CCAFS and FTA will undertake complementary research activities on **sustainable supply chain governance** by linking CCAFS-Flagship 3 “Low emissions development”, particularly CoA 3.3 “Identifying priorities and options for low-emissions development” (under 3.3.2 “Responsible finance and standards for supply chain governance”) with FTA Flagship 3 “Sustainable global value chains and investments”, specifically CoA 3.1 “Enabling sustainable commodity supply chains”. The outputs to be achieved collaboratively are: (i) impact assessment of regulations and sustainability initiatives on hectares of avoided deforestation, GHG emissions and associated social effects; (ii) options on instruments and guidelines for improving sustainable commodity supply from public, private and hybrid governance arrangements; and (iii) options of financing mechanisms to supporting scaling up of innovative institutional arrangements and business models. CCAFS-FP3 will emphasize private sector and market governance in supply chains related to beef production, mainly beef production in the Amazon, while FTA-FP3 will accentuate supply chains related to high-value trees and forest products, mainly palm oil production in Indonesia.

Regarding **adaptation**, FTA is focusing on ecosystem-based adaptation (FTA-CoA 5.2), and CCAFS on climate-smart agricultural practices (CCAFS-FP2) and climate information systems and climate-informed safety nets (CCAFS-FP3). Both programs promote the use of climate information systems in National Adaptation Plans (NAPs) in complementary ways, with CCAFS focusing on seasonal forecasts for agricultural decision-making and food system safety nets, and FTA focusing on decadal scale variability for risk management, and national NAP policy architecture and implementation. Both programs also analyze synergies between mitigation and adaptation and climate finance but from different angles (in CCAFS-FP1 and CCAFS-FP3 always in relation to the triple objectives of productivity, adaptation, and mitigation related to as climate-smart agriculture, whereas in FTA-FP5 this is focused on adaptation using forests, or when trees outside forests are concerned, it converges with climate-smart agriculture). CCAFS contributes to a co-investment platform shared by FTA and RTB on tree-crop commodities (FTA-CoA 2.3) that integrates climate mitigation and adaptation with sustainable intensification of cocoa, coffee, rubber and oil palm. There are already joint bilateral projects

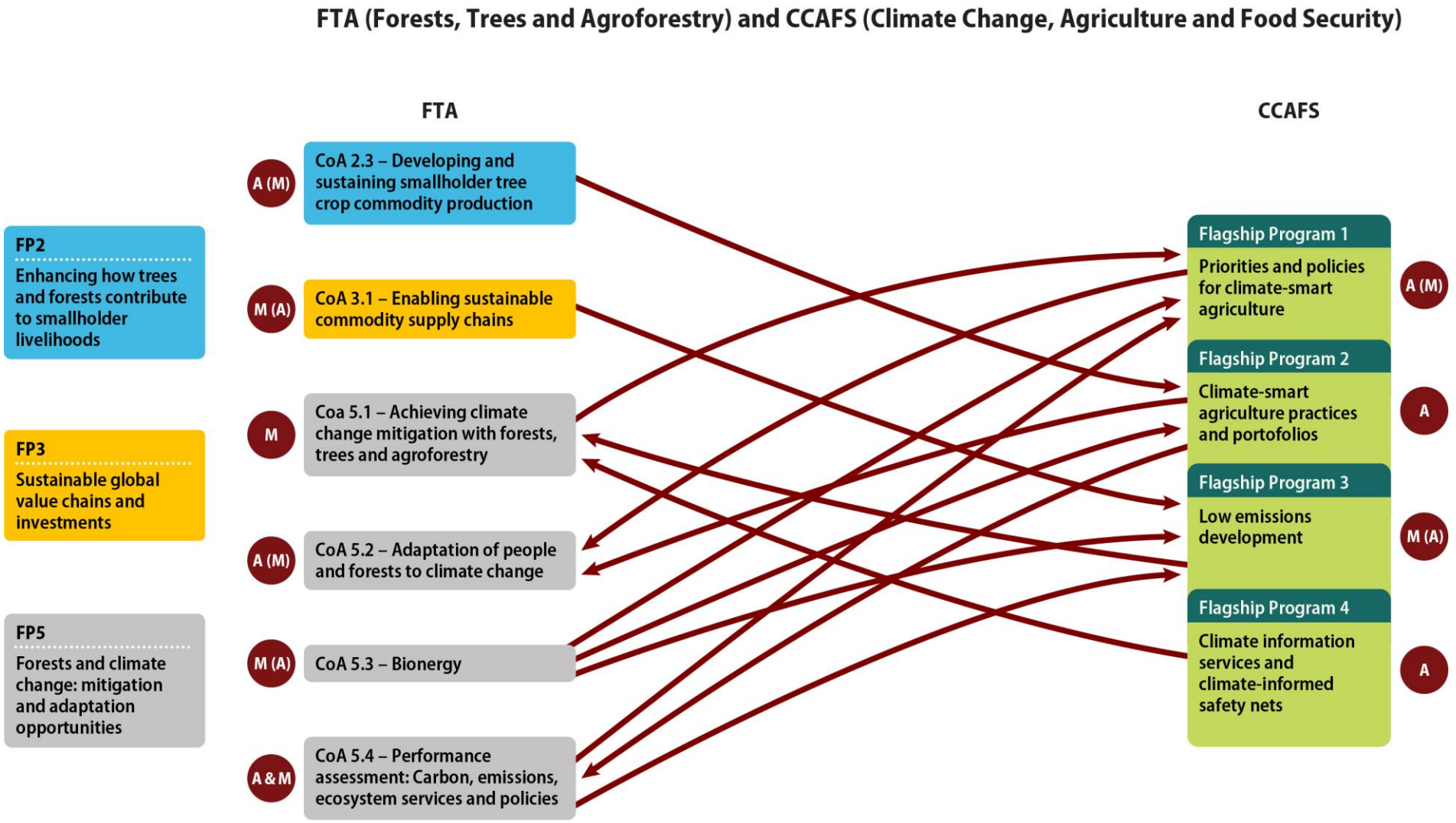
and PhD students including the Danida-funded Climcocoa project (2016–2020) on climate adaptation of cocoa production systems in Ghana led by the University of Ghana, Legon, and involving both ICRAF (FTA) and IITA (CCAFS), as well as joint outputs including an innovative decision support tool for recommending shade trees for coffee based on local knowledge.

CCAFS and FTA will closely **coordinate** their work at the national and international levels (e.g. to provide coherent national policy advice and CGIAR output on climate mitigation and adaptation to the UNFCCC). They have been cooperating over the past years on joint issues such as reference levels, emission hot spots, and climate mitigation aspirations in the land sector, and there will be future cooperation for joint outputs. CCAFS has a Learning Platform on 'Policy engagement on CSA' that includes engagement with UNFCCC processes and is specifically collaborating with FTA on the Global Landscapes Forum at the UNFCCC. CCAFS and FTA will also engage private sector platforms aimed at supporting sustainable supply by harnessing the potential of standards to support adoption of sustainability practices, as well as private commitments to build deforestation-free supply chains.

Co-location of work happens in several regions covered by both CCAFS and FTA (East Africa, West Africa, South Asia, Southeast Asia and Latin America); FTA additionally works in Southern Africa and Central America. CCAFS emphasizes interventions mostly at the national level, where it sees a major impact pathway in national planning processes and food system policies; FTA is also more strongly now focusing on the national level, and there will be heightened efforts to coordinate FTA-CCAFS work at the national level (e.g. previous joint work in Burkina Faso on common impact pathways and multi-stakeholder scenario development demonstrates our commitment to working together).

CCAFS and FTA together represent a winning team for the CGIAR because they **complement** each other in unique ways, building on the comparative strengths in each of the teams. Regarding mitigation, CCAFS brings its strong agricultural and food security perspective into the equation, addressing the 40% of tropical emissions from agriculture, and FTA brings in a strong global coverage of mitigation (emission reduction) policies addressing the 60% of tropical emissions from deforestation/forest degradation (38%) and land-clearing fires (22%). CCAFS and FTA particularly cooperate in the Twinned Flagship on 'Supply chain governance to avoid deforestation' (see above), with CCAFS focusing on the agricultural dimensions and FTA on the forest dimensions, but with co-investment on common issues and common sites. Regarding adaptation, both programs have clear complementarity in addressing the issue in the context of LED(S), adaptation finance, the use of bioenergy to raise rural energy and income security. Both CCAFS and FTA stand for a strong performance assessment approach in both mitigation and adaptation, which is now being expanded to include private sector commitments and LEDS.

The mechanisms to **coordinate** the collaboration between FTA and CCAFS consist of one joint annual planning meeting, jointly funded projects and workgroups, jointly defined impact pathways at the national level to be developed, and one major joint dissemination and outreach event per year (e.g. collaboration on the annual Global Landscape Forum). The period 2017 and beyond will see increased collaboration between FTA and CCAFS via jointly funded projects regarding mitigation and low-carbon economy of global value chains (palm oil, beef, soya bean) and GHG accounting at landscape scale.



M – focus on mitigation; A – focus on adaptation; CoA – cluster of activities

Figure 1. Correspondence between CCAFS and FTA activities

Table 1. 'Multi-dimensional complementarity' of CCAFS and FTA

Issue	FTA	CCAFS
Complementarities		
Objectives	FTA-FP5 addresses the interrelated issues of a) **climate change mitigation** through forests, trees and agroforestry, b) the **adaptation** of forests and people to climate change c) **bioenergy** and d) **performance assessment. FTA-**FP3 looks at the governance arrangements involving public and private actors that contribute to more **sustainable commodity supply**, while ensuring more **inclusive business models** and **responsible finance** for select global value chains	CCAFS tackles **food security, adaptation to climate change and mitigation of climate change**. CCAFS seeks to catalyze positive change towards climate-smart agriculture (CSA), food systems and landscapes
'Centers of gravity'	*Emphasis* on **policy research** for climate ***mitigation*** and **low emissions development** strategies **with** FT&A in the landscape	*Emphasis* on research for ***adaptation*** **technology adoption** in agriculture (CSA practices) and food systems governance to reduce risk in agriculture and increase food security
Regional coverage	East Africa, West Africa, Central Africa, South Asia, Southeast Asia, Latin America, Southern Africa, Central America	East Africa, West Africa, South Asia, Southeast Asia, Latin America
Policy level coverage	• Subnational mitigation and adaptation activities and programs, National Adaptation Plans (NAPs) • National REDD+, NAMA, INDC policies • International REDD+, NAMA, INDC policies • Low-emission development strategies	• National Adaptation Plans • Global policies to include agriculture in climate mitigation agreement and food systems governance • Low emission development (LED)
Builds on	Policy research as core strength of CIFOR and practice research in ICRAF	Joint strength of agricultural research in 15 CGIAR Centers
Exclusively covered themes	REDD+, INDC/NDCs, NAMAs related to FT&A	Carbon market approaches to raise food security

FTA-DCL Linkages

Trees are essential components in dryland agriculture and are a pre-requisite for sustainable intensification and reducing land degradation in these sensitive environments. FTA covers different agro-ecological zones with 40% of the resources invested in dryland areas, whereas the geographic focus being shared between FTA and DCL-AFS includes East Africa, the Sahel and Central America. From Phase I there is established collaboration between FTA and Dryland systems within the frame of bilateral projects that will be further develop between DCL-AFS, FTA and Livestock. Tree-based options developed in FTA can be further tested in DCL-AFS in conjunction with other agronomic interventions while germplasm development of key dryland cereals and legumes suitable for use in agroforestry contexts will be developed in DCL-AFS and evaluated in

agroforestry contexts within FTA. There are three principal links through co-investment with joint investments in a bilateral portfolio:

- DCL-AFS Flagship 1 priority setting and enabling environments, where the options by context approach co-developed by FTA and Dryland Systems in phase 1 is being taken forward with a link to the systems analysis, synthesis and scaling CoA in the FTA FP2 livelihood systems. (Co-invested bilateral projects: DryDev and BioDev)
- DCL-AFS Flagship 4 has 'Sustainable Land and Water Management', whereas tree options for land restoration and intensification are co-developed with the 'Trees in Support of Sustainable Intensification' CoA in FTA FP2 livelihood systems. (Co-invested bilateral projects: IFAD/EU Dryland Restoration, including ICRAF, ICARDA, ILRI and ICRISAT)
- DCL-AFS Flagship 5 has 'Improved Rural Livelihood Systems', whereas modeling impacts of options on livelihood outcomes and implications for scaling across landscapes are jointly developed with the systems analysis, synthesis and scaling CoA in the FTA FP2 livelihood systems. (Co-invested bilateral projects: AfricaRising, Trees4FoodSecurity).

Site integration

The template below summarizes the state of our participation in site integration at the time of writing. It will be updated and completed as information continues to come in.

Template 2b. Plans for site integration in CGIAR target countries

Target country (++ and + countries relevant to your CRP)	**Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration**	**Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country**
		(Responses here should be guided by the outline steps provided in the site integration annex table of instructions to authors.)
Countries marked at CGIAR level for site integration ++		
Ethiopia (FTA participated)	The Ethiopia CGIAR country collaboration and site integration process is coordinated by a committee representing 11 CGIAR Centers (Bioversity, CIAT, CIFOR, CIMMYT, CIP, ICARDA, ICRAF, ICRISAT, IFPRI, ILRI and IWMI) that are based in Ethiopia plus 3 others (Africa Rice, IITA and IRRI) who have no offices in the country, 10 CRP focal points, (Climate Change, DCLAFS, **FTA**, Livestock, Maize, Nutrition and Health, PIM, Rice, Roots Tubers & Bananas and WLS&E) and the Genebank platform. On 11 December 2015 a national consultation was held. Its objectives were to: 1) Improve understanding of	CIFOR has made presentations and introduced its work, sites and major partners in Ethiopia to participants of the December 2015 workshop. CIFOR also proposed a CN to work together with other CG Centers on sites to be selected. Almost all of CIFOR's research projects in Ethiopia have been implemented with active involvement of relevant Ministries and forestry research and education institutions in Ethiopia. As a result, CIFOR had the opportunity to actively collaborate with the Ministry of Environment, Forestry and Climate in the preparation of the second Growth and Transformation Plan for the forestry sector. Thus we do not need to align our research as it is already. The 2016-2020 forestry sector plan focuses

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	the national priorities and goals for agricultural and related nutrition and health research for development 2) Present CGIAR work in Ethiopia (major thematic areas, partnerships and geographic location); and 3) Identify major opportunities to align activities across actors around specific themes, including reviewing modalities for country collaboration. Participants were drawn mainly from the Federal Government Departments, Development partners (Donors, NGOs) and very few private sector and farmer association groups. The meeting participants agreed that the follow on focused meetings by CRPs should aim to include the wider stakeholders groups including women and youth. The Roadmap for agricultural and economic growth in Ethiopia is spelt out in the Government's vision was launched in during the last quarter of 2015 through the Growth and Transformation Plan II. The CGIAR should continue to align its programs to that. In addition there are already big ongoing programs led by the Government like Sustainable Land Management (SLM) to which the CGIAR is already a major player. Following the launch of GTP II there have been many national consultation meetings organized by several CGIAR partners working on the alignment to GTP II. Examples are meetings organized by the Agricultural Transformation Agency (ATA) and the Rural Economic Development and Food Security Sector Working Group (RED&FS) to discuss different pillars under GTP II. A number of CGIAR Centers participated in these consultations based on subject matter.	on improving protection of high priority forests with significant biodiversity conservation challenges, on improving the management and use of natural forests and woodlands in view of reducing D&D and increasing national abatement potential, on promoting plantation forests to meet wood demands at household and national levels, and to significantly increase the socioeconomic contribution of the sector to the national economy and to the GDP. Our research will continue to support the plan through expanding research to cover major forest types of the country, assessing the links between forestry and other sectors, exploring options to improve the management and use of forests and handling and marketing of forest products for better economic and environmental outcomes. Evidence so generated will be shared with key stakeholders to inform policy and practice as the country attempts to increase national tree and forest cover so that communities managing forests will have incentives to responsibly manage and sustainably use forests and woodlands.

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
Vietnam (FTA participated)	Nine CRPs and 10 Centers have participated in the Vietnam planning for CGIAR country coordination. A national stakeholders' consultation workshop was organized in December 2015, with over 70 participants representing: 1) research institutes and government agencies, 2) universities, 3) NGOs-private sector agencies and associations, 4) international organizations and donors, and 5) CGIAR staff. Stakeholders agreed on an eco-regional framework to facilitate in-country collaboration and site integration. The target regions are: 1) Northwest, 2) Northeast, 3) Red river delta, 4) North central coast, 5) Central highlands-south central coast and southeast, and 6) Mekong river delta. In addition, integrating CRPs with national and local development plans was considered a key dimension of country collaboration. For each region, the stakeholders identified: 1) development priorities as set by government policymakers/decision-makers, 2) key research gaps which are recommended for the CGIAR to address, and 3) potential partners for specific research and development initiatives. Between December 2015 and March 2016, CRPs/Centers also engaged in bilateral discussions on specific collaboration needs and opportunities. Several CRPs also organized their respective country/regional planning and consultation events. A follow-up meeting by the CGIAR Vietnam team was held on 7 March, with eight CRPs and seven Centers represented. The eight participating CRPs re-confirmed that Vietnam is a target country for CRP2 proposals. As a next step, it was also agreed that	At the national level, FTA will continue to work closely with relevant ministries and stakeholders on agroforestry policy and program development, on revising Vietnam's Forest Law, and on REDD+ implementation and expanding to include the whole NDC. At the sub-national level, FTA work will focus on scaling up agroforestry options for livelihoods and evaluating multi-functionality in landscapes, in the northwest and central-southern regions of Vietnam, in collaboration with RTB and Livestock CRPs. In the north-central region, focus is on swidden farming, and climate-smart agriculture for adaptation and mitigation in climate-smart villages in collaboration with CCAFS. Lastly, in the northwest region, we will focus on social forestry and natural resource governance, in collaboration with PIM.

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	subnational targeting will be undertaken for higher-resolution site integration plans, i.e. within each agro-ecoregion. A draft agenda for the 10-element site integration report was prepared. The proposed action items are to be shared with CRPs, for them to indicate their suggested priorities as well as intent for co-financing/cost-sharing. The country collaboration/site integration efforts in Vietnam are coordinated through: 1) a core team with representatives from CRPs/Centers having physical (office) presence in Vietnam, and 2) a working group with representatives from all CRPs/Centers planning to undertake activities in Vietnam for CRP2. CIAT provides overall leadership, with ICRAF as co-Lead Center. In each eco-region, a Lead Center and supporting CRPs have been identified and agreed upon.	
Burkina Faso (FTA/CIFOR lead coordinate site integration efforts)	The starting point was the June 6-7, 2013 meeting of WLE, FTA and CCAFS in Bonn where it was agreed to explore areas of cross-CRP synergy (both issue and place-based) in Burkina Faso. All three CRPs had major new research programs in the country, and there was potential to link to CRP Drylands. On 24 August 2013, CIFOR organized the first internal meeting between ICRAF and CIFOR in Ouagadougou to review the expected outcomes of the joint CRP initiative in Burkina Faso. A committee was set up at this meeting and was tasked to establish a database of CGIAR projects in terms of targets, location and partners that would be a basis for discussing improved coordination, but also for joint development of new projects.	The joint CRP initiative in Burkina Faso has set the groundwork for planning CGIAR Site Integration in Burkina Faso. Key outputs have been achieved both at strategic and operational levels. Some updates are now needed to fine tune the alignment of these outputs with CRP Phase II activities in Burkina Faso. A formal Site Integration planning meeting will be organized in mid-April 2016 in Ouagadougou to do so.

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	A 2nd meeting was convened in December 2013 in Ouagadougou with participation of a broader set of partners intervening in Burkina Faso (CRPs FTA, CCAFS, WLE, Dryland, national and other international research institutions, including universities, state and non-state development partners, international NGOs) to review the quality of previous partnerships with CGIAR initiatives in Burkina Faso and to work out a new partnership framework guided by the aim to contribute to the same development pathways in Burkina Faso in a synergetic manner. A 3rd meeting was held in February 2014 with the same set of partners to define a vision, mission and action plan for the partnership framework. It was also agreed to develop a common theory of change aligned to the strategy for accelerated growth and sustainable development of Burkina Faso (SCADD), particularly the national program for the rural sector (PNSR). The outputs of this meeting were validated by CRP Leaders. As part of the agreed roadmap, the CGIAR-led initiative for building a thematic and geographical database of all CGIAR projects and those of non-CGIAR actors working in the rural sector of Burkina Faso has been merged with a similar initiative led by the SP/CPSA (Permanent Secretariat for Coordination of Agricultural Sectoral Policies) for setting up a map database of Government and development partner interventions in the areas of rural development in Burkina Faso. The CRP joint initiative in Burkina Faso has also partnered with the CCAFS Scenarios program and the SP/CPSA in	

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	a specific process aimed at examining the ending PNSR in the context of multiple socio-economic and climatic scenarios, to improve its robustness, flexibility and feasibility in the face of possible diverse futures. This scenario-guided policy revision workshop, held in July 2015, offered a unique opportunity to CGIAR experts and national policy making experts and all other workshop participants () to identify research areas through which CRPs and CG Centers can contribute to the expected outcomes of the upcoming revised PNSR. Overall, the CRPS' joint initiative in Burkina Faso has set up and followed until now a participatory approach involving CGIAR actors (CRPs and Centers), national actors of Burkina Faso, and other international actors intervening in Burkina Faso, to frame partnerships, map research interventions and define development and research priorities to be considered for the rural development of Burkina Faso.	
Cameroon (FTA/ICRAF coordinate site integration efforts)	The Cameroon National Consultation for site integration took place on 18 March 2016 at the ICRAF Regional Office in Yaoundé, Cameroon. The following sessions punctuated the one-day meeting: **Session 1: Why site integration?** (By Zac Tchoundjeu of ICRAF). A presentation explained the concept of site integration and why the CGIAR Centers in Cameroon and the different stakeholders should adopt this approach to create more impact from research work in the country. In his presentation, Zac explained site integration and what should be reviewed by the steering committee before the upcoming site integration meeting.	After reports were presented by each group, it was decided the site integration steering committee will look at three important themes when the report of the meeting is circulated and a roadmap to elaborate the site integration plan will be developed. The steering committee is made up of IITA, CIFOR, Bioversity and ICRAF. At the first meeting participants were from IITA, CIFOR, ICRAF, AVRDC, IRAD, SNV, ASB AND IBAYSUP. A report of this meeting will be made available as soon as it is ready. Prior to this meeting, the CGIAR Centers based in Cameroon were already working together in projects such as Sentinel Landscapes. ICRAF, CIFOR and Bioversity developed joint teams and worked

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	Session 2: Who? Getting on the same page; Who are we, lessons to date, agendas, priorities, focus areas, ambitions: (By Richard Eba'a). Denis Sonwa of CIFOR facilitated this session, which helped participants understand the type of research and activities conducted in the country by participants. The session was useful as it helped participants gain a clearer picture of what each institution is doing. **Session 3: What opportunities for collaboration with focus areas proposed addressing relevant development challenge and aligned to national priorities (Rachid Hanna of IITA):** The participants were divided in three groups and the examined the following themes: 1. Challenges and opportunities for collaboration 2. Sustainable intensification crops and agroforestry forests 3. Climate smart rural development.	together on institutional mapping of a landscape, socio-economic characterization and land degradation surveillance. For ICRAF and CIFOR as more most of research activities are covered by FTA, scientists focused their activities to what is linked to FTA Flagships. Data collected from the research work was analyzed and used for scientific papers. With IITA, ICRAF and IRAD had also worked together for the implementation of Humid Tropics program. To date, the CRP joint initiative in Cameroon has created an approach involving several CGIAR Centers (ICRAF, CIFOR, Bioversity), as well as national partners (like IRAD- Cameroon's Institute of Agriculture for Development) to design partnerships and identify research areas and priorities necessary for the development of the rural sector in Cameroon and other countries in the Congo Basin.
DRC (FTA participated)	The first CRP site integration meeting for DRC was held in Kinshasa on 19 February 2016. About 100 people were invited and the bulk attended the meeting. Participants came from CG Centers (IITA, CIFOR, ICRAF, ILRI, ICRISAT, IFPRI, Bioversity International, CIP, WorldFish, AfricaRice, CIAT, etc.), the DRC Government, international partners (World Bank, African Development Bank, FAO, UNDP, IFAD, USAID, SIDA, Belgian Technical Cooperation, etc.), international and national NGOs as well as from the private sector. Activities were organized through a workshop with three major objectives: • To achieve a common understanding of current and	The participants agreed on the need of creating a platform to foster future collaborations and help manage steps to prepare a DRC site integration plan.

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	evolving development challenges in DRC and related national priorities for addressing them and identify areas where Agriculture Research-for-Development (AR4D) can play a key role • To identify opportunities to align CGIAR current and future AR4D activities with the activities of all other key actors and the national priorities, ensuring the relevance of research to achieving development outcomes • To recommend modalities for greater country collaboration and coordination This workshop aimed at providing a major input into the CGIAR DRC site integration plan as well as important inputs into Phase II of the current CRPs. One of the key components of the workshop was a "marketplace", a space provided to participants to present their organizations, their activities and ways of working. Welcome remarks were delivered by the IITA Country Representative before the opening session by a delegate from the DRC Ministry of Agriculture. After a panel discussion on DRC development challenges and priority AR4D (sites, focus areas, etc.) as seen by different stakeholders (government, development practitioners, research partners, donors and the private sector), group discussions were organized and followed by plenary sessions. Participants were invited to reflect on several issues such as: • Opportunities for collaboration – addressing relevant development challenges and aligned to national priorities (definition of challenges and opportunities for collaboration;	

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	focus areas for collaboration in terms of addressing specific development challenges and intervention areas) • Modalities for collaboration and cooperation (identify ingredients of worst collaborative scenarios, and the concrete steps needed to move to a more successful collaborative model) • Recommendations for further collaboration based on specific priority areas	
India (FTA participated)	The process of site integration in India was initiated with a meeting of some of the Representatives of the CG Centers based in India. The meeting was held on 19th January, and it was agreed that the ICRISAT (Peter Carberry) will coordinate the site integration in India. It was also agreed that a Steering Committee comprised of the CG Centers based in India will meet on 23rd February at ICRISAT's Delhi office to further discuss the planning for the Site Integration. During the meeting, it was decided to hold a two days consultation meeting (22-23 March) involving the DG, DDG, ADGs and Director of various National Institutes of Indian Council of Agricultural (ICAR), representatives of the agriculture universities, NGOs and other partners of the CG Centers. The issue of absence of a specific budget for this purpose was discussed, and it was agreed that the general logistics cost will be covered by ICRISAT, whereas each CG Centers will cover the cost of the participation of their own partners. A tentative list of about 100 participants was agreed. However, confirmation of about 60% delegates has so far been received. Among others, , DG-ICAR, and DDGs-ICAR, Directors of several ICAR	The steering committee in full consultation of all the stakeholders and partners will prepare a draft plan for site integration in India which will then be finalized in discussion with all concerned

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	institutions, Vice Chancellor of partner universities; DG-ICRISAT, and Representatives of ten CG Centers having regional offices at Delhi will be in attendance.	
Nepal (FTA participated)	The process of site integration in Nepal was initiated on November 9, 2015 by organizing a meeting of all CG Centers working in Nepal. The site integration steering committee was formed (with one member from each CG/CRP Center). This included CIMMYT, IWMI, Biodiversity International, IFPRI, IRRI, CIFOR and ICARDA. CCAFS was included in the subsequent meeting. Two meetings were held on 4th and 30th December to share information on work being done by each Center in Nepal and to plan for a stakeholder consultation meeting which was organized at Kathmandu on 11 January 2016. The purpose of the stakeholder meeting was three-pronged: to design the integrated research agenda, to consolidate CGIAR Centers, and to coordinate with national actors and strengthen the coordination, collaboration and alignments with partners in line with national priorities and policies. More than 60 participants, representing 34 national institutions participated. The cost of this meeting was shared by all Centers. A joint presentation on activities being undertaken by all CG Centers on various CRPs in Nepal was presented and two discussion sessions were held. The first one focused on better alignment of current CGIAR research activities, whilst the second one on targeting stakeholders' needs. Opportunities for further alignment of CG programs and CRP integration	Although not having staff physically present in Nepal, FTA continues to work in collaboration with other CRPs in aligning CG Centers' research activities with that of national priorities through dialogue, engagement and partnership with national and sub-national level partners and stakeholders. In addition, there are plans for producing joint research outputs and public goods including knowledge, technologies, tools, methods, evidence, processes and platforms. We attended the two consultations carried out so far in the country.

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	were identified through shared goals, activities and increased partnerships. The minutes were prepared along with one pager blog and submitted to CGIAR. The next CG-national consultation meeting was proposed to be held in Nepal in January 2017. Highlights included how to better align CG work with national policy issues, demand for continued capacity building of local agricultural scientists, the development of stronger national databases, promoting local genetic resources and the need for research on both climatic and non-climatic stress on agriculture. Ideas for new research avenues were also raised. For more info, see https://library.cgiar.org/handle/10947/4148 A steering committee meeting was held to draft the site integration, based on the national consultation and experiences of each of the Centers in Nepal. In doing all this, the central point will be the Agriculture Development Strategy (ADS 2015-2035) approved by Government of Nepal on 14th August, 2015.	
Nicaragua (FTA participated and provide support from the Nicaragua-Honduras Sentinel Landscape)	One year ago, several CRPs and CGIAR Centers working in Nicaragua met to discuss ways to better integrate work in Nicaragua and in Central America as a whole; Nicaragua was selected as a CGIAR integration site++; To take the Nicaragua site integration forward, a steering committee was established with representatives from CIAT, Bioversity, CATIE, ICRAF and CCAFS. CIAT, CATIE and ICRAF started a two-month campaign to inform government, academia, international organizations and other key stakeholders in the research-	With the guidance from the Consortium Office, the steering committee will draft the site integration plan building on the national consultation and past/current experiences of Centers in Nicaragua. A clear understanding of what is being proposed in Phase II CRP proposals is important before we carry out any further stakeholder consultation. Potential sites of integrative work were identified based on previous and ongoing CGIAR efforts (such as CCAFS climate-smart village (CSV) and FTA sentinel sites) and on priorities of the government (such as the dry corridor). Some integrative work has been already done in Tuma-La Dalia CSV between CCAFS

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	innovation sector working in Nicaragua, of the selection of Nicaragua as an "integration site++" for the CGIAR; The national consultation was held requested in the guidelines of the GCARD3 and GFAR as suggested by the consortium office (CGIAR Site Integration: Update and Guidance). Representatives of the CO in charge of the GCARD3 process were adequately informed and approved our process in Nicaragua. As the first priority, a national consultation was held in Managua, Nicaragua from 17-18 November, 2015. Participants included six CGIAR Centers (Bioversity, CIAT, CIMMYT, CIP, ICRAF, and IFPRI), as well as CATIE and CIRAD and 20+ national partners. Centers represented work of nine CRPs (from Phase 1) which are active in the region (A4NH, CCAFS, FTA, Humidtropics, L&F, Maize, PIM, RTB, and WLE). Opportunities for further CRP integration were identified, including shared goals, activities, partnerships that would benefit the work being carried out by each program in Nicaragua and a proposed theory of change and impact pathway to carry them out. At least three Flagship Projects in FTA II (Livelihoods, Landscapes, Value Chains) plan to conduct research in Nicaragua. The Nicaragua-Honduras Sentinel Landscape (NHSL) established in Phase I of FTA will be retained in phase 2 of FTA with much intensified research efforts in this territory. CIRAD is augmenting its research efforts in NHSL and other territories in Nicaragua, in close partnership with CATIE, ICRAF and FTA.	and FTA regarding baseline surveys and implementation of agroforestry measures. Developing information and knowledge management systems are essential to sustain dialogue and communication. Unlike other countries, we don't anticipate Nicaragua being a physical hub leading to a single CGIAR office. Political situation in Nicaragua is challenging and therefore engagement with the national Government and collective process towards policy level process are not easy. To meet donor/CGIAR aspirations on site integration, dedicated funding to support coordination and collective efforts is required.

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
Zambia	The Consultative Group on International Agricultural Research (CGIAR) entities in Zambia held a National Consultation Workshop between 9 and 10 February 2016. The workshop organized by the International Maize and Wheat Improvement Center (CIMMYT) Southern Africa Regional Office brought together stakeholders from nine CGIAR Research Programs (CGIAR Centers involved were CYMMT, ICRAF, CIFOR, ILRI, ICRISAT, Bioversity, CIAT, Worldfish and IITA), government officials and researchers from across Zambia. Prior to this meeting, CGIAR research programs in Zambia had cooperated in various portfolios e.g., the CIFOR-HarvestPlus-Worldfish Consortium running a research project in the northern part of Zambia. Other forms of bilateral collaboration between CGIAR research programs are known to have taken place across Zambia and these experiences came to bear in the consultative meeting. Key issues identified for site integration included the following: a) Shared vision among CGIAR Centers and national partners and alignment of CGIAR research activities to national priorities b) Identification of research priorities, effective delivery and scaling-out c) Resource mobilization to drive site integration process d) Capacity development of national partners and research infrastructure e) Impactful development initiatives to ensure improved production, food and nutrition security for smallholder farmers in Zambia	Prior to the site integration meeting, a Steering Committee was established and this committee will continue to work on integration and will focus on the following: • Facilitate discussions in smaller groups and follow site integration road map • Feedback on high-level meetings to follow and decisions on Zambia Site Integration. Maintain momentum and keep partners informed on the progress of site integration process • Develop a communications strategy and embed it into the Zambian-based CGIAR Centers' work • Develop plan for site integration and get buy-in from stakeholders • Resource mobilization that will operationalize site integration • Establish clear Terms of References for people in charge of coordination • Partners to start engaging each other in current projects and start joint projects • Develop and produce proposal and plan with clear steps and timelines • Buy-in from regional/country representatives/headquarters

Target country (++ and + countries relevant to your CRP)	Define steps taken so far (March 2016) to establish national level engagement with other CRPs towards site integration	Define plan and schedule through which your CRP will provide relevant elements for development of CGIAR site integration in this country
	The meeting noted the centrality of maize production in the region and its implications for food security and forests. Further, there are at least three Flagship Projects in FTA II in Zambia (Livelihoods, Landscapes, Climate Change) that are carrying out research and plan to intensify the work. The Miombo Sentinel Landscape (covering parts of Zambia, Malawi, Mozambique and Zimbabwe) established in Phase I of FTA will be developed further. A number of CGIAR research programs active in southern Africa hold various forms of data on the selected landscape and this provides a centralizing point for collaboration for the site integration work under FTA II with an increased exchange of data and intensified research efforts in the territory.	

Annex 3.8 Staffing of management team and Flagship projects

The FTA team represents more than 160 scientists for about 146 full-time equivalents (FTE). The gender ratio is now at 40% female, which is slightly lower than FTA I. Our target, like for FTA I, is to reach – as soon as possible – a 50%/50% female/male balance.

The tables below present the most important and already identified members of the team, including the Support Platform members, FP leaders, CoA heads and crosscutting theme coordinators. A series of CVs are provided for the most senior people or ones with management roles in the program.

3.8.1 FTA Phase II team members

Support Platform – Delivering Impact and Inclusion

Name	Organization	Role	% Time
Nasi Robert	CIFOR	SP leader	30%
Belcher Brian	Royal Roads University/CIFOR	MELIA coordinator	35%
Hughes Karl	ICRAF		35%
Gotor Elisabetta	Bioversity		30%
Hassan Mehmood	ICRAF	CapDev coordinator	50%
Gassner Anja	ICRAF	Data for Impact coordinator	55%
Kroma Margaret	ICRAF	Gender/Youth coordinator	25%
Basnett Bimbika	CIFOR		100%
Badgery-Parker Imogen	CIFOR	Communication coordinator	35%
Finlayson Robert	ICRAF		35%

Flagship 1 – Tree Genetic Resources

Name	Organization	Role	% Time
Jamnadass Ramni	ICRAF	FP1 leader	80%
Graudal Lars	UCPH/ICRAF	CoA 1.3 coordinator	80%
Loo Judy	Bioversity	CoA 1.1 coordinator	75%
Dawson Ian	JHI		65%
Kamau-Rutenberg Wanjiru	AWARD		15%
Tchoundjeu Zac	ICRAF	CoA 1.2 coordinator	90%
Kouame Christophe	ICRAF		100%
Thomas Evert	Bioversity		70%
Duminil Jerome	Bioversity		20%
Kindt Roeland	ICRAF		80%

Flagship 2 – Livelihood Systems

Name	Organization	Role	% Time
Sinclair Fergus	ICRAF	FP2 leader	75%
Pagella Tim	Bangor University	CoA 2.2 coordinator	50%
Cronkleton Peter	CIFOR	CoA 2.1 coordinator	100%
Vaast Philippe	CIRAD	CoA 2.3 coordinator	100%
Muthuri Catherine	ICRAF	CoA 2.4 coordinator	100%
Chacon Adriana	CATIE	CoA 2.5 coordinator	50%
Larson Anne	CIFOR		100%
Barrios Edmundo	ICRAF		50%
Kassa Habtemariam	CIFOR		100%
Winowieki Leigh	ICRAF		50%
Donovan Jason[2]	ICRAF		30%

Flagship 3 – Value Chains

Name	Organization	Role	% Time
Pacheco Pablo	CIFOR	FP3 leader	100%
Piketty Marie-Gabrielle	CIRAD	CoA 3.1 coordinator	25%
Schoneveld George	CIFOR	CoA 3.2 coordinator	100%
Savenije Herman	Tropenbos International	CoA 3.3 coordinator	25%
Levang Patrice	IRD-CIFOR		25%
Guariguata Manuel[3]	CIFOR		50%
Sist Plinio	CIRAD		25%
Stoian Dietmar	Bioversity		25%
Donovan Jason	ICRAF		50%
Cerutti Paolo	CIFOR		80%

Flagship 4 – Landscapes

Name	Organization	Role	% Time
van Noordwijk Meine	ICRAF	FP4 leader	80%
Sunderland Terry	CIFOR	CoA 4.3 coordinator, A4NH liaison	80%
Minang Peter[4]	ICRAF	CoA 4.2 coordinator	70%
Somarriba Eduardo	CATIE	CoA 4.3 coordinator	80%
Leimona Beria	ICRAF	CoA 4.4 coordinator	80%
Catacutan Delia	ICRAF	PIM liaison	80%
Finegan Bryan	CATIE	CoA 4.2 co-coordinator	80%

2 Also works in Flagship 3.
3 Also works in Flagship 4.
4 Also works in Flagship 5.

Name	Organization	Role	% Time
Boot Rene	Tropenbos International	CoA 4.4 co-coordinator	100%
Dewi Sonya	ICRAF	CoA 4.2 co-coordinator	80%
Wunder Sven	CIFOR		100%
Guariguata Manuel	CIFOR	WLE liaison	50%

Flagship 5 – Climate Change

Name	Organization	Role	% Time
Martius Christopher	CIFOR	FP5 leader and CoA 5.1 coordinator	100%
Locatelli Bruno	CIRAD / CIFOR	CoA 5.2 coordinator	100%
Sharma Navin	ICRAF	CoA 5.3 co-coordinator	100%
Brockhaus Maria	CIFOR	CoA 5.4 coordinator	100%
Djoudi Houria	CIFOR		75%
Duguma Lalisa	ICRAF		50%
Baral Himlal	CIFOR		100%
Hyman Glenn	CIAT		85%
Angelsen Arild	NMBU		25%
Kanninen Markku	University of Helsinki /CIFOR		25%
Minang Peter	ICRAF		30%

3.8.3 Steering Committee and Management Team TORs and FTA Leader job description

Composition, selection and ToR for FTA II Independent Steering Committee

Introduction

FTA has drawn lessons on its governance and management from Phase I and, in keeping with the recommendations of the IEA and CO, has changed both the composition and the responsibilities of its Independent Steering Committee (ISC). This is to ensure that FTA ISC has a majority of voting members who are independent so FTA can benefit from the advice and views of individuals with no institutional bias and with FTA's best interests as their overall objective.

Steering Committee composition

Size: 8 members (7 full, 1 *ex-officio*)

- 3 participating partners (1 Lead Center, 1 CGIAR Center, 1 non-CGIAR partner)
- 4 independent members
- *Ex-officio* (non-voting): FTA Director

Independent members are:

- selected in their individual capacity and do not have a conflict of interest in being a ISC member (i.e. they do not represent or work for any of the institutions involved in the FTA partnership)
- short-listed by the FTA Director following nominations from current ISC members
- short list is discussed by the ISC and selected members proposed by the current ISC members to the Lead Center Board of Trustees (BoT)
- appointed by the Lead Center BoT for a fixed term (2 years), with a single option for renewal.

Independent members are individuals known internationally and respected for their professional expertise in fields relevant to FTA. The overall ISC should show, to the extent possible, a balance in gender, discipline and geographic representation.

The Chair is chosen among the independent members, nominated by the ISC and appointed by the Lead Center BoT for a two-year fixed term, renewable once.

The ISC welcomes observers and can call upon resource persons from within or outside CGIAR for specific questions.

Participating partner members:

- represent the whole range of respective strategic partners (CGIAR and non-CGIAR) and not their own institutional interests
- must request inputs from other partners ahead of ISC meetings based on the proposed agenda
- representative actually sitting in ISC meetings is chosen by his/her constituencies (CGIAR Centers, non-CGIAR partners) for a period of two years.

Reporting

The Chair of the ISC reports to the BoT of the Lead Center, CIFOR.
Minutes of ISC meetings are prepared by the FTA Director and approved by the ISC members via email and are publicly available, once approved.

Responsibilities

Strategic planning, oversight and monitoring

- Review the set of participating partners and make recommendations about possible changes to the Lead Center Board based upon performance criteria set by FTA.
- Review and comment upon the strategic directions proposed by the FTA Director. Actively oversee the overall FTA portfolio to ensure overall coherence with these strategic directions, including by supporting (or not) proposals to include bilateral funds as well as Windows 1 and 2 (W1/W2) projects in the FTA portfolio based on analyses provided by the Management Team (MT).
- Approve the annual Program of Work and Budget prepared by the MT based on inputs provided by the Flagships and crosscutting themes. Once agreement is reached, the ISC proposes its approval to the Lead Center BoT.
- Commission and approve FTA's management response to external reviews (CCER, IEA) upon proposition from the MT or the Lead Center BoT.
- Provide guidance to the MT in developing and updating the FTA research strategy including programmatic priorities.
- Ensure that advice and direction from the Consortium Board, Fund Council and ISPC are considered in FTA planning and implementation.
- Work with the DG of the Lead Center to design and implement a transparent recruitment process for the FTA Director that is in the best interests of the CRP.

Performance review

- Assess FTA performance based on traffic light and annual reports, and conduct other reviews against work plans, making corresponding recommendations to the Lead Center BoT.
- Review the performance of FTA participating Centers and recommend changes to the Lead Center BoT when justified.
- Assess the performance of the FTA Director on an annual basis in close coordination with the DG of the Lead Center who is the direct supervisor of the FTA Director and report accordingly to the CIFOR BoT.

Resource allocation

- Propose the yearly allocation of W1/W2 funding across FTA participating Centers to the Lead Center BoT based on recommendation by the MT and its assessment of partners' performance.
- Facilitate agreement among FTA partners on equitable mechanisms, processes and decision criteria for funding allocations among FTA participating Centers.

Decision-making

The ISC operates by consensus. When consensus cannot be reached, the Chair of the ISC will provide a balanced report of the differing views to the Lead Center BoT, because of its overall fiduciary responsibility for the program. The BoT will then make a decision. In the event that the Lead Center is against the consensus of the ISC, CIFOR's BoT will report this to the Consortium Board/Board of the CGIAR System for a decision to be made at that level.

TORs FTA Management Team

The Management Team (MT) is composed of a maximum of 10 members:

- Flagship leaders
- Strategic partners (Tier 1) not leading a Flagship.

The MT meets monthly via video conference, and meets in person at least twice a year in parallel with the Independent Steering Committee (ISC) meetings and/or science meetings. The MT interacts with the ISC at the regular meetings of the ISC. The agenda will be managed by the MT, but the FTA Director and SC can request the inclusion of specific topics.

The MT can invite observers and or resource persons as and when required.

The MT operates by consensus.

The MT reports to the FTA Director, who is the chairperson.

When consensus cannot be reached, the ultimate decisions remain with the Lead Center because of its overall fiduciary responsibility for the program or, if the Lead Center is against the consensus, with the ISC.

The MT dispute resolution process consists of inviting an independent facilitator to help Participating Centers work through the specific 'sticking point' issue(s).

Responsibilities

- Propose direction and strategy for the FTA program for consideration by the ISC
- Implement active portfolio management and manage project inclusion in FTA, priority setting and scientific quality for Flagship and crosscutting themes
- Provide analyses of the FTA portfolio, including new bilateral projects as well as W1/ W2 activities, to the ISC for confirmation of inclusion in the FTA portfolio
- Recommend the proportional distribution of Window 1 and Window 2 funds to the ISC
- Prepare the inputs for the annual Program of Work and Budget, and Report
- Ensure complementarity and coherence across Centers, CRPs and partners through strategic planning and facilitation
- Plan for and promote outcomes and impact through the development and management of a research program that interfaces appropriately with key stakeholders on the impact pathways
- Take into account advice and direction from the Consortium Board, Fund Council and ISPC in Flagship and crosscutting theme planning and implementation
- Facilitate integration across Flagships and in Sentinel Landscapes as well in as cross-CRP partnerships

- Monitor internal progress (how the program is doing in its activities, outputs, outcomes and impact)
- Manage alignment of the Flagships and the crosscutting themes; ensure that the latter are considered at the beginning of research projects rather than in the middle or at the end
- Ensure coherence and equity in decision-making within and across Flagships and crosscutting themes
- Organize and maintain foresight on prospective or emerging issues
- Coordinate and organize FTA processes or events whenever needed, e.g. information sharing, access to documents, annual science meeting, etc.

FTA Flagship leader job description

Selection, supervision and financial support
The Flagship Leader will serve as an active member of the FTA Management Team (MT) and report to the FTA Director for the proportion of time spent on Flagship coordination. (This could be understood as a 'dotted line' relationship, with the FTA Director providing input to a performance evaluation conducted by the line manager at the host Center). The cost of coordination, including administrative support within reason, will be covered by the FTA management budget following approval by the ISC.

Roles of the Flagship leader
In close collaboration with the Flagship team, the other Flagship leaders and the FTA Director, the Flagship Leader facilitates, coordinates and/or leads the following functions:

Research animation, coordination, planning and reporting
- Provides scientific, conceptual and methodological leadership/coordination, balancing two windows of research that go beyond a narrowly defined Results-Based Management (RBM) approach across all participating Centers.
- Acts as focal point of communication between the MSU and the scientific team contributing to the Flagship.
- Facilitates and welcomes contributions to the planning and execution of the Flagship research agenda and impact pathways from across Participating Centers and partners.
- Organizes scientific retreats, workshops, etc., whenever deemed appropriate.
- Monitors progress on impact pathways in consultation with the Monitoring, Evaluation and Impact Assessment team.
- Provides consolidated reports as and when requested by the CRP Director.
- Contributes to CRP-level coordination and integration.

Portfolio management, fundraising and budgeting
- Provides inputs to the FTA Director for annual budget development and the allocation of Windows 1 & 2 (W1/W2) funds.
- Develops criteria for the evaluation of bilateral projects to qualify for 'bridging' W1/W2 funds.
- Informs the FTA Director about the development of new bilateral projects and prepares the elements for evaluation by the MSU of the relevance of these new projects for FTA.
- Provides inputs to the FTA Director and the Centers' management teams for the continuous monitoring of funding levels and the assessment of funding needs.
- Facilitating communication on proposal development and fundraising opportunities and encouraging partnering among Centers.

Required qualifications
- Recognized competence in relevant scientific disciplines and familiarity with policy arenas and practitioner communities relevant for impact

- Excellent interpersonal skills with a proven track record of facilitating participation in collaborative endeavors
- Good research management record.

Term of appointment and evaluation
The Flagship leader will be appointed for an initial period of two years.

At the end of the appointment period (or upon request of one of the parties as necessary and appropriate), a performance evaluation will take place involving inputs from the host Center, the Flagship team members, the Management Team and the Steering Committee as a basis for extension or reassignment of the appointment.

3.8.3 Support Platform Core Team

ROBERT NASI	68
BRIAN BELCHER	69
KARL ALAN HUGHES	70
ELISABETTA GOTOR	71
MUHAMMD MEHMOOD-UL-HASSAN	72
ANJA GASSNER	73
MARGARET KROMA	74
BIMBIKA SIJAPATI BASNETT	75
IMOGEN BADGERY-PARKER	76
ROBERT FINLAYSON	77

Name: ROBERT NASI

Current position and affiliation: FTA Director, CIFOR, PO Box 0113 BOCBD, Bogor 16000, Indonesia
Phone: +62 8118113901; Email: r.nasi@cgiar.org
Link to Google Scholar profile: https://scholar.google.co.id/citations?user=3U6L7WYAAAAJ&hl=en&oi=ao

Profile: Although management duties are occupying more and more of my time, I never stopped being involved in active research. I am especially interested in issues related to management of integrated natural resources and how it relates to sustainable forest management in the tropics. My main disciplines are ecology, botany, biometrics, tropical forest management and silviculture. I regularly supervise MSc and PhD students on the above topics.

Employment:

- 2014 – present Deputy Director General – Research (CIFOR)
- 2011 – present Director, FTA CGIAR research program

Education:

- 1994 PhD, Biology, Université Paris Sud-Orsay
- 1982 Forest Engineer, Ecole Nationale des Eaux et Forêts

Selected Recent Peer-reviewed publications:

- Fa, J. E., J. Olivero, R. Real, M. A. Farfán, A. L. Márquez, J. Mario Vargas, S. Ziegler, M. Wegmann, D. Brown, B. Margetts & R. Nasi 2015. Disentangling the relative effects of bushmeat availability on human nutrition in central Africa. Scientific Reports 5, Article number: 8168 doi:10.1038/srep08168
- Mayaux, P., Pekel J.F., Desclee B., Donnay F., Lupi A., Achard F., Clerici M., Bodart C., Brink A., Nasi R, Belward A. 2013. State and evolution of the African rainforests between 1990 and 2010. Phil. Tran. Roy. Soc. B vol. 368 no. 1625
- Michon, G., R. Nasi, and G. Balent. 2013. Public policies and management of rural forests: lasting alliance or fool's dialogue? Ecology and Society 18(1): 30. (special feature)
- Cerutti, P., L. Tacconi, G. Lescuyer, R. Nasi. (2012). Cameroon's Hidden Harvest: Commercial Chainsaw Logging, Corruption and Livelihoods. Society and Natural Resources 26(5), 539-553 (n=25)
- Guariguata, M., P. Sist, R. Nasi 2012. Multiple-uses of tropical forests: from concept to reality? Forest Ecology and Management 268:1-5
- Nasi, R., N. Vanvliet, A. Billand 2012. Managing for timber and biodiversity in the Congo Basin. Forest Ecology and Management 268:103-111
- Nasi, R., F. E. Putz, P. Pacheco, S. Wunder, S. Anta 2011. Sustainable forest management and carbon in tropical Latin America: The case for REDD+. Forests, 2, 200-217

Other Evidence of Leadership, large-program management and delivery: As Director of the CRP "Forests Trees and Agroforestry", I manage a USD 233 million program involving four CGIAR Centers and numerous partners. I am a very efficient manager of my time and work comfortably in very variable or uncertain complex environments. I strongly believe in delegation and subsidiarity. I have strong experience in project development and management along the whole spectrum from pure research projects to development projects. I also have a good fundraising record, and personally designed and obtained funding for projects worth more than USD 30 million.

Role in FTA II: FTA Director, Support Platform leader

Name: BRIAN BELCHER

Current position and affiliation: Professor and Canada Research Chair, Royal Roads University (RRU), Canada. Email: brian.belcher@royalroads.ca

Profile: Extensive international experience in research and research management on environment, natural resources and development issues. Interdisciplinary academic training and practical experience with a range of social-environmental issues. Experienced with academic process and student supervision. Program and project management in multicultural environments. Resource mobilization and management of partnerships, including large collaborative activities. Research focus and skills in research evaluation, comparative case studies, natural resources and rural development.

Employment:

- 2013 – present Professor & Tier 1 Canada Research Chair, Sustainability Research Effectiveness, RRU
- 2007 – 2014 Professor & Director, Centre for Livelihoods and Ecology, RRU
- 2007 – present Senior Associate Scientist, Center for International Forestry Research(CIFOR)
- 1997 – 2007 Principal Scientist/Program Leader/Director, CIFOR

Education:

- 1997 PhD Forestry (Economics and Policy), University of Minnesota, USA
- 1988 Masters in Natural Resources Management, University of Manitoba, Canada

Selected Recent Peer-reviewed publications:

- Belcher, B. M., Rasmussen, K. E., Kemshaw, M. R., & Zornes, D. A. (2016). Defining and assessing research quality in a transdisciplinary context. Research Evaluation, 25(1), 1-17.
- Wunder, S., Angelsen, A. and Belcher, B. (2014). Forests, Livelihoods, and Conservation: Broadening the Empirical Base. World Development 64, S1-S11
- Angelsen, A., Jagger, P., Babigumira, R., Belcher, B., Hogarth, N., Bauch, S., Börner, J., Smith-Hall, C. and Wunder, S. (2014). Environmental Income and Rural Livelihoods: A Global-Comparative Analysis. World Development 64, S12-S28
- Belcher, B., Ruiz Pérez, M., and Achdiawan, R. (2005). Global patterns and trends in the use and management of commercial NTFPs: Implications for livelihoods and conservation. World Development 33(9):1435-1452.
- Belcher, B. and Schreckenberg, K. (2007). NTFP Commercialization: A reality check. Development Policy Review 25(3): 355-337

Other Evidence of leadership:

- Director, Center for Livelihoods and Ecology at RRU from 2007-2014
- Program Director, CIFOR, 1999-2003
- Developed and led Socio-economics research Program, INBAR, 1994-1997

Role in FTA II: MELIA coordinator

Name: KARL ALAN HUGHES

Current position and affiliation: Head of Monitoring, Evaluation and Impact Assessment, ICRAF, UN Avenue, Gigiri, Nairobi, Kenya 30677 00100; Phone: +254 20 722 4393; Email: k.hughes@cgiar.org

Profile: Impact evaluation and monitoring and evaluation (M&E) specialist with over 17 years of experience in the international development sector, 14 years of which has been based in Africa and Asia.

Employment:

- Head of Monitoring, Evaluation and Impact Assessment, World Agroforestry Centre (ICRAF), Nairobi, Kenya (10/2014 to present)
- Senior Evaluation Specialist, Independent Evaluation Department, Asian Development Bank (ADB), Manila, Philippines (04/2013 to 10/2014)
- Program Effectiveness Team Leader, Oxfam GB, Oxford, UK (02/2010 to 03/2013)

Education: PhD Impact Evaluation, London School of Hygiene and Tropical Medicine, UK (2012)

Selected Recent Peer-reviewed publications:

- Hughes, Karl and Helen Bushel. (2013) *A Multidimensional Approach to Measuring Resilience: Oxfam GB Working Paper*. Oxford; Available from: http://policy-practice.oxfam.org.uk/publications/a-multidimensional-approach-to-measuring-resilience-302641
- Hughes, Karl and Claire Hutchings. (2011) *Can we obtain the required rigour without randomisation: Oxfam GB's non-experimental Global Performance Framework.* 3ie Working Paper series 13; Available from: http://www.3ieimpact.org/en/evaluation/working-papers/working-paper-13/
- Hughes, Karl. (2012) Getting Oxfam GB's effectiveness reviews to lead to more effective programming. *Impact Evaluation Utilization at Oxfam GB and the Millennium Challenge Corporation.* Webinar hosted by Interaction, Nov. 2012; Available from: http://www.youtube.com/watch?v=T8472-zi2w4&feature=youtu.be
- Hughes, Karl. (2011) Panel Presenter on "Donor Priorities for Evaluation." *Mind the Gap: From Evidence to Policy*. 3ie Conference, Cuernavaca, Mexico, June, 2011.

Role in FTA II: Support Platform

Name: ELISABETTA GOTOR

Current position and affiliation: Scientist, Bioversity International, Via dei Tre Denari 472/a 00057 Maccarese (Fiumicino) Rome, Italy
E-mail: e.gotor@cgiar.org

Profile: Elisabetta is an agricultural economist with more than 10 years of professional experience in international research-for-development work in the area of economic analysis and evaluation of agricultural development problems and policies. Since January 2007, she has been working at Bioversity International first as Associate Scientist (2007-2011) and then as a Scientist, leading and managing the Impact Assessment Unit (2011 to date), soon to be merged into the Development Impact Unit. Throughout her professional career she has been keen to develop personal and management skills such as problem solving, dedication, flexibility and willingness to perform a variety of tasks. She has been conducting and leading fieldwork in Bolivia, China, Ecuador, Kazakhstan, Kenya, India, Peru, The Philippines, Uzbekistan and Yemen.

Employment: Bioversity International (formerly International Plant Genetic Resources Institute, IPGRI), Office of the Deputy Director General-Research, Rome, Italy (2007-to date). Associate Scientist (2007-2011) Scientist-Ad Interim Head, Impact Assessment Unit (2011-2015)

Education: University of Reading, Department of Agricultural and Food Economics, Reading - UK
PhD, Doctor of Philosophy, (Agricultural and Food Economics) (2008)

Selected Recent Peer-reviewed publications:

- Bellon M. R., **Gotor E**., Caracciolo F. 2015. Assessing the effectiveness of projects supporting on-farm conservation of native crops: evidence from the High Andes of South America. ***World Development***. doi:10.1016/j. worlddev.2015.01.014
- Bellon M.R., **Gotor E**., Caracciolo F. 2015. Conserving landraces and improving livelihoods: how to assess the success of on-farm conservation projects? ***International Journal of Agricultural Sustainability*** 13:2 (167-182). doi: 10.1080/14735903.2014.986363
- **Gotor E.**, Caracciolo, F., Blundo Canto, G.M., and Al Nusairi, M., 2013. Improving rural livelihoods through the conservation and use of underutilized species: evidence from a community research project in Yemen, ***International Journal of Agricultural Sustainability***, DOI:10.1080/14735903.2013.796173
- **Gotor E.,** Tsigas M.E., 2011. The impact of the EU sugar trade reform on poor households in developing countries: A general equilibrium analysis: ***Journal of Policy Modeling,*** 33:568-582.
- **Gotor E.,** Caracciolo F., Watts J., 2010.The Perceived Impact of the In-Trust Agreements on CGIAR Germplasm Availability: An Assessment of Bioversity International's Institutional Activities. ***World Development*** 38 (10): 1486–1493

Role in FTA II: Support Platform

Name: MUHAMMD MEHMOOD-UL-HASSAN

Current position and affiliation: Head Capacity Development Unit, ICRAF, Address ICRAF House, UN Avenue, Gigiri, Nairobi, Kenya 30677 00100; Phone: +254 20 722 4181; Email: m.hassan@cgiar.org
Link to Google Scholar profile: https://scholar.google.co.id/citations?user=b9zPUbMAAAAJ&hl=en

Profile: PhD in Capacity Development Analysis, Institutional assessment, natural resource management, innovation system and agricultural research, Skills: Team building, program management, office head, institutional analysis, educational reform, capacity development, inter and transdisciplinarity in research

Employment:

- Senior Scientist, World Agrforestry Center (October 2012 to present)
- Senior Researcher and Coordinator for Transdisviplinarity, Center for Development Research, University of Bonn, Germany (April 2008 – December 2011)

Education: PhD Agricultural Sciences, University of Bonn, Bonn, Germany

Selected Recent Peer-reviewed publications:

- Mehmood-Ul-Hassan, et al., (under review). Rapid Appraisal Approach for Capacity Needs Assessment and its application to Rwandan Agroforestry Extension System. *Development in Practice*
- Mehmood-Ul-Hassan and JD Leeuw. 2015. Enhancing the quality of African climate change science by investing in peer review capacity. Science brief contributed to the Global Sustainable Development Report 2015. Available at: https://sustainabledevelopment.un.org/content/documents/623065-Muhammed_Enhancing%20the%20quality%20of%20African%20climate%20change%20science.pdf
- Hornidge, AK and M. Mehmood-Ul-Hassan, M. (2014). The Making of locally-adapted Agricultural Innovations – Transdisciplinary Innovation Research and its Lessons Learnt. in Lamers, et al., 2014
- VS Saravanan, M Ul-Hassan, B Schraven. Chapter 4.4 Irrigation water management in Uzbekistan: analyzing the capacity of households to improve water use profitability. In Lamers, et al., 2014
- Mehmood-Ul-Hassan, M. 2013. *Nurturing Interdisciplinarity in Agricultural Research: The case of ZEF's Uzbekisatn project*. PhD Dissertation. Faculty of Agricultural Sciences, University of Bonn. Available at http://hss.ulb.uni-bonn.de/2013/3139/3139.htm
- Mehmood-Ul-Hassan, M. (2013). Credit Conditionality and Strategic Sabotage: The tale of first decade of Pakistan's irrigation reform. In *Water Resource Policies for South Asia*.
- Tischbein, AM Manschadi, C Conrad, AK Hornidge, A Bhaduri, M Ul Hassan, JPA Lamers, Usman Khalid Awan, PLG Vlek (2013). Integrated Water Resources Management in a Changing World: Lessons Learnt and Innovative Perspectives. *Water Science&Technology: Water Supply*. 13(2): 337-348

Other Evidence of Leadership, large-program management and delivery:

- Head Capacity Development Unit at ICRAF (October 2012 to present)
- Program steering (FoodAfrica project, Innovation Transfer in Agriculture, CGIAR CapDev CoP) 2013 to present
- Science team coordination (April 2008 – December 2011)

Role in FTA II: Support Platform, Coordinator of CoA: Capacity Development

Name: ANJA GASSNER

Current position and affiliation: Head Research Method Support Unit, ICRAF World Agroforestry Center, UN Avenue, Gigiri, Nairobi, Kenya 30677 00100; Phone: +254 20 722 4236; Email: a.gassner@cgiar.org
Link to Google Scholar profile:
https://scholar.google.co.id/citations?hl=en&user=NNDhq5EAAAAJ&view_op=list_works&sortby=pubdate

Profile: Applied statistics, Geostatistics, Agriculture, Forestry, Applied Development Microeconomics, Sound analytical work specifically on large integrated datasets, demonstrated experience in tailoring analysis and conveying advice in weak capacity contexts, demonstrated experience in poverty and inequality reduction, poverty and welfare measurements, understanding how relevant cross-sectoral FT&A areas interrelated; Skills: Effectiveness in working collaboratively with teams from multiple practices and across different organizations, result based management, strong client engagement skills, good judgment

Employment: Head Research Method Group, World Agroforestry Center (March 2010 to present)

Education: PhD AgroEcology, Carolina Wilhelmina Universität, Braunschweig

Selected Recent Peer-reviewed publications:

- Bourne M, Makui, P.Muller A, Gassner A (2014) Social network analysis for determining gender-differentiated sources of information and tree seedlings, In Catacutan D, McGaw E, Llanza MA(Eds.) In Equal Measure: A User Guide to Gender Analysis in Agroforestry;
- Gassner, A.;Coe, R.;Sinclair, F. 2013 Improving food security through increasing the precision of agricultural development : In: Oliver, M., Bishop, T. and Marchant, B. eds. Precision agriculture for sustainability and environmental Protection. Abingdon: Earthscan & Routledge p34-57; http://www.routledge.com/books/details/9780415504409/,
- Gassner A;Alvare L M;Bamba Z;Beare D;Bernardo M;Biradar C;van Brakel M;Chapman R;Dileepkumar G;Dieng I;Erlita S;Fulss R;Poole J;Kshatriya M;Selim G;Simon R;Prasai N;Garruccio M;Rivas S S;Rajasekharan M;Rao C S 2013 Shifting the goal post—from high impact journals to high impact data Washington, D.C., USA : CGIAR Consortium 26p; http://library.cgiar.org/handle/10947/2884/ ,
- Shepherd, K.D.; Farrow, A.; Ringler, C.; Gassner, A.; Jarvis, D. Review of the Evidence on Indicators, Metrics and Monitoring Systems. World Agroforestry Centre (ICRAF), Nairobi, Kenya (2013) 94 pp. , http://r4d.dfid.gov.uk/Output/192446/ ,
- Kristjanson P, H Neufeldt, A Gassner, J Mango, FB Kyazze, S Desta, G Sayula (2012) Are food insecure smallholder households making changes in their farming practices? Evidence from East Africa, Food Security, 4(3): 381-397
- Gassner, A; Coe, R (2012) Principles of field experiment design, In: Dawson, I., Harwood, C., Jamnadass, R., Beniest, J. eds. Agroforestry tree domestication: a primer. Nairobi: World Agroforestry Centre ICRAF , Kenya, p 55-63,

Other Evidence of Leadership, large-program management and delivery: Managing the research method support to more than 100 bilateral projects and 5 CRP's across 6 ICRAF regional offices (March 2010 to present), Sentinel Landscape Coordinator FTA (Jan 2012 to present)

Role in FTA II: Support Platform, Coordinator of CoA: Data for Impact.

Name: MARGARET KROMA

Current position and affiliation: Assistant Director General, Partnerships, Capacity Development & Impact, ICRAF, World Agroforestry Center, PP Box 30677,UN Avenue, Nairobi, Kenya; Email: m.kroma@cgiar.org

Profile: Rural Sociologist with specializations in the sociology of agriculture/natural resources management, rural extension and gender; over 16 years of research, teaching and outreach addressing social dimensions in smallholder agriculture; Extensive experience in the management of NRM education and community outreach.

Employment:
2013 – present: Assistant Director General, Partnerships Capacity Development & Impact, World Agroforestry Center
2010 – 2013: Head of Unit and Program Officer, Gender & Agriculture, Alliance for a Green Revolution in Africa
2010 – 2013: Special Assistant to the President, AGRA 2010 -2012
2008 – 2010: Project Manager, African Women in Agricultural Research and Development

Education: PhD. Rural Sociology (1999), Iowa State University, Ames, Iowa, USA

Selected Recent Peer-reviewed publications:

- Kroma, M. 2014. Gender in agricultural education and training in sub-Saharan Africa. Chapter 16, In: Swanepoel, F.J.C., Ofir, Z. and Stroebel, A. (Eds). . *Towards Impact and Resilience: Transformative Change in and through Agricultural Education and Training in sub-Saharan Africa*. *Cornell University Press.*.
- Kroma, M. 2013. The role of women in Africa's smallholder agriculture: Status, trends and opportunities, Chapter 11, in: *Africa Agriculture Status Report: Focus on Staple Crops,* Alliance for a Green Revolution in Africa (AGRA), Nairobi, Kenya.
- Davies, K., and M. Kroma, 2013. Extension and advisory services for facilitating sharing of agricultural innovations, Chapter 12, in: *Africa Agriculture Status Report: Focus on Staple Crops,* Alliance for a Green Revolution in Africa (AGRA), Nairobi, Kenya.
- Kroma, M. 2011. African women in agricultural science and technology innovation- The AWARD model: Fixing the "leaky pipeline" of female talent. *Proceedings of the conference on Developing Africa through Science and Technology Innovations in Agriculture: Women as the key drivers*: organized by the Regional University Forum for Capacity Building in Agriculture (RUFORUM). November, 2009.

Other Evidence of Leadership, large-program management and delivery:

- Leadership in the development of the long-term strategic direction and priority setting integrating global development needs in agricultural development and natural resources management.
- Working with teams to develop, refine and pursue strategies by leveraging technical knowledge of team members.
- Collaborating with partners to support relationships with current and potential funders
- Strengthening and developing new relationships with key local government, international and local non-governmental organizations, bi-lateral institutional and corporate partners to support the development
- Providing leadership and promoting collaboration across relevant Units to ensure effective participation in global development dialogue by attending events, hosting meetings and forming relationships with potential partners and funders.

Role in FTA II: Support Platform, Coordinator of Gender CoA

Name: BIMBIKA SIJAPATI BASNETT

Current position and affiliation: Gender Coordinator/Scientist, CIFOR, Jalan CIFOR, Situ Gede, Bogor Barat 16115, Indonesia; Phone: +612 81212426141**;** Email: b.basnett@cgiar.org

Profile: Development studies with specialization in Gender and development, and gender and natural resource governance

Employment: Post-doc fellow gender (2013 – 2014); Gender and social inclusion advisor, UN Women, Nepal (2013); Senior Research Officer, Pacific Institute of Public Policy, Vanuatu (carrying out commissioned research for AusAID/DFAT, UNIFEM/UNWomen, UNICEF and UNFPA across the Pacific Island Countries) (2011 – 2008)

Education: PhD in Development Studies, London School of Economics and Political Science, London, UK, 2008

Selected Recent Peer-reviewed publications:

- Elmhirst, Rebecca, Bimbika Sijapati Basnett and Mia Siscawati, 'Gendered ontologies and the impact of large-scale investments in East Kalimantan', *Journal of Peasant Studies*, under preparation.
- Beth, Bee and Bimbika Sijapati Basnett 'Engendering social and environmental safeguards in REDD+: Lessons from feminist research", *Journal of Development Studies,* Forthcoming
- Ojha, Hemant, Mani Ram Banjade, Bimbika Sijapati Basnett et al. "Harnessing Evidence and Voice in Nepal's Forestry Sector Strategy 2014: A Critical Assessment", *Environment and Society*, Forthcoming
- Hect, Susana, Anastasia Yang, Bimbika Sijapati Basnett and Christine Padoch 'People in Motion, Forests in Transition', *CIFOR Occasional Paper*, Forthcoming
- Klienschmit, Daniela, Bimbika Sijapati Basnett, Adrian Martin, Nitin D. Rai and Carsten Smith-Hall (2015) "Drivers of forests and tree-based systems for food security" in Bhaskar Vira, Christoph Wildburger and Stephanie Mansourian (eds) *Forests, Trees and Landscapes for Food Security and Nutrition: A Global Assessment Report*, International Union of Forest Research Organisation.
- Catacutan, Delia, Esther Mwangi, Bimbika Sijapati Basnett and Ujjwal Pradhan (2014) 'Introduction' in *In Equal Measure: A User Guide to Gender Analysis in Agroforestry Systems*, World Agroforestry Systems, Nairobi.
- Sharma, Sanjay, Shibani Pandey, Dinesh Pathak and Bimika Sijapati Basnett (2014) *State of Migration in Nepal', Center for the Study of Labour Mobility*, Social Science Baha, Kathmandu.

Other Evidence of Leadership, large-program management and delivery:
Coordinate the integration of gender responsive or gender specific research in each of CIFOR's research portfolio, review proposals, and provide support with M&E; Gender focal point for CGIAR research programme on Forests, Agroforestry and Landscapes; Experience coordinating with other researchers within CIFOR; coordinating with partners on collaborative research projects; managing research staff, external consultants, interns, students and field researchers

Role in FTA II: Support Platform, Gender.

Name: IMOGEN BADGERY-PARKER

Current position and affiliation: Outreach Manager, CIFOR; Address: Center for International Forestry Research, Jalan CIFOR, Situ Gede, Bogor Barat 16115, Indonesia; Email: i.badgery-parker@cgiar.org

Profile: Professional communicator with 12 years' experience in writing and editing for the media, academic, environment and development sectors, and in publishing, R&D, management, market development, marketing, journalism and communications.

Employment:
2014 – present Center for International Forestry Research Outreach Manager
2008 – 2014 Writer/Editor Consultant

Education: Graduate Diploma in Journalism (MA program), University of Technology Sydney. 2008. Bachelor of Arts (First Class Honours), University of Sydney. 1997.

Role in FTA II: Support Platform, Coordinator of CoA Communications

Name: ROBERT FINLAYSON

Current position and affiliation: Research Communications Specialist and Project Development Unit Coordinator, World Agroforestry Centre (ICRAF), Jl. CIFOR, Situ Gede, Sindang Barang, Bogor 16115, Indonesia; Office telephone: (+62) 251-8625415 Cell phone: +62 811 9627 801; E-mail: r.finlayson@cgiar.org

Employment: Research Communications Specialist and Project Development Unit Coordinator, ICRAF

Education: Master of Arts (Writing), Edith Cowan University

Other Evidence of Leadership, large-program management and delivery: Management advisor, Interkultur Foundation, Jakarta (volunteer with Austraining International and AusAID); Project officer, visual arts, crafts and writing, Western Australia Department of Culture and the Arts; Chief executive officer, Western Australia State Literature Centre; Development officer, Town of Vincent; Development officer, City of Subiaco; Sole proprietor, The Room Communications Consultancy

Role in FTA II: Support Platform, Communications.

Flagship 1 CVs

RAMNI H. JAMNADASS 79
LARS GRAUDAL 80
JUDY LOO 81
IAN KENNETH DAWSON 82
WANJIRU KAMAU-RUTENBERG 83
ZAC TCHOUNDJEU 84
CHRISTOPHE KOUAME 85
EVERT THOMAS 86
JEROME DUMINIL 87
ROELAND KINDT 88

Name: RAMNI H. JAMNADASS

Current position and affiliation: 1) Science Domain Co-leader for Diversity, Domestication and Delivery and ICRAF Genebank; 2) ICRAF Focal point for FTA 6.1.1.1 and FTA 6.1.2.3 and FTA 6.2; 3) Leader for African Orphan Crops Consortium genomics Lab (AOCC); 5) proposed leader FP1 in FTA 2
Address: World Agroforestry Centre (ICRAF), Phone: +254 710602227; Email: r.jamnadass@cgiar.org

Profile: Main area of expertise: Tree domestication, molecular biology, conservation genetics, tree foods for nutrition and health. >10 years' of experience of science team management.

Employment: 2012-current Current: ICRAF Science Domain Leader (Diversity, Domestication and Delivery) and ICRAF lead scientist for African Orphan Crops Genomics Laboratory; ICRAF Global Research Program Leader (2007-2011); Head, Genetics Resources Unit (Global Unit), ICRAF (Dec 2006- June 2012)

Education: 1982: Nairobi University, Kenya: M.Sc. Biochemistry; 1994: International Livestock Research Institute (ILRI) and Brunel University, London: Ph.D. Molecular biology / Biochemistry; 1997-2003: International Livestock Research Institute (ILRI) Post-doctoral fellowship (joint with University of Nairobi): Genetic Diversity and Conservation of Genetic resources while lecturing part time at University of Nairobi

Selected Recent Peer-reviewed publications:

- Dawson I, Harwood C, Jamnadass R, Beniest J (eds.) (2012) Agroforestry tree domestication: a primer. The World Agroforestry Centre, Nairobi, Kenya. 148 pp
- Public Private Partnerships in Agroforestry (2014) Jamnadass, R. Langford, K. Anjarwalla, P. Mithöfer, D. In van Alfen, N. (ed.) Encyclopaedia of Agriculture and Food Systems Vol.4 San Diego: Elsevier p544-564
- Jamnadass, R. McMullin, S. Iiyama, M. Dawson, I.K. Powell, B. Termote, C. Ickowitz, A. Kehlenbeck, K. Vinceti, B. van Vliet, N. Keding, G. Stadlmayr, B. Van Damme, P. Carsan, S. Sunderland, T. Njenga, M. Gyau, A. Cerutti, P. Schure, J. Kouame, C. Obiri, B.D. Ofori, D. Agarwal, B. Neufeldt, H. Degrande, A. Serban, A. 2015 Understanding the roles of forests and tree-based systems in food provision *IUFRO World Series vol. 33 In: Vira, B., Wildburger, C., Mansourian, S. 2015. Forests, Trees and Landscapes for Food Security and Nutrition: a global assessment report* p25-49 2015062 http://bit.ly/1K1Ub8Y
- Utilization and transfer of forest genetic resources: A global review (2014) Jarkko Koskela, Barbara Vinceti, William Dvorak, David Bush, Ian K Dawson, Judy Loo, Ramni Jamnadass, Forest Ecology and Management 333, 22-34
- Allanblackia, a new tree crop in Africa for the global food industry: market development, smallholder cultivation and biodiversity management (2010): R Jamnadass, IK Dawson, P Anegbeh, E Asaah, A Atangana, Forests, Trees and livelihoods 19 (3), 251-268

Other Evidence of Leadership, large-program management and delivery:

- 12 years (and currently lead) Allanblackia (AB) R&D in a public private partnership with Unilever, UEBT, IUCN, and national institutes in 4 countries in Africa http://www.allanblackiapartners.org/. AB is a potentially new tree crop for Africa and the AB spread has been launched in some European markets.
- 2012-2016 Initiated "Fruiting Africa" promoting food tree species for food and nutritional security, >4.5M USD (competitive funding IFAD-EC).
- 2012-2016 Support ICRAF's Agroforestry Global Genetic Resources Unit. Considerable effort and a strong case was made to get trees included into CRP Genebanks > 4M USD and ongoing to phase 2.

Role in FTA II FP1: CRP Coordinator for FP1 and manage linkages between FTA and Genebank CRP, A4NH and the Genetic Gain Platform.

Name: LARS GRAUDAL

Current position and affiliation: 1) Senior Advisor and Research Group Leader in Tropical Trees and Landscapes, University of Copenhagen; 2) Science Domain Co-Leader (Diversity, Domestication and Delivery), World Agroforestry Centre (ICRAF), Phone: +254 726407134; Email: 1) lgr@ign.ku.dk; 2) L.Graudal@cgiar.org

Profile: Specialized in use and conservation of genetic resources of trees. Field experience from >70 missions, several as team leader, to >20 countries mainly in the tropics. Combines >20 years of experience from forestry development practice (past) with >10 years of experience from science and science management (current). Member of the FAO Panel of Experts on Forest Gene Resources 2001-2007. Domain Expert to EC COST Domain on Forests, their Products and Services (FPS), since 2010. Chairman of Teaknet, 2010 – .

Employment: Current, see above; 2004-2012: Director of Research in Management of Tree Genetic Resources and of the Hoersholm Arboretum, UCPH; 2001-2003: Director of the Danida Forest Seed Centre (DFSC) and of the Danish Tree Improvement Station (DTIS), Ministry of Environment, Denmark

Education: M.Sc. in Forestry, 1982, The Royal Veterinary and Agricultural University, Copenhagen, Denmark

Selected Recent Peer-reviewed publications:

- Stanturf, JA, Kant, P, Lilleso, J-PB, Mansourian, S, Kleine, M, Madsen, P, **Graudal**, L **2015**: Forest Landscape Restoration as a Key Component of Climate Change Mitigation and Adaptation. IUFRO World Series, 34, 72 p.
- Sanou, H, Hansen, JK, Koné, S, Angulo-Escalante, MA, Martínez, J, Nikiema, A, Kalinganire, A, Kjær, ED, **Graudal**, L, & Nielsen, LR **2015**: Lost genetic diversity of *J. curcas* L. through domestication. Crop Sci. 55:1–11.
- Hansen, OK, Changtragoon, S, Ponoy, B, Kjær, ED, Minn, Y, Finkeldey, R & L **Graudal**, **2015**: Genetic resources of teak - strong genetic structure among natural populations. Tree Genetics & Genomes 11:802.
- **Graudal**, L, Aravanopoulos, F, Bennadji, Z, Changtragoon, S, Fady, B, Kjær, ED, Loo, J, Ramamonjisoa, L, Vendramin, G.G. **2014**: Global to local genetic diversity indicators of evolutionary potential in tree species within and outside forests. Forest Ecol. Manage. 333: 35–51.
- Lillesø, JPB, **Graudal**, L, Moestrup, S, Kjær, ED, Kindt, R, Mbora, A, Dawson, I, Muriuki, J, Ræbild, A & Jamnadas, R **2011**. Innovation in input supply systems in smallholder agroforestry: seed sources, supply chains and support systems. Agr.for Systems 83:347-359.

Other evidence of Leadership, large-program management and delivery:

- 21 years in Danish public and international administration, management of forests (Danish Ministry of Environment and FAO) of which six years in managerial positions incl. as Director of DTIS (breeding programme >40 tree species, seed business >1 M USD/yr, production >5 M tree seedlings/yr) and DFSC (support to National Tree Seed Programmes >15 tropical countries, >50 M USD over 10 yrs).
- Nine yrs as research manager at UCPH, 2004-2012; Research Team of 25 based on approx. 25M USD budget (60% competitive funding: EU, Danida, Rockefeller Foundation, GBHF Fund).
- 2012-2015 Support to genetic studies of tropical and temperate species, > 3M USD (competitive funding Danida, GBHF, Islamic Development Bank, Ministry of Environment Grant Fund Denmark).
- 2011-2015 Support to Harapan Rainforest, Sumatra > 8M USD (Danida Climate Funds).

Role in FTA II FP1: TGR: Leader of CoA 3.1 on delivery systems for tree planting material.

Name: JUDY LOO

Current position and affiliation: Science Domain Leader, Forest Genetic Resources and Restoration, Bioversity International, Phone: +39 066118292; Email: j.loo@cgiar.org

Profile: Forester, quantitative and population geneticist. Began career as tree breeder, focusing on wood quality and adaptive traits. Conducted research on conservation of tree genetic resources and restoration of threatened tree species in eastern Canada and Mexico, including breeding for pest resistance. Conducted gap analyses and participatory research for protection of high conservation value sites in Fundy Model Forest; chaired scientific advisory committee for protected areas program in New Brunswick, Canada. Tested genetics indicators in North American Criteria and Indicators study. Supervised graduate students in conservation genetics, pest and drought resistance, forest history. Taught summer courses in Conservation Genetics at Mexican universities from 1998 to 2008. Managed global and regional projects in four continents on conservation and sustainable management of tree genetic resources.

Employment: 2009-present: Global Coordinator, Forest and other wild plant resources, then Theme Leader, Forest Genetic Resources, now Science Domain Leader: Forest Genetic Resources and Restoration at Bioversity International; Previously Research scientist, Canadian Forest Service, Natural Resources Canada

Education: Ph.D. Crop Science - Forest Resources, Major fields: Quantitative and Population Genetics; Minor: Statistics, Oklahoma State University, USA, 1986.

Selected Recent Peer-reviewed publications:

- Relationships between population density, fine-scale genetic structure, mating system and pollen dispersal in a timber tree from African rainforests. (2016) Duminil J, Daïnou K, Kaviriri DK, Gillet P, Loo J, Doucet JL, Hardy OJ. Heredity. 116, 295–303
- Uncovering spatial patterns in the natural and human history of Brazil nut (Bertholletia excelsa) across the Amazon Basin (2015) E Thomas, C Alcázar Caicedo, CH McMichael, R Corvera, J Loo. Journal of Biogeography 42 (8), 1367-1382.
- What is the relevance of smallholders' agroforestry systems for conserving tropical tree species and genetic diversity in circa situm, in situ and ex situ settings? A review (2013)IK Dawson, MR Guariguata, J Loo, JC Weber, A Lengkeek, D Bush, …Biodiversity and Conservation 22 (2), 301-324.
- Present spatial diversity patterns of Theobroma cacao L. in the neotropics reflect genetic differentiation in Pleistocene refugia followed by human-influenced dispersal (2012) E Thomas, M van Zonneveld, J Loo, T Hodgkin, G Galluzzi, J van Etten, PloS one 7(10), e47676.
- The role of forest genetic resources in responding to biotic and abiotic factors in the context of anthropogenic climate change (2014) RI Alfaro, B Fady, GG Vendramin, IK Dawson, RA Fleming, ..J Loo. Forest Ecology and Management 333, 76-87.
- Genetic considerations in ecosystem restoration using native tree species (2014) E Thomas, R Jalonen, J Loo, D Boshier, L Gallo, S Cavers, S Bordács, ... Forest Ecology and Management 333, 66-75.

Other Evidence of Leadership, large-program management and delivery: As Theme Leader within Bioversity's Forest Genetic Resources program, developed team of scientists and research assistants/specialists; supervised five scientists and three research specialists located in three continents; managed or supervised management of multiple grants and co-managed thematic areas within FTA Flagship 2.

Role in FTA II FP1: Coordinator CoA 1.1

Name: IAN KENNETH DAWSON

Current position and affiliation: Associate Fellow, World Agroforestry Centre, iankdawson@aol.com

Profile: Main areas of expertise: molecular ecology; conservation genetics; tree and crop domestication; science writing (esp. position development)

Employment: Associate Fellow with the World Agroforestry Centre (ICRAF), Nairobi, Kenya. Working with a team at ICRAF to support managers and the team (not managing projects directly); Scientist with the James Hutton Institute (JHI), Dundee, Scotland (concurrent). Involved in crop domestication research including genomics, especially on barley.

Education: Univ. of Dundee, Scotland: PhD, Molecular ecology and tree population genetics. 1995
Univ. of Birmingham, UK: MSc, Conservation and use of plant genetic resources. 1991

Selected Recent Peer-reviewed publications:

- Dawson IK, Guariguata MR, Loo J, Weber JC, Lengkeek A, Bush D, Cornelius J, Guarino L, Kindt R, Orwa C, Russell J, Jamnadass R (2013) What is the relevance of smallholders' agroforestry systems for conserving tropical tree species and genetic diversity in circa situm, in situ and ex situ settings? A review. Biodiversity and Conservation, 22, 301-324.
- Dawson IK, Leakey R, Clement CR, Weber JC, Cornelius JP, Roshetko JM, Vinceti B, Kalinganire A, Masters E, Jamnadass R (2014) The management of tree genetic resources and the livelihoods of rural communities in the tropics: non-timber forest products, smallholder agroforestry practices and tree commodity crops. Forest Ecology and Management, 333, 9-21.
- Dawson IK, Vinceti B, Weber JC, Neufeldt H, Russell J, Lengkeek AG, Kalinganire A, Kindt R, Lillesø J-PB, Roshetko J, Jamnadass R (2011) Climate change and tree genetic resource management: maintaining and enhancing the productivity and value of smallholder tropical agroforestry landscapes. A review. Agroforestry Systems, 81, 67-78.
- Jamnadass RH, Dawson IK, Franzel S, Leakey RRB, Mithöfer D, Akinnifesi FK, Tchoundjeu Z (2011) Improving livelihoods and nutrition in sub-Saharan Africa through the promotion of indigenous and exotic fruit production in smallholders' agroforestry systems: a review. International Forest Review, 13, 338-354.
- Russell JR, Hedley PE, Cardle L, Dancey S, Morris J, Booth A, Odee D, Mwaura L, Omondi W, Angaine P, Machua J, Muchugi A, Milne I, Kindt R, Jamnadass R, Dawson IK (2014) tropiTree: an NGS-based EST-SSR resource for 24 tropical tree species. PLoS ONE, 9, e102502. doi:10.1371/journal.pone.0102502.

Role in FTA II FP1: Strategy development, research, writing.

Name: WANJIRU KAMAU-RUTENBERG

Current position and affiliation: Director, African Women in Agricultural Research and Development (AWARD), Nairobi, Kenya, Phone: +254 725661968, Email: w.kamauR@cgiar.org

Profile: Main areas of expertise: Gender Responsive Agricultural Research; Institutional and Individual Capacity Building; Organizational Management; Strategic Planning; Project Management

Employment:

March 2014 – Present:	Director, AWARD, Kenya
May 2005 – March 2014:	Founder and Executive Director, Akili Dada, Kenya and USA
August 2008 – March 2014:	Assistant Professor, Politics, University of San Francisco, USA
August 2013 – January 2014:	Lecturer, International Relations, Hekima College, a Constituent College of the Catholic University of Eastern Africa, Kenya

Education:

May 2008:	Ph.D. Political Science: University of Minnesota, USA
June 2005:	M.A. Political Science: University of Minnesota, USA

Other Evidence of Leadership, large-program management and delivery: Board of Directors: African Democratic Institute, Johannesburg, South Africa, July 2013-Present. Jury member: International Intercultural Innovation Award, United Nations Alliance of Civilizations & BMW Group, Vienna, Austria, 2013. Advisory Council: New Economy Ventures Accelerator, United States International University, Nairobi and Colorado State University, October 2012-Present. Steering Committee: Opportunity Collaboration. Ixtapa, Mexico, November 2011 – present. White House Champion of Change, United States White House and the United States Department of State, 2012. 100 Most Influential Africans, Civil Society category, New African Magazine, 2012. Top 40 Under 40 Years, Business Daily, Kenya, 2014. Champion of Democracy in East Africa, Ford Foundation, New York, U.S.A. 2012. Africa's Most Influential Women in Business and Government, Winner, Civil Society category Nairobi, 2013. Africans to Follow on Social Media, Independent Global Citizen, 2012. African Achievers International MDG Award, Ferguson Centre for African Studies at the University of Bradford, United Kingdom, 2011. Thomas I. Yamashita Prize, Center for the Study of Social Change, University of California at Berkeley, USA, 2011. Google Fellow, Personal Democracy Forum, New York, USA, 2010. Winner, Marketplace of Ideas, United Nations Alliance of Civilizations, Rio de Janeiro, Brazil, 2010.

Role in FTA II FP1: Primary partner for gender and equality.

Name: ZAC TCHOUNDJEU

Current position and affiliation: ICRAF Regional Coordinator for West and Central Africa Region, World Agroforestry Centre (ICRAF), Phone: +237 677707582; Email: z.tchoundjeu@cgiar.org

Profile: Main areas of expertise: Principal Scientist (Forester specialized in Tree Improvement). Agroforestry, Improvement of livelihoods of small scale farmers, Domestication of high value but lesser known indigenous fruit trees of tropical forests; sustainable management of tropical forests.

Employment: ICRAF Regional Coordinator for West and Central Africa. Overseeing ICRAF research activities in Sahel and Humid tropics Nodes, for eight countries.

Education: PhD Natural Resources University of Edinburgh Scotland UK.

Selected Recent Peer-reviewed publications:

- Makuti JT, Tchoundjeu Z, Tsobeng A, Numbissi F, Tsafack S. (2015). Local communities' perception and willingness on sustainable management of a natural threatened resource: case study of Baillonella toxisperma Pierre in Eastern Cameroon. Journal of Biodiversity and Environmental Sciences (JBES); Vol 6, N0 5, pp 74-94.
- Takoutsing Bertin, Tchoundjeu Zacharie, Degrande Ann, Asaah Ebenezar & Tsobeng Alain (2014). Scaling-up Sustainable Land Management Practices through the Concept of the Rural Resource Centre: Reconciling Farmers' Interests with Research Agendas DOI: 10.1080/1389224X.2014.913984.
- Alemagi, D., Hajjar, R., Tchoundjeu, Z., Kozak. R. A., 2013. Cameroon's Environmental Impact Assessment Decree and publiparticipation in concession-based forestry: An exploratory assessment of eight forest-dependent communities.
- Tchoundjeu Z, Asaah E, Bayala J, Kalinganire A, Mng'omba S (2012) Vegetative propagation techniques. In: Dawson I, Harwood C, Jamnadass R, Beniest J (eds.) Agroforestry tree domestication: a primer. The World Agroforestry Centre, Nairobi, Kenya. pp. 110-117.
- Tchoundjeu Z, Asaah E, Dawson I, Leakey R (2012) The participatory tree domestication approach. In: Dawson I, Harwood C, Jamnadass R, Beniest J (eds.) Agroforestry tree domestication: a primer. The World Agroforestry Centre, Nairobi, Kenya. pp. 134-139.
- Tchoundjeu, Z ; Degrande, A; Leakey R.R.B., NIMINO,G; KEMAJOU, E; Asaah, E; Facheux, C; Mbile, P; Mbosso, C; Sado, T. and Tsobeng, A. 2010. Impacts of participatory tree domestication on farmer livelihoods in West and Central Africa. Forest, Treesand Livelihoods, vol. 19, pp. 217-234.
- Tchoundjeu Z., Tsobeng A., Asaah E., Angbeh P. (2010). Domestication of Irvingia gabonensis (Aubry Lecomte) by air layering. Journal For Horticultural and Forestry Vol 2 (6).

Role in FTA II FP1: Lead CoA 1.2 of FP1.

Name: CHRISTOPHE KOUAME

Current position and affiliation: Senior Scientist & Country Director ICRAF Cote d'Ivoire Country Program, World Agroforestry Centre (ICRAF), Phone: +225 22446774, Email: c.kouame@cgiar.org

Profile: My areas of interest include tree and crop domestication, plant breeding and improvement of livelihoods of small scale farmers. My work aims at revitalizing the productivity of aging cocoa farms through the development of management options for sustainable intensification / rehabilitation of cocoa cropping systems.

Employment: ICRAF Country Program Manager in Cote d'Ivoire since 2010. Lead the implementation of ICRAF public-private-partnership program of Vision for Change; Liaison Officer, AVRDC-The World Vegetable Center. Yaoundé, Cameroon. 2007-2010. Managed AVRDC-The world Vegetable Center regional program in nine countries of the humid zones of West and Central Africa; Senior Scientist, Centre National de Recherche Agronomique (CNRA)> Abidjan, Cote d'Ivoire. 1998-2007

Education: PhD (1991). Plant Breeding and Agronomy, University of Florida; M.Sc (1987). Plant Breeding. University of Florida; Ingenieur Agronome (1984). Ecole Nationale Superieure Agronomique (ENSA). Abidjan, Cote d'Ivoire

Selected Recent Peer-reviewed publications:

- Gyau Amos, Kaitlyn Smoot, Christophe Kouame, Lucien Diby, Jane Kahia & Daniel Ofori. 2014. Farmer attitudes and intentions towards trees in cocoa (Theobroma cacao L.) farms in Côte d'Ivoire. Agroforest Syst DOI 10.1007/s10457-014-9677-6
- Gyau Amos, Kaitlyn Smoot, Lucien Diby, Christophe Kouame. 2014. Drivers of tree presence and densities: the case of cocoa agroforestry systems in the Soubre region of Republic of Côte d'Ivoire. Agroforest Syst. DOI 10.1007/s10457-014-9750-1
- AGBO Adouko Edith, KOUAME Christophe, ANIN Atchibri Ocho Louise, SORO Leniferé Chantal, N'ZI Jean-Claude, FONDIO Lassina, GNAKRI Dago. 2014. Seasonal variation in nutritional compositions of spider plant (Cleome gynandra L.) in south Côte d'Ivoire. International Journal of Agricultural Policy and Research Vol.2 (11), pp. 406-413, November 2014.http://dx.doi.org/10.15739/IJAPR.013
- Abang A. F., C. N. Kouamé, M. M. Abang, R. Hanna and A. FotsoKuate. 2013. Vegetable growers' perception of pesticide use practices, cost, and health effects in the tropical region of Cameroon. International Journal of Agronomy and Plant Production. Vol 4 (5) 873-883.
- Kamga, R., C. Kouame, and E. Akyeampong. 2013. Vegetable consumption patterns in Yaounde, Cameroon. African Journal of Food, Agriculture, Nutrition and Development. 7399-7414.
- Kouamé, C. R. Batchep et R.T. Kamga. 2013. Evaluation des pertes post-récolte dans la chaine de production et de commercialisation des légumes feuilles traditionnels à Yaoundé (Cameroun). Agron Afr. 25(1):61-70
- Nzi, JC, C. Kouame, SP Nguetta, L. Fondio, H. Djidji et A. Sangare. 2010. Evolution des populations de Bemisia tabaci Genn. selon les varietes de tomate (Solanum lycopersicum L.) au centre de la Cote d'Ivoire. Science & Nature 7 (1) : 31-40.

Role in FTA II FP1: Tree domestication of high value indigenous crop. Research coordination.

Name: EVERT THOMAS

Current position and affiliation: Scientist, Bioversity International, Phone: +572 4450048; Email: e.thomas@cgiar.org

Profile: Forest restoration, GIS, R-programing, species suitability modeling, inter- and intra-specific diversity analysis, ethnobotany, ecology, international biodiversity negotiations, political advisor

Employment: 2014-present: Scientist, Conservation and use of forest genetic resources in Latin America, Bioversity International, Colombia; 2011-2014: Associate expert, Conservation and use of forest genetic resources in Latin America, Bioversity International, Colombia; 2008 –2011: Biodiversity and Biosafety expert for the Ministry of Environment of the Belgian federal government, Belgium; 2003-2008: Research associate, Ghent University, Belgium and extensive fieldwork in Bolivia

Education: Master Bioscience Engineering, 2001; PhD Applied Biological Sciences - Ethnobotany, 2008, Ghent University, Belgium

Selected Recent Peer-reviewed publications:

- De Pourcq, K., **Thomas**, E., Arts, B., Vranckx, A., Sicard, T., Van Damme, P. (2015) Conflict in protected areas: who says co-management does not work? *PLOSONE* 10(12):e0144943 (*De Pourcq and Thomas contributed equally to this MS*)
- Galluzzi, G., Dufour, D., **Thomas,** E., van Zonneveld, M., Escobar Salamanca, A.F., Giraldo, A., Rivera, A., Gallego, G., Scheldeman, X., Gonzales, A. (2015). An integrated hypothesis on the domestication history of *Bactris gasipaes* Kunth. *PLOSONE* 10(12):e0144644.(*Galluzzi and Thomas contributed equally to this MS*)
- **Thomas**, E., Alcazar Caicedo, C, McMichael, C.H., Corvera, R., Loo, J. (2015) Uncovering spatial patterns in the natural and human history of Brazil nut (*Bertholletia excelsa*) across the Amazon basin. *Journal of Biogeography* 42, 1367–1382.
- **Thomas, E**., Jalonen, Loo, J., R., Boshier, D., Gallo, L., Cavers, S., Bordács, S., Smith, P., Bozzano, M., (2014) Genetic considerations in ecosystem restoration using native tree species. *Forest Ecology and Management* 333, 66-75.
- **Thomas, E**. (2014) Gold rush: forest devastated by mining is reborn. *Nature* 511:155.
- Douterlungne, D., **Thomas, E**., Levy-Tacher, S. (2013) Stands of broad-leaved fast-growing pioneer trees as a Rapid and Cost-effective Strategy for Bracken Elimination in the Neotropics. *Journal of Applied Ecology* 50: 1257–1265 (9)
- **Thomas**, **E**., van Zonneveld, M., Loo, J., Hodgkin, T., Galluzi, G., van Etten, J. (2012) Present spatial diversity patterns of *Theobroma cacao* L. in the Neotropics reflect genetic differentiation in Pleistocene refugia followed by human-influenced dispersal. *PLoSONE* 7(10): e47676

Other Evidence of Leadership, large-program management and delivery: Effective supervision of research staff and >10 students. Writer of successful grant proposals. Lead execution and financial management of research projects on restoration (USD 500k) and conservation and management of endangered timber species (Colombian Mahogany).

Role in FTA II FP1: Leading restoration-related research at Bioversity International; in FP1 CoA 1.3.

Name: JEROME DUMINIL

Current position and affiliation: Scientist, Forest Genetic Resources and Restoration**,** Bioversity International, Phone: + 32 475 295 470; Email: j.duminil@cgiar.org

Profile: I am currently developing genetic approaches to characterize the reproductive biology, adaptation and diversity distribution of tropical fruit and timber tree species from tropical Africa in order to propose biodiversity management and conservation strategies in a global perspective. During my PhD and post-doctoral activities, I studied the mechanisms of diversification that drive the evolution (speciation, species genetic differentiation) of tropical species particularly in relation to climate changes.

Employment: Since 2012: Scientist, Forest Genetic Resources and Restoration, Bioversity International
2008-2012 Research assistant FNRS. Evolutionary Biology & Ecology Team. ULB, Belgium. 2006-2008 Post-Doctoral fellowship. Gembloux Agro Bio Tech, Free University of Liege, Belgium.

Education: 2002-2006 PhD in Forest Biology (Henri Poincaré University, Nancy, France). 2001-2002 Master degree in Forest Biology (Henri Poincaré University, Nancy, France).

Selected Recent Peer-reviewed publications:

- **J. Duminil**, et al. (2016) "Relationships between population density, fine-scale genetic structure, mating system and pollen dispersal in a timber tree from African rainforests" ***Heredity*** 116: 295-303.
- **J. Duminil**, et al. (2015) "Late Pleistocene molecular dating of past population fragmentation and demographic changes in African rain forest tree species supports the forest refuge hypothesis" ***Journal of Biogeography*** 42(8): 1443-1454.
- **J Duminil**, et al. (2013) "Large-scale pattern of genetic differentiation within African rainforest trees: insights on the roles of ecological gradients and past climate changes on the evolution of Erythrophleum spp (Fabaceae)" **BMC Evolutionary Biology**, 13:1.
- G. Dauby, **J. Duminil**, et al. (2014) "Congruent phylogeographical patterns of eight tree species in Atlantic Central Africa provide insights into the past dynamics of forest cover" ***Molecular Ecology*** 23: 2299-2312.
- **J. Duminil**, et al. (2013) "Drivers of genetic diversification of African rainforest taxa in the Guinea region as inferred by molecular dating and reconstruction of demographic history" ***BMC Evol. Ecol.*** 13: 195.
- I Parmentier**, J Duminil**, et al. (2013) "How effective are DNA barcodes in the identification of African rainforest trees?" ***PloS one*** 8 (4), e54921.
- **J. Duminil**, et al. (2012) "Testing species identification and delimitation in sympatric species complexes: the case of an African tropical tree, *Carapa* spp. (Meliaceae)*"* ***Mol. Phylogenetics and Evolution*** 62: 275-285.

Other Evidence of Leadership, large-program management and delivery:
2015-(…) – IPBES expert – Lead author 'Regional assessment of biodiversity and ecosystem services for Africa'
2015-2016 – Key Flagship research leader in the project "Aide à l'application des normes FSC sur la régénération et la diversité génétique des essences du bassin du Congo" (PPECF).
2012-2016 – Involvement in the project "Threats to priority food tree species in Burkina Faso" (ADA).
2012-**2016** – Supervision of African students (one PhD, eight masters).
2012-2014 – Key Flagship research leader in the project "Beyond timber" (Congo Basin Forest Fund).
2012-2015 – Coordination of the SAFORGEN network**.**

Role in FTA II FP1: CRP6: Carrying out genetic research and capacity development in the safeguarding cluster of TGR.

Name: ROELAND KINDT

Current position and affiliation: Senior Ecologist, Science Domain 3 World Agroforestry Centre (ICRAF), Phone: +254 207224107; Email: r.kindt@cgiar.org

Profile: Research is focused on tree species suitability modeling and mapping, combining ensemble suitability modeling algorithms (integrated in the cran.r-project.org/web/packages/BiodiversityR package that he maintains) with information on distribution and species assemblages of potential natural vegetation types (http://www.vegetationmap4africa.org), using skills in R and KML programming and scripting (for future climate projections on a web-based integration of R-studio and the ICRAF geoserver), GIS (QGIS, DIVA-GIS and raster), database design and website development. Similar skills were used to develop online decision support tools such as the Agroforestry Species Switchboard and the Useful Tree Species for Eastern Africa. As coordinator of a project on 'Testing options and training partners in participatory tree domestication and marketing in East Africa', various training materials and tools were developed and tested with representative national users such as the Tree Diversity Analysis manual and the Tree Seeds for Farmers toolkit. Roeland's Google Scholar profile (https://scholar.google.com/citations?user=A2NaTjoAAAAJ) lists over 10,000 citations (10,471 – Feb 2016).

Employment: 2013 – 2016: senior ecologist based at the World Agroforestry Centre in Kenya. 2008 – 2013: ecologist based at the World Agroforestry Centre in Kenya. 2003 – 2007: project coordinator for VVOB (Belgian NGO) in Kenya. 1994 – 2002: associate scientist at World Agroforestry Centre in Kenya

Education: 2012: PhD degree in Applied Biological Sciences (unanimous 12-member jury), Gent University, Belgium**.** 1992: MSc degree in Agricultural and Applied Biological Sciences (great distinction), Gent University.

Selected Recent Peer-reviewed publications:

- Kindt R. 2016. BiodiversityR: Package for Community Ecology and Suitability Analysis (current version 2.6-1). URL https://cran.r-project.org/web/packages/BiodiversityR
- Oksanen J, Blanchet FG, Kindt R, Legendre P, Minchin PR, O'Hara RB, et al. 2015 Vegan: community ecology package (current version 2.3-3). URL http://cran.r-project.org/web/packages/vegan
- Kindt R, van Breugel P, Orwa C, Lillesø J-PB, Jamnadass R, Graudal L. 2015. Useful Tree Species for Eastern Africa. URL http://www.vegetationmap4africa.org/3_Species/Species_selection_tool.html
- van Breugel P, Kindt R, Lillesø J-PB, van Breugel M. 2015. Environmental Gap Analysis to Prioritize Conservation Efforts in Eastern Africa. PLoS ONE 10:4 DOI: 10.1371/journal.pone.0121444
- Kindt R et al. 2014.Correspondence in forest species composition between the Vegetation Map of Africa and higher resolution maps for seven African countries. Applied Vegetation Science 17: 162-171
- Luedeling E, Kindt R, Huth NI, Koenig K. 2014. Agroforestry systems in a changing climate – challenges in projecting future performance Current Opinion in Environmental Sustainability 6: 1-7

Other Evidence of Leadership, large-program management and delivery: Roeland is the ICRAF focal point for CRP-FTA Flagship 2 and sometimes acts as ICRAF science domain leader (and on occasion as ICRAF Deputy Director General). He coordinates various projects or work packages, leads the database team of the science domain and genebank, supervises several PhD and MSc students, co-supervises programmers of ICRAF's geospatial lab, is a member of the Forests, Trees and Agroforestry Sentinel Landscapes methods group and participates in proposal development, training activities, seminars and panel interviews.

Role in FTA II FP1: Will coordinate ICRAF contributions to the Cluster of Activities on Safeguarding Diversity (CoA 1.1) and co-develop map-based decision support-tools for Cluster 3 on delivery systems for tree planting material.

Flagship 2 CVs

FERGUS SINCLAIR 90
TIM PAGELLA 91
PETER J. CRONKLETON 92
PHILLIP VAAST 93
CATHERINE MUTHURI 94
ADRIANA CHACÓN-CASCANTE 95
ANNE M. LARSON 96
EDMUNDO BARRIOS 97
HABTEMARIAM KASSA BELAY 98
LEIGH ANN WINOWIECKI 99

Name: FERGUS SINCLAIR

Current position and affiliation: Leader of Livelihood Systems Flagship of FTA, World Agroforestry Centre (ICRAF), Box 30677, Nairobi, Kenya. Phone: +254 2 7224101; Email: f.sinclair@cgiar.org.
Link to Google Scholar profile: https://scholar.google.co.th/citations?user=8lKLALEAAAAJ&hl=en

Profile: Best known for his pioneering work on agroforestry science, policy and practice (http://www.springer.com/us/book/9780792336969); the acquisition and use of local knowledge in agricultural development (http://akt.bangor.ac.uk/), and the measurement and modeling of complex social-ecological systems (http://www.cifor.org/realizingfutures/_ref/home/index.htm), Fergus has spent the last 30 years applying systems theory to the practical realities of agricultural and forest development in Africa, Asia and Latin America. He started as a training officer with the Ministry of Agricultural and Water Development in Zambia, cutting his teeth on the development and roll out of farming systems methods. Most recently he has been engaged in developing negotiation support tools (Polyscape) for exploring trade-offs and synergies amongst impacts of land use change on ecosystem services (Pagella and Sinclair, 2014; Jackson et al 2013) and conceiving and implementing a new 'research in development' paradigm that applies systems research methods at the scale of impact (see Coe et al., 2014).

Employment: Systems Science Domain Leader, World Agroforestry Centre (75% as a research collaboration with Bangor University, UK where also on the faculty in the School of the Environment, Natural Resources and Geography 25%); Visiting Professor, Center for Agricultural Research and Higher Education, Turrialba, Costa Rica.

Education: PhD (1995). Modeling Agroforestry. Department of Forestry and Natural Resources. University of Edinburgh, UK. BSc (Hons) First Class (1983), Agriculture (Tropical Agricultural Systems), University of Reading, UK

Selected Recent Peer-reviewed publications:

- Chomba, S. W., Nathan, I., Minang, P.A. and Sinclair, F. (2015). Illusions of empowerment? Questioning policy and practice of community forestry in Kenya. *Ecology and Society* **20**(3): 2.
- Smith Dumont, E. Gnahou, GM, Ohouo, L, Sinclair, FL and Vaast P (2014). Farmers in Côte d'Ivoire value integrating tree diversity in cocoa for the provision of ecosystem services. *Agroforestry Systems* 88(6): 1047-1066
- Pagella TF and Sinclair FL (2014). Development and use of a new typology of mapping tools to assess their fitness for supporting management of ecosystem service provision. *Landscape Ecology* **29**(3): 383-399
- Coe, R., Sinclair, F. and Barrios, E. (2014). Scaling up agroforestry requires research 'in' rather than 'for' development. *Current Opinion in Environmental Sustainability*.
- van Ginkel, M., Sayer, J., Sinclair, et al. (2013). An integrated agro-ecosystem and livelihood systems approach for the poor and vulnerable in dry areas. *Food Security*, 5 (6), 751-767.

Other Evidence of Leadership, large-program management and delivery: Before joining ICRAF was Director of Research at the School of Agricultural and Forest Sciences, University of Wales, Bangor, UK and Director of their Centre for Advanced Research in International Agricultural Development. Systems Science Domain Leader at ICRAF, Leader of the Livelihood Systems Flagship of FTA and overall responsibility for ICRAF's engagement in Dryland Systems and Humidtropics.

Role in FTA II FP2: Proposed leader of Livelihood Systems Flagship 2 of FTA.

Name: TIM PAGELLA

Current position and affiliation: Research Officer, School of the Environment and Natural Resources, Bangor University, Bangor Wales LL57 2UW**;** Phone: +441248 382286; Email: t.pagella@bangor.ac.uk
Link to Google Scholar profile: https://scholar.google.com/citations?user=357W0ikAAAAJ&hl=en

Profile: Tim is a system scientist with a research focus on the role of agroforestry for the delivery of ecosystem services, resilience and sustainable intensification from field and farm to local landscape scales. He has long experience using knowledge-based approaches for the acquisition and utilization of local ecological knowledge in natural resource management (Huang et al, 2006). Most recently his research focus has been on the development of negotiation support tools (Polyscape) for exploring trade-offs and synergies amongst impacts of land use change on ecosystem services (Pagella and Sinclair, 2014; Jackson et al 2013).

Employment: Lecturer, Bangor University, 2012-present, Research Officer, Bangor University to 2011

Education: [2011] PhD. Approaches for spatially explicit negotiation of impacts of land use change on ecosystem services Bangor University, UK. [2001] MSc Agroforestry (Distinction), University of Wales, Bangor

Selected Recent Peer-reviewed publications:

- Pagella, TF Polyscape: Approach and GIS toolkit for supporting negotiation of trade-offs amongst impacts of land use change on ecosystem service provision. Bangor University, Wales, UK http://www.werh.org/PlasTan%20Y%20Bwlch/2014/documents/Plas-EcosystemServiceMapping-TimPagella2014b.pdf
- Doores, J, Pagella, TF, Lamond, G, and Sinclair, FL (2016). AKT (Agroecological Knowledge Toolkit). Approach and knowledge based systems software. Version 5.39 Bangor University, Wales, UK http://akt.bangor.ac.uk/
- Pagella TF and Sinclair FL (2014). Development and use of a new typology of mapping tools to assess their fitness for supporting management of ecosystem service provision. *Landscape Ecology* **29**(3): 383-399
- Jackson, B., Pagella, T., Sinclair, F., Orellana, B., Henshaw, A., Reynolds, B., McIntyre, N., Wheater, H. and Eycott, A. (2013) Polyscape: a GIS mapping toolbox providing efficient and spatially explicit landscape-scale evaluation of multiple ecosystem services. *Landscape and Urban Planning* 112: 74-8
- Ambrose-Oji, B and Pagella, T. (2012) Spatial Analysis and Prioritisation of Cultural Ecosystem Services: A Review of Methods. Forest Research. Alice Holt Lodge Farnham, Surrey

Other evidence of Leadership, large-program management and delivery: Tim's research has involved managing interdisciplinary co-operation and participatory action research with a range of stakeholders from farmers to policy makers. He managed ICRAF's involvement in the CPWF- NBDC Integrated Rainwater Management Strategies: Technologies, Institutions and Policies (for the Blue Nile Basin, Ethiopia) project; Bangor's Adaptive Landscapes Project – in The Cambrian Mountains (2011) – CCW/Defra, UK. Was previously an EPSRC/NERC/Defra – Research Officer – part of the Flood Research Management Research Consortium responsible for participatory landscape modelling within the stakeholder and policy priority research area (2004-2007); Phase II (2007-2011). Designed specifications for Polyscape for the GEF-funded Lake Tanganyika catchment project and he was Research Officer for the CAFNET project on ecosystem services associated with trees in coffee agroforestry systems in Latin America, Africa and India (2007-2009).

Role in FTA II FP2: Proposed coordinator of the systems analysis and synthesis research cluster (CoA 2.2) in the Livelihood Systems Flagship 2 of FTA

Name: PETER J. CRONKLETON

Current position and affiliation: Address: Center for International Forestry Research (CIFOR), Av. La Molina 1895, La Molina, Lima 12, Perú Tel: 51 (1) 349-6017, Email: pcronkleton@cgiar.org
Google Scholar profile: http://scholar.google.com.pe/citations?user=IxPIoNoAAAAJ&hl=en

Profile: Specialist in community forestry development, forest policy, forest tenure, social movements and participatory research. More than 20 year of experience conducting applied research and development in Latin America, primarily in Peru, Bolivia, Brazil, Ecuador, and Guatemala.

Employment:
2010 – Present. Senior Scientist, Forest and Human Well-being, Center for International Forestry Research
2001 – 2010. Scientist, Forest Governance Program, Center for International Forestry Research
1998 – 2001. Assistant Professor, University of Florida

Education:
1998 Ph.D. Anthropology, University of Florida. Minor: Farming Systems Research and Extension.
1993 MS. Anthropology, University of Florida

Selected Recent Peer-reviewed publications:

- **Cronkleton**, P. and A. Larson. 2015. Formalization and Collective Appropriation of Space on Forest Frontiers: Comparing communal and individual property systems in the Peruvian and Ecuadoran Amazon. Society and Natural Resources.Uncovering spatial patterns in the natural and human history of Brazil nut (Bertholletia excelsa) across the Amazon Basin (2015) E Thomas, C Alcázar Caicedo, CH McMichael, R Corvera, J Loo. Journal of Biogeography 42 (8), 1367-1382.
- Larson, A., P. **Cronkleton**, and J. Pulhin. 2015. Formalizing indigenous commons: The role of 'authority' in the formation of territories in Nicaragua, Bolivia, and the Philippines. World Development. 70: 228-238.
- Taylor, PL., **P. Cronkleton**, D. Barry. 2013- Learning in the Field: Using Community Self Studies to Strengthen Forest-Based Social Movements. *Sustainable Development*. 21 (4) 209-223.
- **Cronkleton, P**., J. M. Pulhin, and S. Saigal. 2012. Co-management in community forestry: How the partial devolution of management rights creates challenges for forest communities. *Conservation and Society*. 10(2): 91-102
- **Cronkleton P**., D.B. Bray, and G. Medina. 2011. Community forest management and the emergence of multi-scale governance institutions: Lessons for REDD+ development from Mexico, Brazil and Bolivia. Forests. 2(2):451–73.
- **Cronkleton P**., M.R. Guariguata and M.A. Albornoz. 2011. Multiple use forestry planning: Timber and Brazil nut management in the community forests of Northern Bolivia. Forest Ecology and Management 268:49–56.
- **Cronkleton P.**, M.A. Albornoz, G. Barnes, K. Evans and W. de Jong. 2010. Social geomatics: Participatory forest mapping to mediate resource conflict in the Bolivian Amazon. *Human Ecology* 38(1):65–76.

Other Evidence of Leadership, large-program management and delivery: CIFOR Focal point for Smallholder Forestry and Markets Flagship of FTA. Led CIFOR research theme on Community and Smallholder Forestry and member of CIFOR's gender research team.

Role in FTA II FP2: Proposed coordinator of CoA 2.1.

Name: PHILLIP VAAST

Current position and affiliation: Leader Tree-crop commodities research cluster, Livelihood Systems Flagship of FTA**,** Address: CIRAD, UMR Eco&Sols, 2 place Viala, 34060 Montpellier cedex 2, France**;** Phone: 33 (0)4 99 61 30 46; Email: philippe.vaast@cirad.fr
Link to Google Scholar profile: https://scholar.google.com/citations?user=rEeSICQAAAAJ&hl=en

Profile: Internationally recognized for his research and development work on agroforestry with perennial crops, Philippe has been working on cocoa and coffee systems over 33 years in 15 producing countries in Africa, Latin America and Asia. His work is focusing on the effects of associated shade trees on coffee and cocoa at the plot, farm and the landscape levels, assessing environmental services provided by agroforestry management and trade-offs between crop intensification and ecosystem services. Philippe has also been participating in the evaluation of coffee value chains, and particularly on the effects of various eco-certification schemes (Rainforest Alliance, UTZ Certified, Starbucks, and Nestlé AAA) on farmers' adoption of best practices and improvement of their revenues.

Employment: Philippe is a senior scientist, working at CIRAD since 1982. Up to 2011, Philippe was for 3 years an associate professor at the University of Agricultural Sciences in Bangalore, India. From 2011 to 2015, Philippe was seconded at ICRAF Nairobi as a senior scientist on agroforestry of perennial crops.

Education:
1995 PhD, Soil Science, University of California, Davis, USA
1982 BSc, Agricultural Science, Institut Supérieur Technique d'Outre-mer, Le Havre,

Selected Recent Peer-reviewed publications:

- Vaast P, E Somarriba. 2014. Trade-offs between crop intensification and ecosystem services: the role of agroforestry in cocoa cultivation. *Agroforestry Systems,* 88 (6), 947-956.
- Smith Dumont, E. Gnahou, GM, Ohouo, L, Sinclair, FL and Vaast P (2014). Farmers in Côte d'Ivoire value integrating tree diversity in cocoa for the provision of ecosystem services. *Agroforestry Systems* 88(6): 1047-1066
- Marie-Vivien D., Garcia C.A., Kushalappa C.G., Vaast P (2014). Trademarks, geographical indications and environmental labeling to promote biodiversity: The case of agroforestry coffee in India. *Development policy review*, 32 (4) : 379-398.
- Charbonnier F, G le Maire, E Dreyer, F Casanoves, M Christina, J Dauzat, JUH Eitel, P Vaast, LA Vierling, O Roupsard (2014). Competition for light in heterogeneous canopies: Application of MAESTRA to a coffee (*Coffea arabica* L.) agroforestry system. *Agricultural and Forest Meteorology* 181, 152-169.
- V Boreux, CG Kushalappa, P Vaast, J Ghazoul (2013). Interactive effects among ecosystem services and management practices on crop production: pollination in coffee agroforestry systems. *Proceedings of the National Academy of Sciences* 110 (21), 8387-8392

Other Evidence of Leadership, large-program management and delivery: Up to 2011, Philippe coordinated CAFNET a large international project, financed by EU, in 7 countries on the promotion of agroforestry practices to enhance the provision of environmental services of coffee systems, and to improve the livelihoods of coffee farming communities in Central America, East Africa and India. He is currently leading a project on the synergy between coffee cultivation and food crops at the household level in Kenya (financed by African Union). He is also involved as scientific advisor to a project (financed by the German cooperation) on the adaptation to climate change of coffee and cocoa systems in Uganda and Ghana.

Role in FTA II FP2: CoA 2.3 leader

Name: CATHERINE MUTHURI

Current position and affiliation: Address: World Agroforestry Centre (ICRAF), Box 30677, Nairobi, Kenya
Phone: +254 2 7224382; Email: c.muthuri@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?user=eY2XjbgAAAAJ&hl=en

Profile: Catherine is a systems scientist with a strong background in ecophysiology and a research focus on tree crop interactions and modeling underpinning productivity of agroforestry systems. She has been involved in research investigating impact of different tree species and their management on resource use and crop productivity useful in informing management by site options for optimized systems productivity.

Employment: Before joining ICRAF in 2010, Catherine was the chairperson of Botany department Jomo Kenyatta University of Agriculture and Technology. She is now a senior scientist in the Systems Science Domain at ICRAF.

Education:

2004 PhD (Ecophysiology / agroforestry). Nottingham University (UK) / JKUAT ACU split site scholar
1994 Master of Science (Botany Plant physiology and Biochemistry) Botany Department, Kenyatta University

Selected Recent Peer-reviewed publications:

- Luedeling E, …, **Muthuri C**, L. Sinclair F (2016). Field-scale modeling of tree–crop interactions: Challenges and development needs Agricultural Systems 142: 51-69
- Nyaga J., Barrios E., **Muthuri, C.W**., Öborn I., Matiru V., Sinclair F.L. **2015**. Evaluating factors influencing heterogeneity in agroforestry adoption and practices within smallholder farms in Rift Valley, Kenya *Agriculture, Ecosystems and Environment* 106–118 http://www.sciencedirect.com/science/article/pii/S0167880915002339
- Rolf Borchert, …, **Catherine Muthuri 2015**. Insolation and photoperiodic control of tree development near the equator. **New Phytologist** letters 205: 7–13
- David W. MacFarlane, Shem Kuyah, Rachmat Mulia, Johannes Dietz, **Catherine Muthuri** , Meine van Noordwijk **2014.** Comparing a non-destructive method for calibrating tree biomass equations to the standard destructive approach. **Trees journal** Volume 28, Issue 3, pp 807-817.
- Meine van Noordwijk, Jules Bayala, Kurniatun Hairiah, Betha Lusiana, **Catherine Muthuri**, Ni'matul Khasanah and Rachmat Mulia **(2014)** Agroforestry Solutions for Buffering Climate Variability and Adapting to Change In eds J. Fuhrer & P. Gregory; Climate Change Impact and Adaptation in Agricultural Systems CAB International. Pp 216-232
- Kuyah, Shem, Dietz Johannes, **Muthuri, Catherine,** Meine van Noordwijk, Henry Neufeldt, **2013**. Allometry and partitioning of above- and below-ground biomass in farmed *Eucalyptus* species dominant in Western Kenyan agricultural landscapes. ***Biomass and bioenergy****. 1-9.*

Other Evidence of Leadership, large-program management and delivery: Catherine is an experienced research manager. Following departmental leadership at JKUAT she set up and implemented the ICRAF-JKUAT long term agroforestry trial established in 2011 now with four replicate sites in Ethiopia and Rwanda. Catherine leads the 10M USD ACIAR-funded Trees4FoodSecurity project (Ethiopia, Rwanda, Uganda and Burundi) combining inputs from CIMMYT, ILRI, CSIRO and national partners.

Role in FTA II FP2: Proposed leader of CoA 2.4

Name: ADRIANA CHACÓN-CASCANTE

Current position and affiliation: Address: Tropical Agricultural Research and Higher Education Center (CATIE), Headquarters, CATIE. Cartago, Turrialba 30501. Costa Rica. Phone: +506 2558-2594; Email: achacon@catie.ac.cr

Profile: My work has focused on the impacts of policies on rural development and wellbeing. My areas of interest have shifted over time from international and macroeconomic policies (international trade) to national and subnational policies and incentives. My training and experience are a combination of quantitative analysis skills applied to wellbeing and sustainability of human systems. While working at CATIE I have incorporated into my research and teaching, people´s cultural values and systematic approaches to development. This requires integration of interdisciplinary fields and expertise, such as the team I am currently leading at CATIE, which comprises biologists, ecologists, economists, sociologists and agronomists.

Employment: Program Leader of the Livestock and Environment Program at CATIE. Senior Researcher and Professor at CATIE. Invited Professor at the Universidad de Costa Rica and Earth University in Costa Rica. International Consultant for IICA, CATIE and the Costa Rican Government.

Education:

2006 PhD. Economics with Emphasis in Agricultural Economics. Kansas State University, USA.
2004 MSc. in Agricultural Economics. Department of Agricultural Economics. Kansas State University, USA.

Selected Recent Peer-reviewed publications:

- Robalino, J., Jiménez, J. and Chacon-Cascante, A. (2015). The effect of hydro-meteorological emergencies on internal migration. *World Development* 67: 438–448.
- Lozano Sivisaca, D.C., Chacón Cascante, A., Robalino, J. and Gutiérrez-Montes, I.A. (2015). Mapa casual y variables que inciden en la migración internaante eventos climáticos extremos: el caso de Guatemala. Ciencia *ergo-sum.* Vol 22 (1).
- Inamagua, et al. (2015). Impact of feeding strategies on GHG emissions, income over feed cost and economic efficiency on milk production. 3rd Global Science Conference on Climate-Smart Agriculture CSA2015 Montpellier
- Rivas Herrera, C., Ramírez, F. and Chacon-Cascante. A. (2015). Women and cattle production: Participation and decision making by women in cattle production in the Santa Cruz District of Turrialba, Costa Rica. DOI: 10.13140/RG.2.1.2658.4408
- Robalino, J., Sandoval, C., Barton, D., Chacon-Cascante, A. and Pfaff, A. (2014). Evaluating interactions of forest conservation policies on avoided deforestation. *PLOS ONE* 10(4) 2015.
- Hanawa Peterson, H., Barkley, A., Chacón-Cascante, A. and Kastens, T. (2012). "The Motivation for Organic Grain Farming in the United States: Profits, Lifestyle, or the Environment?" *Journal of Agricultural and Applied Economics*. 44 (2):137-155.

Other Evidence of Leadership, large-program management and delivery: Before joining CATIE was Director of the National Cadaster Program on Special Regimes Areas. At CATIE responsible for coordinating research projects related to Environmental Policy and Development. In 2013 started working fulltime as co-ordinator of Silvopastoral Projects at the Livestock and Environment (GAMMA) Program, assuming leadership of the GAMMA programme in April 2015.

Role in FTA II FP2: Proposed leader of the Silvopsatoral Systems research cluster (CoA 2.5) of FP 2

Name: ANNE M. LARSON

Current position and affiliation: Principal Investigator, Policy and Institutions, with Livelihood Systems Flagship of FTA, CIFOR, c/o CIP, Avenida La Molina 1895, Lima 12, Peru. Phone: +51 1 349-6017 ext. 2102; Email: a.larson@cgiar.org

Profile: Conducts research on multiple aspects of forest and landscape governance policy and institutions, including property rights, climate change, decentralization, indigenous territories and gender, from local to international scales. Responsibilities include developing research strategies, projects and methodologies, fundraising, supervising and conducting research, writing and editing books, reports, and articles, networking with policy-makers, NGOs and grassroots organizations for impact, and project management. Served on the science committee for the Global Landscape Forum (2014, 2015), the CIFOR Strategy Working Group (2014-15), and the council of the International Association for the Study of the Commons (IASC, 2014-16) and represents CIFOR to the Rights and Resources Initiative. Current research priorities include opportunities and challenges for forest tenure reforms; women's rights to land in communal forests; and multilevel governance, REDD+ and low emissions development. Coordinates fieldwork in Peru, Nicaragua, Mexico, Tanzania, Uganda, Indonesia and Vietnam.

Employment:

2012 – present Principal Scientist, Senior Scientist, Center for International Forestry Research

2001 – 2012 Senior Associate, Associate, Center for International Forestry Research and Independent Consultant

Education:

2001 PhD, Wildland Resource Science, Environmental Science, Policy and Management, University of California, Berkeley

1983 BS (with distinction), Applied Earth Science: Environmental Science, Stanford University

Selected Recent Peer-reviewed publications:

- Larson, A.M.**, P. Cronkleton and J.M. Pulhin (2015**). Formalizing indigenous commons: The role of 'authority' in the formation of territories in Nicaragua, Bolivia, and the Philippines**. *World Development* 70: 228-238.**
- **Larson, A.M.**, T. Dokken, A.E. Duchelle, S. Atmadja, I.A.P. Resosudarmo, P. Cronkleton, M Cromberg, W. Sunderlin, A. Awono and G. Selaya (2015). The role of women in early REDD+ implementation: Lessons for future engagement. *International Forestry Review* 17(1).
- Cronkleton, P.J. and **A.M. Larson** (2015). Formalization and collective appropriation of space on forest frontiers: Comparing communal and individual property systems in the Peruvian and Ecuadoran Amazon. *Society and Natural Resources* 28:5, 496-512.
- Sunderlin, W.D., **A.M. Larson**, A.E. Duchelle, I.A.P. Resosudarmo, T.B. Huynh, A. Awono and T. Dokken (2014). How are REDD+ proponents addressing tenure problems: Evidence from Brazil, Cameroon, Tanzania, Indonesia and Vietnam. *World Development* 55: 37-52.
- **Larson, A.M.,** M. Brockhaus, W. Sunderlin, A. Duchelle, A. Babon, T. Dokken, T.T. Pham, I.A.P. Resosudarmo, G. Selaya, A. Awono and T.B. Huynh (2013). Land tenure and REDD+: The good, the bad and the ugly. *Global Environmental Change* 23: 678-689.
- Chhatre, A., S. Lakhanpal, **A.M. Larson**, F. Nelson, H. Ojha and J. Rao (2012). Safeguards and co-benefits in REDD+: A review of the adjacent possible. *Current Opinion in Environmental Sustainability COSUST* 4: 654–660.

Name: EDMUNDO BARRIOS

Current position and affiliation: Principal investigator, Soil Ecology, in Flagship 3, link to WLSE**,** Address: World Agroforestry Centre (ICRAF), Box 30677, Nairobi, Kenya; Phone: +254 2 7224193; Email: e.barrios@cgiar.org. Link to Google Scholar profile: https://scholar.google.co.id/citations?user=NTjlG6AAAAAJ&hl=en

Profile: His work for close to 10 years with CIAT's Soil's Program and later with the TSBF Institute of CIAT, based in Colombia, focused on understanding the impact of land use change and agricultural intensification on soil biological processes in tropical landscapes and the development of methodologies to integrate local and scientific knowledge about soil quality. Prior to joining ICRAF, Edmundo was a Giorgio Ruffolo Research Fellow in Sustainability Science at Harvard University's Center for International Development and CNPq Visiting Researcher at the National Soils Research Center of Embrapa, the Brazilian Agricultural Research Corporation, leading a collaborative project to adapt participatory approaches to foster knowledge sharing on soil quality indicators to the Brazilian context that contributed to capacity building of Embrapa scientists and their partners in research for development. At ICRAF his work focuses on understanding the ecological basis of sustainable land management in agricultural landscapes and the contribution of local knowledge systems to the capacity to adapt to disturbance and to shape change in natural resource management. He leads the Living Soil Laboratory which studies the role of agroforestry trees in restoring and sustaining soil functions that underpin soil-mediated ecosystem services.

Employment: Senior Scientist, Land and Soil Management, Systems Science Domain, World Agroforestry Centre (ICRAF). Senior Scientist, Soil Ecosystem, Systems Science Domain, World Agroforestry Centre (ICRAF).

Education:
1995 PhD Soil Ecology. Department of Biological Sciences. University of Dundee, UK
1988 MSc Soil Ecology. Venezuelan Institute for Scientific Research (IVIC), Caracas , Venezuela

Selected Recent Peer-reviewed publications:

- Balvanera, P.; Quijas, S.; Martín-López, B.; Barrios, E.; ….; de Groot, R. 2016. The links between biodiversity and ecosystem services. Routledge Handbook of Ecosystem Services (Potschin, M. et al. Eds.), pp. 45-49. Routledge, Taylor & Francis Group, London. http://www.worldagroforestry.org/downloads/publications/pdfs/BC15608.PDF
- Pumariño, L.; Sileshi, G.W.; Gripenberg, S.; Kaartinen, R.; Barrios, E.; Muchane, M.N.; Midega, C.; Jonsson, M. 2015. Effects of agroforestry on pest, disease and weed control: a meta-analysis. Basic and Applied Ecology 16: 573-582. http://www.sciencedirect.com/science/article/pii/S1439179115001073
- Nyaga, J.; Barrios, E.; Muthuri, C.W.; Oborn, I.; Matiru, V.; Sinclair, F.L. 2015. Evaluating factors influencing heterogeneity in agroforestry adoption and practices within smallholder farms in Rift Valley, Kenya. Agriculture, Ecosystems and Environment 212: 106-118. http://www.sciencedirect.com/science/article/pii/S0167880915002339
- Mortimer, P.E.; H.Gui.; Xu, J.; Zhang, C.; Barrios, E.; Hyde, K.D. 2015. Alder trees enhance crop productivity and soil microbial biomass in tea plantations. Applied Soil Ecology 96: 25-32. http://www.sciencedirect.com/science/article/pii/S0929139315300160

Other Evidence of Leadership, large-program management and delivery: Responsible for the Living Soil Lab and the Soil Ecology Facility at ICRAF Headquarters. Leader Natural Resource Management – Integrated Systems Improvement – Humidtropics CRP1.2. Member of Lead Team – TWG2-Biodiversity and Ecosystem Services-Ecosystem Services Partnership (ESP)

Name: HABTEMARIAM KASSA BELAY

Current position and affiliation: Principal investigator, Rural Development, for Flagship 3, Senior Scientist, CIFOR, Ethiopia Office c/o ILRI Addis, P.O. Box 5689, Addis Ababa, Ethiopia; Phone: +251 (0)116172000 ext. 2230; Email: h.kassa@cgiar.org

Profile: research mainly on the management of forests at landscape level for better livelihoods and conservation outcomes, on forest products collection and marketing and value chains, on the importance of forest based enterprises and their employment creation and growth potentials, on the role of forests for food security and sustainable intensification of agriculture, as well as on understanding the rural-urban links and demographic factors such as migration and the role of policy and institutions in shaping forest-people relationships. He is also engaged in building the capacity of national partners (by advising PhD and MSc students), organizing tailored training sessions, and through joint research planning, implementation and publication of results with researchers and University teachers. His engagement in policy dialogue helped the Government of Ethiopia to revise the national forest law and prepare five year development plan (2016-2020).

Employment: 2014-present *Senior Scientist,* Center for International Forestry Research; 2005-2013 Regional Scientist*,* Center for International Forestry Research; 2003 -2005 Advisor, Research and Extension, AMAREW Project, Virginia Tech University

Education:

2003 PhD, Rural Development Studies, Swedish University of Agricultural Sciences (SLU), Sweden
2003 MSc, Rural Development Studies, Swedish University of Agricultural Sciences (SLU), Sweden

Selected Recent Peer-reviewed publications:

- Teshome, B., Kassa, H., Mohammed, Z. and Padoch, C. 2015. Contribution of Dry Forest Products to Household Income and Determinants of Forest Income Levels in the Northwestern and Southern Lowlands of Ethiopia. Natural Resources, 6, 331-338.
- Sandewall, M., Kassa, H., Wu, S., Khoa, P.V., He, Y. and Ohlsson, B. 2015. Policies to Promote Household Based Plantation Forestry and Their Impacts on Livelihoods and the Environment: Cases from Ethiopia, China, Vietnam and Sweden. *International Forestry Review*, 17(1):98-111:
- Alemu, B., Garedew, E., Eshetu Z., and Kassa, H. 2015. Land Use and Land Cover Changes and Associated Driving Forces in North Western Lowlands of Ethiopia. *International Research Journal of Agricultural Science and Soil Science* Vol. 5(1) pp. 28-44.
- Mekonnen, Z. Worku, A., Yohannes, T., Alebachew, M., Teketay, D. and Kassa, H. 2014. Bamboo Resources in Ethiopia: Their value chain and contribution to livelihoods. *Ethnobotany Research & Applications* 12:511-524 (2014).
- Lemenih, M and Kassa, H. 2014. Re-greening Ethiopia: History, Challenges and Lessons. *Forests* 2014, *5*, 1896-1909; doi:10.3390/f5081896.I Parmentier, J Duminil, et al. (2013) "How effective are DNA barcodes in the identification of African rainforest trees?" *PloS one* 8 (4), e54921.
  Worku, A. Preszsch, J., Kassa, H. and Auch, E. 2014. The significance of dry forest income for livelihood resilience: The case of the pastoralists and agro-pastoralists in the drylands of southeastern Ethiopia. *Forest Policy and Economics*. Volume 41, April 2014, Pages 51–59.

Name: LEIGH ANN WINOWIECKI

Current position and affiliation: Principal Investigator, Soil Systems, with Livelihood Systems Flagship of FTA**,** Address: World Agroforestry Centre (ICRAF), Box 30677, Nairobi, Kenya**,** Phone: +254 727.636.351; Email: L.A.WINOWIECKI@CGIAR.ORG
Link to Google Scholar profile: https://scholar.google.com/citations?user=f_VKJJoAAAAJ&hl=en

Profile:

- Spatially explicit, landscape-scale assessments of soil and ecosystem health
- Understanding drivers of land health dynamics
- Interdisciplinary research on social-ecological processes at landscape-scale
- Developing evidence-based system-level land management recommendations
- Conducting multi-scale interdisciplinary trade-off analysis

Employment: Soil Systems Scientist, World Agroforestry Centre (ICRAF), Nairobi, Kenya Jan. 2016 – present. Soil Scientist, International Center for Tropical Agriculture (CIAT), Nairobi, Kenya June 2011 – Dec. 2015. Earth Institute Postdoctoral Research Fellow, Columbia University, based in Arusha, Tanzania, Sept 2008 - May 2011.

Education: Ph.D. Soil Science, 2008 University of Idaho, USA and CATIE, Costa Rica
M.S. Soil Science, 2002 University of Idaho, USA.

Selected Recent Peer-reviewed publications:

- **Winowiecki, L.**, Vågen, T-G. and Huising, J. 2016. Effects of land cover on ecosystem services in Tanzania: A spatial assessment of soil organic carbon. Geoderma. http://www.sciencedirect.com/science/article/pii/S0016706115000816
- Abegaz, A., **Winowiecki, L.**, Vågen, T-G., Langand, S., and Smith, J.U. 2016. Spatial and temporal dynamics of soil organic carbon in landscapes of the upper Blue Nile Basin of the Ethiopian Highlands. Agriculture, Ecosystems and Environment. 218: 190-208.
- Vågen, Tor-G., **Winowiecki, L.**, Tondoh, J.E., Desta, L.T. and Gumbricht, T. 2016. Mapping of soil properties and land degradation risk in Africa using MODIS reflectance. Geoderma. http://dx.doi.org/10.1016/j.geoderma.2015.06.023
- **Winowiecki, L.,** Vågen, T-G., Massawe, B., Jelinski, N.A. , Lyamchai, C., Sayula, G. and Msoka, E. 2015.Landscape-scale variability of soil health indicators: Effects of cultivation on soil organic carbon in the Usambara Mountains of Tanzania. Nutrient Cycling in Agroecosystems.doi:10.1007/s10705-015-9750-1
- Sommer, R., Mukalama, J., Kihara,J., Saidou, S., **Winowiecki, L**. and Bossio, D. 2015. Nitrogen dynamics and nitrous oxide emissions in a long-term trial on integrated soil fertility management in Western Kenya. Nutrient Cycling in Agroecosystems.
- Towett, E.K., Shepherd, K.D., Tondoh, J.E., **Winowiecki, L**., Tamene, L., Nyambura, M., Sila, A., Vågen, T-G. and Cadisch, G. 2015. Total elemental composition of soils in Sub-Saharan Africa and relationship with soil forming factors. Geoderma Regional. http://dx.doi.org/10.1016/j.geodrs.2015.06.002

Other Evidence of Leadership, large-program management and delivery: Leads research on soil systems science across ICRAF, embracing multi- scale and interdisciplinary analysis to assess drivers of sustainable agricultural intensification and land health. Manages large IFAD/EU - funded project on dryland restoration in East Africa and the Sahel.

Flagship 3 CVs

PABLO PACHECO 101
MARIE-GABRIELLE PIKETTY 102
GEORGE. C. SCHONEVELD 103
HERMAN SAVENIJE 104
PATRICE LEVANG 105
MANUEL GUARIGUATA 106
PLINIO SIST 107
DIETMAR STOIAN 108
JASON DONOVAN 109
PAOLO OMAR CERUTTI 110

Name: PABLO PACHECO

Current position and affiliation: Principal Scientist, CIFOR, Jalan CIFOR Situ Gede, Bogor Barat 16115, Email: p.pacheco@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?user=Qzy63s0AAAAJ&hl=en

Profile: Dr. Pablo Pacheco has an interdisciplinary background, and has a leading role at CIFOR on research and policy engagement with emphasis on the governance arrangements for sustainable commodity supply, market and investments shaping landscape transformation and people's livelihoods in the tropics, and government and private sector responses, including voluntary standards.

Employment:

- [2005- present] From Scientist to Principal Scientist, Team Leader 'Value Chains, Finance and Investments", Centre for International Forestry Research (CIFOR), Bogor, Indonesia
- [2002 - 2004] Consultant, Center for International Forestry Research (CIFOR), Belem, Brazil
- [1999 – 2001] Research assistant,Graduate School of Geography. Clark University, MA, USA
- [1993 – 1996] Scientist, Inter-American Institute for Cooperation on Agriculture (IICA), La Paz, Bolivia

Education: [2005] PhD in Geography, Graduate School of Geography, Clark University, MA, USA. [1991] Msc in Agricultural Economics, Catholic University, La Paz, Bolivia

Selected Recent Peer-reviewed publications:

- **Pacheco, P.** and R. Poccard-Chapuis. 2015. Cattle ranching development in the Brazilian Amazon: Looking at long-term trends to explore the transition towards sustainable beef cattle production. In J. Emel and N. Harvey (eds). *The political ecologies of meat*, New York, Routledge, Earthscan. pp. 42-66
- **Pacheco, P**. and J.H. Benatti. 2015. Tenure security and land appropriation under changing environmental governance in lowland Bolivia and Pará. *Forests* 6: 464-491, doi: 10.3390/f6020464
- McDermott, C., LL.C. Irland and P. **Pacheco**. 2015. Forest certification and legality initiatives in the Brazilian Amazon: Lessons for effective and equitable forest governance. *Forest Policy and Economics* 50: 134–142, doi: 10.1016/j.forpol.2014.05.011
- Godar, J., T. A. Gardner, E. Jorge Tizado and **P. Pacheco**. 2014. Actor-specific contributions to the deforestation slowdown in the Brazilian Amazon. *Proceedings of the National Academy of Sciences of the United States of America*. 111(43): 15591-15596, doi: 10.1073/pnas.1322825111
- **Pacheco, P.** and R. Poccard-Chapuis. 2012. The complex evolution of cattle ranching development amid market integration and policy shifts in the Brazilian Amazon. *Annals of the Association of American Geographers.* 102(6): 1366-1390, doi: 10.1080/00045608.2012.678040
- **Pacheco, P.,** D. Barry, P. Cronkleton and A. Larson. 2011. The recognition of forest rights in Latin America: Progress and shortcomings of forest tenure reforms. *Society & Natural Resources* 25(6):556-571, doi: 10.1080/08941920.2011.574314

Other Evidence of Leadership, large-program management and delivery: Coordinator of FTA Flagship 5 "Global Governance, Trade and Investment" under the FTA Research Program, Phase one during the period from 2011-2016. Since 2016 he is Team Leader at CIFOR on "Value Chain, Finance and Investments". He has been the coordinator of CIFOR research on Trade and Investment from 2010 to2015.

Role in FTA II FP 3: Dr. Pacheco leads the proposal development of FTA Flagship 3, and will lead this Flagship. He will engage equally in the implementation of the three clusters comprised by FP3.

Name: MARIE-GABRIELLE PIKETTY

Current position and affiliation: CIRAD ES-Green, Senior Research Fellow, Email: marie-gabrielle.piketty@cirad.fr
Link to Google Scholar profile: https://scholar.google.com/citations?user=nlL8dPoAAAAJ&hl=en

Profile: Economy, Agronomy, Modeling

Employment:

- [2015 - present] Senior Research Fellow, CIRAD-GREEN
- [2011 - 2015] Research Fellow CIRAD-GREEN, co-coordination of CIRAD Research platform in the Brazilian Amazon

Education: [1999] PhD Economy – University of Paris I (Panthéon Sorbonne) – Paris (France)

Selected Recent Peer-reviewed publications:

- **Piketty, M.G**., I. Drigo, P. Sablayrolles, E.A. de Aquino, D. Pena and P. Sist. 2015 Annual Cash Income from Community Forest Management in the Brazilian Amazon: Challenges for the Future. *Forests*, *6*, 4228-4244 .doi: 10.3390/f6114228
- **Piketty, M.G.,** R. Poccard Chapuis, I. Drigo, E. Coudel, S. Plassin, F. Laurent and M.C. Thales. 2015. Multi-level governance of land use changes in the Brazilian Amazon: Lessons from Paragominas, State of Pará. *Forests*, 6 (5): 1516-1536, doi: 10.3390/f6051516
- Drigo, I., **M.G. Piketty,** D. Pena and P. Sist. 2013. Cash income from community-based forest management: Lessons from two case studies in the Brazilian Amazon. *Bois et forêts des tropiques* (315):39-49 IUFRO International Conference on Research Priorities in Tropical Silviculture, 2011-11-15/2011-11-18, Montpellier, France
- Calado da Costa, R., **M.G. Piketty** and R. Abramovay. 2013. Pagamentos por serviços ambientais, custos de oportunidade e a transição para usos da terra alternativos: o caso de agricultores familiares do Nordeste Paraense. *Sustentabilidade em debate*, 4 (1): 99-116 http://seer.bce.unb.br/index.php/sust/article/view/9202
- De Menezes, T.A. and **M.G. Piketty.** 2012. Towards a better estimation of agricultural supply elasticity: The case of soya beans in Brazil. *Applied Economics*, 44 (31): 4005-4018, doi: 10.1080/00036846.2011.587773
- Behling, M., **M.G. Piketty**, T.F. Morello, J.P. Bouillet, F. Mesquita Neto and J.P. Laclau. 2011. Plantations d'eucalyptus et sidérurgie en Amazonie: apports du modèle 3-PG. *Bois et forêts des tropiques* (309):37-49
- Ezzine de Blas, D., J. Börner, A.L. Violato-Espada, N. Nascimento and **M.G. Piketty.** 2011. Forest loss and management in land reform settlements: Implications for REDD governance in the Brazilian Amazon. *Environmental science and policy*, 14(2): 188-200, doi: 10.1016/j.envsci.2010.11.009

Other Evidence of Leadership, large-program management and delivery:

- Project Leader "Eco-efficiencies and development of territories in the Brazilian Amazon", French National Research Agency (2014 – 2017)
- Project co-leader for CIRAD "Emerging countries in transition to a Green Economy: will it make the difference for Forests and People'", FTA strategic funds (2013 – 2015)
- Project leader "Energy and reforestation in the Brazilian Amazon", AFD (French Agency for Development), 2009-2011.

Role in FTA II FP 3: Dr. Piketty will coordinate Cluster of Activity 3.1 on "Enabling sustainable commodity supply chains", and develop methods and conduct research with emphasis in beef, soy and timber.

Name: GEORGE. C. SCHONEVELD

Current position and affiliation: Scientist CIFOR, Nairobi, Kenya, Phone: +254 (0) 70 326 9083, Email: g.schoneveld@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?user=Whv5SG8AAAAJ&hl=en

Profile: Political economy, African land tenure, agricultural economics, bioenergy systems, international trade and investment regimes, corporate social performance, global commodity chains, international financial markets, international business strategy, inclusive business models, remote sensing

Employment:

- [2013- Present] Scientist, Centre for International Forestry Research (CIFOR), Nairobi, Kenya
- [2011 - 2013] PhD researcher, Utrecht University/Dutch Ministry of Foreign Affairs/African Studies Center
- [2008 – 2011] Associate Expert – Domain 5 (Globalized Trade and Investments) , Centre for International Forestry Research (CIFOR), Bogor, Indonesia

Education:

- [2013] PhD in Land Governance, Utrecht University/Dutch Ministry of Foreign Affairs/African Studies Center, the Netherlands
- [2008] MSc in International Development Studies, Utrecht University, the Netherlands
- [2004] MSc in International Business Strategy, Utrecht University, the Netherlands

Selected Recent Peer-reviewed publications:

- Schoneveld, G.C. and A. Zoomers. 2015. Natural resource privatisation in Sub-Saharan Africa and the challenges for inclusive green growth. *International Development Planning Review* 37(1): 95-118
- Schoneveld, G.C. 2015. The Challenge of Governing Africa's New Agricultural Investment Landscapes: An Analysis of Policy Arrangements and Sustainability Outcomes in Ethiopia and Nigeria. *Forests* 6(1): 88-115
- Schoneveld, G.C. and L. German. 2014. Translating legal rights into tenure security: lessons from the new commercial pressures on land in Ghana. *Journal of Development Studies* 50(2): 187-203
- Schoneveld, G.C. 2014. The politics of the forest frontier: Negotiating between conservation, development and indigenous rights in Cross River State, Nigeria. *Land Use Policy* 38:147-162
- Schoneveld, G.C. 2014. The geographic and sectoral patterns of large-scale farmland investments in sub-Saharan Africa. *Food Policy* 48: 34-50
- German, L., G.C. Schoneveld and E. Mwangi. 2013. Contemporary processes of large-scale land acquisition in Sub-Saharan Africa: legal deficiency or elite capture of the rule of law? *World Development* 48:1-18
- German, L. and G.C. Schoneveld. 2012. A review of social sustainability considerations among EU-approved voluntary schemes for biofuels, with implications for rural livelihoods. *Energy Policy* 51:765-778

Other Evidence of Leadership, large-program management and delivery: Managing research projects: Large-scale investments in Food, Fiber and Energy (DFID), Africa China Informal Resources Trade (ESRC); Assisted management of research project: Bioenergy: Sustainability and Trade-Offs

Role in FTA II FP 3: Dr. Schoneveld will coordinate Cluster of Activity 3.2 on "Business models in timber and tree crop value chains", and contribute to research, policy engagement and capacity development.

Name: HERMAN SAVENIJE

Current position and affiliation: Tropenbos International, Programme Coordinator**,** PO Box 232, 6700 AE Wageningen**,** Tel +31 317 702024**,** Email: herman.savenije@tropenbos.org

Profile: Payment of Ecosystem Services/Forest Financing; Forestry for economic development and poverty alleviation; Forest governance and institutions; Sustainable timber chains and certification; Forests and climate; Restoration, sustainable development and use of forested landscapes

Employment: [2010 - Present] Programme Coordinator, Tropenbos International

Education: [1981] MSc in tropical Forestry, Wageningen University, Wageningen, the Netherlands

Selected Recent Peer-reviewed publications:

- Pasiecznik, N. and **H. Savenije** (eds). 2015. Effective Forest and Farm Producer Organizations. ETFRN 57, Tropenbos International, Wageningen, the Netherlands
- deMarsh, P., M. Boscolo, **H. Savenije,** S. Grouwels, J. Zapata, J. Campbell and D. Macqueen. 2014. Making Change Happen. What can governments do to strengthen forest producer organizations? FAO, FFF, TBI, IFFA. FAO, Rome
- van Dijk, K., E. Lammerts van Bueren and **H. Savenije**. 2013. Dutch Financial Institutions and Forestry. Involvement, experience and perspectives. An exploratory study. Tropenbos International, Wageningen, the Netherlands.
- Asen, A., **H. Savenije** and F. Schmidt (eds). 2012. Good Business: Making Private Investments Work for Tropical Forests. ETFRN News 54. Tropenbos International, Wageningen, the Netherlands
- Asen, A., M. Boscolo, R. Carrillo, K. van Dijk, C. Nordheim-Larsen, S. Oystese, **H. Savenije**, J. Thunberg and J. Zapata. 2012. Unlocking National Opportunities. New Insights on Financing Sustainable Forest and Land management. Policy Brochure. Jointly prepared by FAO, the Global Mechanism, NFP Facility, TBI and ITTO
- FAO/Tropenbos. 2012. Timberland in Institutional Investment Portfolios: Can Significant Investment Reach Emerging Markets?, by R. Glauner, J.A. Rinehart, P. D'Anieri, M. Boscolo, **H. Savenije**. Forestry Policy and Institutions Working Paper No. 31. FAO, NFP Facility, Tropenbos International, Rome
- Broekhoven, G., **H. Savenije** and S. von Scheliha (eds). 2012. Moving Forward with Forest Governance. Tropenbos International, Wageningen, the Netherlands. ETFRN News 53

Other Evidence of Leadership, large-program management and delivery: Coordinator of TBI's forestry programme with the Dutch Ministry of Economic Affairs; coordinator of European Tropical Forestry Research Network; coordinator of TBI's forest financing program.

Role in FTA II FP 3: He will coordinate Cluster of Activity 3.3 on "Scaling through responsible finance and investments", and contribute to research, policy engagement and capacity development under this cluster

Name: PATRICE LEVANG

Current position and affiliation: CIFOR Seconded Scientist, IRD Director of Research, IRD -UMR GRED. 911 av. agropolis - BP 64501 - 34394 Montpellier Cedex 5, France, Email: p.levang@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?user=bfhcUpcAAAAJ&hl=en

Profile: Agronomist by training Dr. Patrice Levang specialized in the study of agricultural colonization projects in forested environments. He did his dissertation on the Indonesian transmigration program after 10 years of field work in Sumatra, Kalimantan and Sulawesi, studying local and migrant communities. More recent works concern the livelihood issues of forest people faced with development projects (mainly in rubber and oil palm) and forestry plantations in Indonesia and in Central Africa.

Employment:

- [October 2014 – present] Scientist at IRD-GRED Montpellier; Seconded scientist at CIFOR, Central Africa Regional Office, Yaoundé, Cameroon
- [2010 – 2014] Co-Director of the Project PPR-FTH of IRD (Tropical Forests of Central Africa); Seconded scientist at CIFOR, Central Africa Regional Office, Yaoundé, Cameroon
- [August 2009- February 2011] : Acting Program Director Forests and Livelihoods, CIFOR
- [October 1999 – July 2009] : Seconded to CIFOR, Bogor, Indonesia. Task manager of the Forest Products and People program in the Bulungan Research Forest project.

Education:

. [2015] PhD in Agro-economy, ENSA of Montpellier, France.
. [1976] Agricultural Engineering Diploma, Institut National Agronomique de Paris-Grignon, France.

Selected Recent Peer-reviewed publications:

- Cerutti P.O., P. Sola, A. Chenevoy, M. Iiyama, J. Yila, W. Zhou, H. Djoudi, R.Eba'a Atyi, D. Gautier, D.J. Gumbo, Y. Kuehl, P. Levang, C. Martius, R. Matthews, R. Nasi, H.Neufeldt, M. Njenga, G. Petrokofsky, M. Saunders, G. Shepherd, D.J. Sonwa, C. Sundberg and M. van Noordwjik, M. 2015. The socioeconomic and environmental impacts of wood energy value chains in Sub-Saharan Africa: a systematic map protocol. *Environmental Evidence* 4(1)
- Levang, P., G. Lescuyer, C. Déhu, D. Noumbissi and L. Broussolle. 2015. Does gathering really pay? Case studies in South and East Cameroon. *Forests, Trees and Livelihoods* 24(2): 128-143
- Weng, L., D. Endamana, A.K. Boedhihartono, P. Levang and C.R. Margules. 2015. Asian investment at artisanal and small-scale mines in rural Cameroon. *The Extractive Industries and Society* 2(1):64-72
- Schure, J., V. Ingram, B. Arts, P. Levang and E. Mvula-Mampasi. 2015. Institutions and access to woodfuel commerce in the Democratic Republic of Congo. *Forest Policy and Economics* 50: 53-61
- Rival, A. and P. Levang. 2014. Palms of controversies: Oil palm and development challenges. CIFOR.
- Ingram, V., P. Levang, P. Cronkleton, A. Degrande, R. Leakey and P. Van Damme. 2014. Forest and tree product value chains. *Forests, Trees and Livelihoods* 23(1-2): 1-5
- Nkongho, R.N., L. Feintrenie and P. Levang. 2014. Strengths and weaknesses of the smallholder oil palm sector in Cameroon. *OCL* 21(2):D208.

Other Evidence of Leadership, large-program management and delivery: Acting Program Director Forests and Livelihoods (2009-2011). IRD Representative for Indonesia (1997-2004). Co-Director of the Project PPR-FTH of IRD (Tropical Forests of Central Africa). Coordinator of various research projects in Indonesia and Cameroon.

Role in FTA II FP 3: Dr. Levang will contribute to research, policy engagement and capacity development in support to the work on sustainable supply and inclusive business models in the palm oil sector.

Name: MANUEL GUARIGUATA

Current position and affiliation: CIFOR, Principal Scientist, Av. La Molina 1895, Lima, Perú**;** + 51 1 3496017**;** Email: m.guariguata@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?user=KPTEwNIAAAAJ&hl=en

Profile: Forest management for multiple goods and services in both natural and planted forests, tropical forest restoration, tropical silviculture, ecology of ecosystem services, ecology and management of non-timber forest products, forest certification, tropical forest policy, multistakeholder assessments.

Employment: CIFOR, Principal Scientist, Team Leader on CIFOR´s Management of Forests and Restoration theme, Leader of CIFOR regional office in Perú (all concurrent).

Education:

. PhD, Yale School of Forestry and Environmental Studies, New Haven, CT, USA.
. M. Sc. Ecology, University of Florida, Gainesville, USA

Selected Recent Peer-reviewed publications:

- Andersson, K., D. Lawrence, J. Zavaleta and **M.R. Guariguata**. 2016. More trees more poverty? The socioeconomic effects of tree plantations in Chile, 2001-2011. *Environmental Management* 57:123-136
- Murcia, C., **M.R. Guariguata**, J. Aronson, A. Andrade, G. Andrade, E. Escobar, W. Ramirez and E. Montes. 2015. Challenges and prospects for scaling-up ecological restoration to meet international commitments: Colombia as a case study. *Conservation Letters*, doi: 10.1111/conl.12199
- Rockwell, C.A., **M.R. Guariguata,** M. Menton, E. Arroyo-Quispe, et al. 2015. Nut production in *Bertholletia excelsa* across a logged forest mosaic: Implications for multiple forest use. *PLOS One* 10(8)
- **Guariguata, M.R.** and P.H.S. Brancalion. 2014. Current challenges and perspectives on governing forest restoration. *Forests* 5:3022-3030.
- Meijaard, E., S. Wunder, **M.R. Guariguata** and D. Sheil. 2014. What scope for certifying forest ecosystem services? *Ecosystem Services* 7:160-166
- Savilaakso, S., C. Garcia, J. Garcia-Ulloa, J. Ghazoul, M.Groom, **M.R. Guariguata**, Y. Laumonier, R. Nasi, G. Petrokofsky, J. Snaddon and M. Zrust. 2014. Systematic review of effects on biodiversity from oil palm production. *Environmental Evidence* 3:4
- Thompson, I., **M.R. Guariguata,** K. Okabe, C. Bahamondez, R. Nasi, V. Heymell and C. Sabogal. 2013. An operational framework for defining and monitoring forest degradation. *Ecology and Society* 18(2): 20

Other Evidence of Leadership, large-program management and delivery: CIFOR Leader of Domain on Forest Management for Production (2008-2011), Theme Leader within CIFOR of CRP 6 on Forests and Forest Genetic Resources (2011-2015), Leader of CIFOR´s regional office in Perú (2013-present) with substantial administrative tasks and government related interactions with relevant institutions. Member of various PhD and M.Sc. committees. Board member of the International Union of Forest Research Organizations (IUFRO: 2014-present), Board Member of the Latin American Network of Model Forests (2015-present).

Role in FTA II FP 3: Dr. Guariguata will contribute to conducting research, policy engagement and capacity development activities in support to the work on sustainable development of timber plantations

Name: PLINIO SIST

Current position and affiliation: CIRAD, Scientist, Campus International de Baillarguet, TA C-105/D, 34398 Montpellier Cedex 5 France; Phone: +33 4 67 59 39 13; Email: sist@cirad.fr
Link to Google Scholar profile: https://scholar.google.com/citations?user=GsPveggAAAAJ&hl=en

Profile: Tropical forest ecology, Tropical forest management

Employment:

- 2015 – present] Director of BSEF (Good and Services of Tropical forest ecosystems) research Unit at Cirad
- [2012-Present] Coordinator of the Tropical managed Forest Observatory
- [2014-Present] Coordinator of Ecology and silviculture of moist forests in the tropics of IUFRO subdivision 1

Education:

- [1989] PhD Université P&M Curie
- [2003] HDR (Habilitation à Diriger des Recherches, Habilitation to Lead Research, Highest University Diploma), Université Paul Sabatier, Toulouse

Selected Recent Peer-reviewed publications:

- **Sist, P.** et al. 2015. The Tropical managed Forests Observatory: a research network addressing the future of tropical logged forests. *Applied Vegetation Science* 18:171-175, doi: 10.1111/avsc.12125
- Slik et al. 2015. An estimate of the number of tropical tree species. Proceedings of the National Academy of Sciences of the United States of America 112:7472-7477
- **Sist, P.**, L. Mazzei, L. Blanc and E. Rutishauser. 2014. Large trees as key elements of carbon storage and dynamics after selective logging in the Eastern Amazon. *Forest Ecology and Management* 318: 103-109
- **Sist, P.**, P. Sablayrolles, S. Barthelon, L. Sousa-ta, J-F. Kibler, A. Ruschel, M. Santos-Melo and D. Ezzine-de-Blas. 2014. The Contribution of Multiple Use Forest Management to Small Farmers' Annual Incomes in the Eastern Amazon. *Forests* 5:1508-1531; doi: 10.3390/f5071508
- Guariguata, M.R., **P. Sist** and R. Nasi. 2012. Multiple use management of tropical production forests: How can we move from concept to reality? *Forest Ecology and Management* 263:170-174
- Putz, F.E., P.A. Zuidema, T. Synnott, M. Peña-Claros, M.A. Pinard, D. Sheil, J.K. Vanclay, **P. Sist**, S. Gourlet-Fleury, B. Griscom, J. Palmer and R. Zagt. 2012. Sustaining conservation values in selectively logged tropical forests: the attained and the attainable. *Conservation Letters* 5:296-303, doi: 10.1111/j.1755-263X.2012.00242
- Herrero-Jauregui, C., C. Garcıa-Fernandez, **P. Sist** and M.A. Casado. 2011. Recruitment dynamics of two low-density neotropical multiple-use tree species. *Plant Ecology* 212(9):1501-1512

Other Evidence of Leadership, large-program management and delivery: Director of BSEF (Good and Services of Tropical forest ecosystems) research Unit at Cirad (35 researchers, 6 administrative assistants and 30 PhD students), focal point of CRP6 FTA for Cirad

Role in FTA II FP 3: Dr. Sist will contribute to research and capacity development on options and practices to improve sustainable forest management for timber supply with greater social and environmental benefits

Name: DIETMAR STOIAN

Current position and affiliation: Bioversity International, Principal Scientist, Parc Scientifique Agropolis II, 34397 Montpellier - Cedex 5, France ; Tel.: +33 (0)4 67 61 98 02; Email: d.stoian@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?user=4hL5NUAAAAAJ&hl=en

Profile: Smallholder livelihoods, value chain analysis and development, sustainability standards, private sector engagement, markets and marketing of agricultural and forest products, community forestry, NTFPs, systems thinking, asset-based approaches

Employment:

- [2015 – present] Principal Scientist, Value Chains and Private Sector Engagement
- [2012 – 2015] Leader, Commodity Systems and Genetic Resources Programme, Bioversity International
- [2001 – 2012] Leader, Competitiveness and Value Chains Programme, CATIE

Education:

- [2000] PhD in Forest Economics, University of Freiburg, Germany
- [1993] *Dipl.-Forstwirt* (MSc equivalent) in Forest Sciences, University of Freiburg, Germany

Selected Recent Peer-reviewed publications:

- Donovan, J., D. Stoian and M. Lundy. In press. Inclusive Value-Chain Development: Challenges and Approaches Introduction. In A. Devoux, M. Torero, J. Donovan and D. Horton (eds). *Innovation for Inclusive Value Chain Development: Successes and Challenges*, Washington, D.C., IFPRI (0 citation)
- Orr, A., Donovan, J. & Stoian, D. 2015. Smallholder Value Chains as Complex Adaptive Systems: A Conceptual Framework. *Socioeconomic Discussion Paper Series* 36. ICRISAT, Nairobi, Kenya (0 citation)
- Sheck, R., J. Donovan and D. Stoian (eds). 2013. Assessing Impacts of Value Chain Development on Poverty: A Case-Study Companion to the 5Capitals tool. Technical Series 69, Rural Enterprise Development Collection 8, Turrialba, Costa Rica, CATIE/ICRAF/Bioversity International (2 citations)
- Stoian, D., J. Donovan, J. Fisk and M. Muldoon. 2012. Value Chain Development for Rural Poverty Reduction: A Reality Check and a Warning. *Enterprise Development and Microfinance* 23(1):54-69
- Donovan, J. and D. Stoian. 2012. 5Capitals: A Tool for Assessing the Poverty Impacts of Value Chain Development. *Technical Series 55, Rural Enterprise Development Collection 7,* Turrialba, Costa Rica, CATIE
- Pokorny, B., C. Sabogal, W. de Jong, P. Pacheco, N. Porro, B. Louman and D. Stoian. 2010. Challenges of Community Forestry in Tropical America. *Bois et Forêts Des Tropiques* 303 (1): 53-66 (10 citations)
- Donovan, J., D. Stoian, I. Antezana CIP, J. Belt KIT, S. Clark, M. Harper, N. Poole, S. Ruddick, J. Waagbo LWR. 2010. Assessing the impact of value chain approaches on rural poverty. Methodological Guidelines for Development Practitioners and Private Sector Representatives, Turrialba, Costa Rica, CATIE (9 citations)

Other Evidence of Leadership, large-program management and delivery: Leadership in program planning, implementation, and M&E; responsibility for 50+ staff and annual budgets of USD 12-14 million; member of Bioversity's Leadership Team and Research Coordination Committee; Center focal point to CGIAR Research Programs on Roots, Tubers and Bananas (2012-2015) and Policies, Institutions and Markets (since 2015) and Center representative on PIM's Management Committee (since 2016)

Role in FTA II FP 3: Dr. Stoian will contribute to develop methods and conduct research on the governance of value chains and the design of business models with emphasis on timber and high-value tree crops

Name: JASON DONOVAN

Current position and affiliation: Scientist, ICRAF c/o CIP, Av. La Molina 1895, La Molina, Lima, Peru, Tel.: (+51) 1-349-6017 (annex: 2078); Email: j.donovan@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?user=9SGsmjoAAAAJ&hl=en

Profile: Opportunities for poor rural households to participate in higher value markets, economic growth in middle-income countries and its implications for smallholders, women's empowerment though market participation, food safety and nutrition, and monitoring and evaluation systems

Employment:

- ICRAF. Research Leader–Value Chains and Transformational Change
- Centro Agronómico Tropical de Investigación y Enseñanza (CATIE)

Education:

- PhD, U. of London, School of Oriental and Africa Studies; Development Economics

Selected Recent Peer-reviewed publications:

- Devoux, A., M. Torero, **J. Donovan** and D. Horton (eds). In press. Innovation for Inclusive Value Chain Development: Successes and Challenges. Washington, D.C.: IFPRI.
- **Donovan, J.,** D. Stoian and M. Lundy. In press. Inclusive Value-Chain Development: Challenges and Approaches Introduction. In A. Devoux, M. Torero, J. Donovan and D. Horton (eds). *Innovation for Inclusive Value Chain Development: Successes and Challenges*, Washington, D.C., IFPRI.
- **Donovan, J**., S. Franzel, M. Cunha, A. Gyau and D. Mithofer. 2015. Guides for Value Chain Development: A Comparative Review. *Journal of Agribusiness in Developing and Emerging Economies* 5(1): 1-22
- Gelli, A., C. Hawkes, **J. Donovan**, J. Harris, S.L. Allen, A. de Brauw, S. Henson, N. Johnson, J. Garrett and D. Ryckembusch. 2015. Value Chains and Nutrition: A Framework to Support the Design and Evaluation of Interventions. IFPRI Discussion Paper 01413, IFPRI, Washington, D.C.
- Poole, N. and **J. Donovan**. 2014. Building Cooperative Capacity: The Specialty Coffee Sector in Nicaragua. *Journal of Agribusiness in Developing and Emerging Economies* 4(2):133-156
- **Donovan, J**. and N. Poole. 2014. Partnerships in Fairtrade Coffee: Close-up Look at Buyer Interactions and NGO Interventions. *Food Chain* 4(1):34-48
- **Donovan, J.** and N. Poole. 2014. Changing Asset Endowments and Smallholder Participation in Higher Value Markets: Evidence from Certified Coffee Producers in Nicaragua. *Food Policy* 44(2014): 1-13

Other Evidence of Leadership, large-program management and delivery: Research Leader – Value Chains and Transformational Change in ICRAF. Has developed the 5Capitals tool for assessing the impact of value chain development and related journal articles, including a recent article on changing asset endowments in response to smallholder participation in value chains for certified coffee.

Role in FTA II FP 3: Dr. Donovan will conduct research, policy engagement and capacity development on the governance of value chains, standard systems, and business models with emphasis on high-value tree crops. Dr. Donovan will also be working with FP2.

Name: PAOLO OMAR CERUTTI

Current position and affiliation: Senior Scientist, CIFOR, P.O. Box 30677 – 00100 Nairobi, Kenya
+254 701465459; Email: p.cerutti@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?user=yN7qEbcAAAAJ&hl=en

Profile: Environmental Governance, Forestry, Forest Management and Forest Certification, Tropical timber value chains

Employment: [2004 – present] CIFOR, Scientist to Senior Scientist

Education:

- [2012] PhD in Environmental Governance, Crawford School of Economics and Government – Australian National University, Canberra, Australia
- [2001] MSc in Geographic Information Systems and Remote Sensing for natural resources evaluation, Istituto Agronomico per l'Oltremare, Ministry of Foreign Affairs, Florence, Italy

Selected Recent Peer-reviewed publications:

- Cerutti, P.O., P. Sola, A. Chenevoy, M. Iiyama, J. Yila, W. Zhou, H. Djoudi, R.Eba'a Atyi, D. Gautier, D.J. Gumbo, Y. Kuehl, P. Levang, C. Martius, R. Matthews, R. Nasi, H.Neufeldt, M. Njenga, G. Petrokofsky, M. Saunders, G. Shepherd, D.J. Sonwa, C. Sundberg and M. van Noordwjik, M. 2015. The socioeconomic and environmental impacts of wood energy value chains in Sub-Saharan Africa: a systematic map protocol. *Environmental Evidence* 4(1) (1 citation)
- Putzel, L., A.B. Kelly, P.O. Cerutti and Y. Artati. 2015. Formalization as development in land and natural resource policy. *Society & Natural Resources* 28(5): 453-472 (2 citations)
- Cerutti P.O. L. Putzel, P. Pacheco and J. Baxter. 2015. Tackling illegal logging in the tropics: From good intentions to smart policies. *BIORES* 9(4):12-15 (1 citation)
- Lambin, E.F., P. Meyfroidt , X. Rueda, A. Blackman, J. Börner. P.O. Cerutti, T. Dietsch, L. Jungmann, P. Lamarque, J. Lister, N.F. Walker and S. Wunder. 2014. Effectiveness and synergies of policy instruments for land use governance in tropical regions. *Global Environmental Change* 28(2014):129-140 (30 citations)
- Carodenuto, S. and P.O. Cerutti. 2014. Forest Law Enforcement, Governance and Trade (FLEGT) in Cameroon: Perceived private sector benefits from VPA implementation. *Forest Policy and Economics* 48(2014): 55-62 (6 citations)
- Cerutti, P.O., G. Lescuyer, R. Tsanga, S. Nziengui Kassa, P.R. Mapangou, E. Essiane Mendoula, A.P. Missamba-Lola, R. Nasi, P.P. Tabi Eckebil and R.I. Yembe-Yembe. 2014. Social Impacts of the Forest Stewardship Council certification - An assessment in the Congo basin. CIFOR Occasional Paper 103. Bogor, Indonesia, CIFOR (8 citations)
- Cerutti, P.O., Y. Artati, A. Dermawan, A. Kelly, G. Lescuyer , E. Mejía, K. Obidzinski, P. Pacheco, L. Putzel, R. Tsanga and D.A. Wardell. 2014. Policy options for improved integration of domestic timber markets under the voluntary partnership agreement (VPA) regime. Synthesis from lessons learned in Cameroon, the Democratic Republic of the Congo, Ecuador, Gabon and Indonesia. CIFOR Infobrief. Bogor, Indonesia, Center for International Forestry Research (CIFOR) (0 citations)

Other Evidence of Leadership, large-program management and delivery: Coordinated several projects on the impacts of logging concessions and sustainable forest management on tropical production forests; forest certification (FSC) in tropical countries; domestic and regional tropical timber and wood energy markets

Role in FTA II FP 3: Dr. Cerutti will conduct research, policy engagement and capacity development on the governance of timber supply for global and domestic markets, and options for smallholders and SMEs

Flagship 4 CVs

MEINE VAN NOORDWIJK 112
TERRY SUNDERLAND 113
PETER A MINANG 114
EDUARDO SOMARRIBA 115
BERIA LEIMONA 116
DELIA C. CATACUTAN 117
BRYAN FINEGAN 118
RENÉ GA BOOT 119
SONYA DEWI 120
SVEN WUNDER 121

Name: MEINE VAN NOORDWIJK

Currently FTA[I].3 and proposed FTA[II].6 leader

Address: World Agroforestry Centre (ICRAF), Bogor, Indonesia
Phone: +62 87888999108; Email: m.vannoordwijk@cgiar.org; Skype: MeinevanNoordwijk
Link to Google Scholar profile: https://scholar.google.com/citations?user=CyTMe1IAAAAJ&hl=en

Education

1987 PhD, Agricultural Science, Wageningen University (the Netherlands)

Relevant disciplinary expertise and skills

Trained as a biologist/ecologist at MSc level and holds a PhD in agricultural sciences; he has a strong *systems science* orientation, with a focus on cross-scale linkages in socio-ecological systems (discussed in *Climate-Smart Landscapes: Multifunctionality in Practice*); the synergy between local, scientific and public/policy knowledge systems summarized in the compilation of 49 methods in *Negotiation-support tool kit for learning landscapes (2013)*; the development of synthetic models at tree (functional branch analysis, fractal scaling of allometry), tree-soil-crop interactions (WaNuLCAS), hydrological functions in landscape mosaics (GenRiver and FlowPer) and land-use dynamics (FALLOW) scale, with associated databases. He led the RUPES program that reframed the debate on Payments for Ecosystem Services (PES), recognizing a place for three complementary paradigms (commodification, compensation and co-investment). Recent interests include the use of role-play games for gender specific analysis of preferences and choices in a real-world context, complementing economic analysis of opportunity costs.

Positions held (last 5 years)

2014–present Seconded as part-time Professor of Agroforestry, Wageningen University (the Netherlands)
1993–present Senior to Principal Scientist (Ecologist), ICRAF (serving as Regional Coordinator SE Asia 2001–2008 and Leader of the Environmental Services Science Domain (2006–2013); Chief Science Adviser since 2009

Management experience and skills (last 5 years)

Leads the FTA[I].3 Flagship project and as such is part of the FTA[I] management team. Until 2014, co-led the landscapes and environmental services science domain in ICRAF (with Peter A. Minang). Since 2009 overall responsibility for the annual ICRAF Science Week (150-200 scientists, 5 day program). Served, with Beria Leimona as local organizer of the 5th Ecosystem Services Partnership symposium in Bali. Co-led (with Robin Mathews) EU FP7 REDD-ALERT.

Relevant publications (up to 10, during last 5 years, with Google Scholar citation numbers per 7/7/2015)

Pricing rainbow, green, blue and grey water: tree cover and geopolitics of climatic teleconnections (2014) **M Van Noordwijk**, S Namirembe, D Catacutan, D Williamson. Current Opinion in Environmental Sustainability 6, 41-47. (19 citations)

Reducing emissions from land use in Indonesia: motivation, policy instruments and expected funding streams (2014) **M van Noordwijk**, F Agus, S Dewi, H Purnomo. Mitigation and Adaptation Strategies for Global Change 19 (6), 677-692. (24 citations)

Management swing potential for bioenergy crops (2013) SC Davis, RM Boddey, BJR Alves, AL Cowie,...**M van Noordwijk**... GCB Bioenergy 5 (6), 623-638. (44 citations)

Design challenges for achieving reduced emissions from deforestation and forest degradation through conservation: leveraging multiple paradigms at the tropical forest margins (2013) PA Minang, **M van Noordwijk**. Land Use Policy 31, 61-70. (52 citations)

Benefit distribution across scales to reduce emissions from deforestation and forest degradation (REDD+) in Vietnam (2013) MH Hoang, TH Do, MT Pham, **M van Noordwijk**, PA Minang. Land Use Policy 31, 48-60. (53 citations)

Protected areas within multifunctional landscapes: Squeezing out intermediate land use intensities in the tropics? (2013) S Dewi, **M van Noordwijk**, A Ekadinata, JL Pfund. Land Use Policy 30 (1), 38-56. (41 citations)

Social-ecological and regional adaptation of agrobiodiversity management across a global set of research regions (2012) LE Jackson, MM Pulleman, L Brussaard, KS Bawa, GG Brown...**M van Noordwijk** ...Glob. Env. Change 22 (3), 623-639. (47 citations)

Payments for Environmental Services: evolution towards efficient and fair incentives for multifunctional landscapes.(2012) **van Noordwijk M**, Leimona B, Jindal R, Villamor G B. Annual Review of Environment and Resources 37, 389-420. (65 citations)

Influence of coastal vegetation on the 2004 tsunami wave impact in west Aceh (2011) JCL Bayas, C Marohn, G Dercon, S Dewi, HP Piepho, L Joshi, ...Proceedings of the National Academy of Sciences 108 (46), 18612-18617. (46 citations)

Boundary work for sustainable development: Natural resource management at the Consultative Group on International Agricultural Research (CGIAR).(2011) WC Clark, TP Tomich, **M van Noordwijk**, D Guston, D Catacutan, Proceedings of the National Academy of Sciences (published online, not yet (…) in a volume with page numbers. (191 citations)

Name: TERRY SUNDERLAND

Principal Scientist, CIFOR
Address: Jalan CIFOR Situ Gede Bogor, Indonesia
Phone: +62 251 8622 622; Email: t.sunderland@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?hl=en&btnA=1&user=1etd8J8AAAAJ

Education

1988	Dip. Hort Kew. (Hons), RBG Kew, Horticulture and botany
1993	MSc (distinction) Forestry and its relation to land use, University of Oxford
2001	PhD Biology and anthropology, University College London

Relevant disciplinary expertise and skills
Coordinates CIFOR's work on forests and food security and integrated landscape management. Prior to joining CIFOR in early 2006, he was based in West Africa for over 15 years and worked on numerous conservation and livelihood focused projects. Having both a field practitioner and an academic background gives him a wide perspective on conservation, livelihoods and related issues.

Positions Held (last 5 years)
2006–present Senior/Principal Scientist, CIFOR, Indonesia.

Management Experience and skills (last 5 years)
Extensive project management experience. For example: Southern and West Africa: USAID, Finnish AID, Lower Mekong (MacArthur Foundation), Indonesia (Canadian CIDA). CIFOR focal point for research on landscapes, food security, biodiversity and ecosystem services as part of FTA 1 with concomitant responsibility for strategic planning, staffing and budgets. Chair of the Science Committee for the Global Landscapes Forum, Warsaw (2013) and Lima (2014). Raised more than USD 35 million in bilateral funding since 2010.

Most Relevant Publications (up to 10, during last 5 years, with Google Scholar citation numbers)

Dietary quality and tree cover in Africa (2014) A Ickowitz, B Powell, MA Salim, **T Sunderland**. Global Environmental Change 24, 287-294. (37 citations)

The landscape approach: ten principles to apply at the nexus of agriculture, conservation and other competing land-uses (2013) J Sayer, **T Sunderland**, J Ghazoul, JL Pfund, D Sheil, …. PNAS. 110 (21) 8345-8348 http://www.pnas.org/content/110/21/8349.full.pdf (169 citations)

Understanding and integrating local perceptions of trees and forests into incentives for sustainable landscape management (2011) JL Pfund, J Watts, M Boissiere, A Boucard, … **T Sunderland** … Environmental Management 48: 334–349. (49 citations)

Food security: why is biodiversity important? (2011) **T Sunderland**. International Forestry Review. 13(3): 265-274. http://www.cifor.org/publications/pdf_files/articles/ASunderland1101.pdf (39 citations)

Getting REDD to work locally: lessons learned from Integrated Conservation and Development Projects (2010) B Blom, **T Sunderland** and D Murdyarso. 2010. Environmental Science & Policy. 13(2): 164-172. (226 citations)

Challenging perceptions about men, women, and forest product use: a global comparative study (2014) **T Sunderland** et al. World Development 64, S56-S66 (25 citations)

Editorial: Forests, biodiversity and food security (2011) M Arnold, B Powell, P Shanley and **T Sunderland**. 2011. International Forestry Review. 13(3): 259-264. http://www.cifor.org/publications/pdf_files/articles/AShanley1102.pdf (53 citations)

Improving diets with wild and cultivated biodiversity from across the landscape (2015) B Powell, SH Thilsted, A Ickowitz, C Termote, **T Sunderland**, A Herforth. Food Security, 1-20 (8 citations)

The impacts of selective logging on non-timber forest products of livelihood importance (2012) L Rist, **T Sunderland**, D Sheil, O Ndoye, N Liswanti, …. Forest Ecology and Management. 268: 57-69.http://www.cifor.org/publications/pdf_files/articles/ASunderland1102.pdf (48 citations)

Managing Landscapes for Food Security and Enhanced Livelihoods: Building upon a Wealth of Local Experience (2014) Padoch C and **T Sunderland**. Unasylva 241, Vol. 64, 2013/2 http://www.fao.org/docrep/019/i3482e/i3482e01.pdf (18 citations)

Name: PETER A MINANG

Science Domain Leader, Landscapes and Environmental Services & Global Coordinator ASB Partnership for the Tropical Forest Margins
Address: World Agroforestry Centre (ICRAF), UN Avenue, Gigiri, Nairobi, Kenya
Phone: +254 20 7224264; Email: a.minang@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?user=9FFGuyoAAAAJ&hl=en

Education

2007 PhD, Environmental Science and Policy, University of Twente (The Netherlands)

Relevant disciplinary expertise and skills

Trained as a geographer/GIS and Remote Sensing Specialist at MSc level, holds a PhD in environmental science and policy, he has worked for 20 years in conservation, community forestry, carbon forestry, REDD+, climate change and ecosystem services. He has a specific interest in system science as applied to socio-ecological systems and landscapes (see *Climate-Smart Landscapes*). Policy science, especially climate policy and its interactions with development and ecosystems services policies represent the bulk of his current interests.

Positions held (last 5 years)

2014–present Science Domain Leader, Landscapes and Environmental Services, ICRAF

2012–2013 Co-Leader Science Domain 5- Landscapes and Environmental Services, ICRAF

2010–present Global Coordinator ASB Partnership for the Tropical Forest Margins

Management experience and skills (last 5 years)

Besides managing global research teams working on landscapes and environmental services globally at ICRAF and the ASB Partnership, I have also actively managed grants on comparative research across Africa, Asia and Latin America on concepts such as Reducing Emissions from All Land Use- REALU, REDD+ and others.

Relevant publications (up to 10, during last 5 years, with Google Scholar citation numbers per 15/07/2015)

REDD+ Readiness progress across countries: Time for reconsideration (2014) **PA Minang**, et al. Climate Policy 14(6): 685-708. (27 citations)

Prospects for agroforestry in REDD+ landscapes in Africa (2014) **PA Minang**, LA Duguma, F Bernard, O Mertz and M van Noordwijk. Current Opinion in Environmental Sustainability 6:78-82. (24 citations)

Climate change mitigation and adaptation in the land use sector: from complementarity to synergy (2014) LA Duguma, **PA Minang**, and M van Noordwijk. Environmental management 54(3):420-432. (28 citations)

Climate-Smart Landscapes: Opportunities and Challenges for Integrating Adaptation and Mitigation in Tropical Agriculture (2014) CA Harvey, M Chacón, CI Donatti, E Garen,… **PA Minang**, … Conservation Letters 7(2):77-90. (64 citations)

Design challenges for achieving reduced emissions from deforestation and forest degradation through conservation: leveraging multiple paradigms at the tropical forest margins (2013) **PA Minang** and M van Noordwijk. Land Use Policy 31:61-70. (52 citations)

Benefit distribution across scales to reduce emissions from deforestation and forest degradation (REDD+) in Vietnam (2013) MH Hoang, TH Do, MT Pham, M van Noordwijk, and **PA Minang**. Land Use Policy 31:48-60. (53 citations)

Payments for Environmental Services: evolution towards efficient and fair incentives for multifunctional landscapes (2012) M Van Noordwijk, B Leimona, R Jindal, GB Villamor, … **PA Minang**, …. Annual Review of Environment and Resources 37:389-420. (65 citations)

Land science contributions to ecosystem services (2013) ND Crossman, BA Bryan, RS de Groot, YP Lin, and **PA Minang**. Current Opinion in Environmental Sustainability 5(5):509-514. (28 citations)

Modern bioenergy from agricultural and forestry residues in Cameroon: Potential, challenges and the way forward (2013) EK Ackom, D Alemagi, NB Ackom, **PA Minang**, and Z Tchoundjeu. Energy Policy 63:101-113. (17 citations)

Estimating the opportunity costs of REDD+ - A training manual (2010) D White, **PA Minang**, F Agus, J Borner, K Hairiah, …. Washington DC, USA: World Bank. (45 citations)

Name: EDUARDO SOMARRIBA

Address: Apartado 108, CATIE, Turrialba 30501, Costa Rica.
Phone: +506 25582593, esomarri@catie.ac.cr; Skype: eduardo.somarriba;
Google Scholar profile: http://scholar.google.com/citations?user=vcgrjM4AAAAJ&hl=en

Education
PhD (University of Michigan, 1993)

Relevant disciplinary expertise and skills
Biology (primary and secondary forest successions), tropical forest management (tree population dynamics), agro-ecology (decision-making in farming systems). Researcher and postgraduate student mentor in agroforestry, trees on farms, timber production from naturally regenerated trees in crop fields and pasture lands in Latin America since 1983. Has made a career-long contribution to understanding the design and optimal management of shade canopies in cocoa- and coffee-based agroforestry systems (www.ShadeMotion.com), reforestation of smallholder farms and agroforestry farm planning and management.

Positions held (last 5 years)
Leader, Agroforestry and Sustainable Agriculture Program, Tropical Agricultural Research and Higher Education Centre (CATIE); Head Research, CATIE; Leader Central American Cocoa Project; Affiliate Associate Professor, College of Natural Resources, University of Idaho; Leader CATIE-FTA Initiative (Coordinator Nicaragua-Honduras Sentinel Landscape).

Management experience and skills (last 5 years)
Leader of the largest Research & Development Program in CATIE, with 20+ researchers and their graduate students and supporting staff. Research, postgraduate education and outreach on agroforestry and sustainable agriculture. Partnerships and coordination with multiple partner organizations from local to global levels. Leader of Central American Cocoa Project, a 7-year initiative, worth USD 7 million, with more than 50 staff providing education and technical support to both governments and 5000+ households.

Relevant publications (up to 10, during last 5 years, with Google Scholar citation numbers)

Productivity of *Theobroma cacao* agroforestry systems with legume and timber shade tree species (2011) **E Somarriba** and J Beer. Agroforestry Systems 81:109-121 (55 citations)

Vegetation structure and productivity in cocoa-based agroforestry systems in Talamanca, Costa Rica (2012). O Deheuvels, J Avelino, **E Somarriba** and E Malezieux. Agriculture Ecosystems and Environment. 149:181-188. (54 citations)

Genetic diversity and spatial structure in a new distinct *Theobroma cacao* L. population in Bolivia (2012) D Zhang, W July, ES Johnson, **E Somarriba**, W Phillips-Mora, C Astorga, …. Genetic Resources and Crop Evolution 59(2):239-252. (14 citations)

Climate-smart Landscapes: Opportunities and Challenges for Integrating Adaptation and Mitigation in Tropical Agriculture (2013) C Harvey, M Chacón, CI Donatti, E Garen,… **E Somarriba**,…. Conservation Letters doi: 10.1111/conl.12066. (64 citations).

Mainstreaming agroforestry in Latin America. In: Agroforestry: the way forward (2012) **E Somarriba** et al. *in* PKR Nair and Garrity DP. Editors. Springer, Advances in Agroforestry 9. USA. Pp. 429-453.(14 citations)

Carbon stocks in agroforestry systems with cocoa (*Theobroma cacao* L.) in Central America (2013) **E Somarriba**, et al. Agriculture, Ecosystems and Environment 173:46-57. (37 citations)

Contribution of cocoa agroforestry systems to family income and domestic consumption: looking toward intensification (2014) R Cerda, O Deheuvels, D Calvache, L Niehaus,… **Somarriba E**. AgroforestSyst 88(6):957–981. DOI 10.1007/s10457-014-9691-8 (17 citations)

BIOFRAG – A new database for analysing BIOdiversity responses to forest FRAGmentation (2014). M Pfeifer, V Lefebvre, TA Gardner, V Arroyo-Rodriguez,... **E Somarriba**, …. Ecology and Evolution 4(9): 1524–1537. DOI: 10.1002/ece3.1036. (7 citations)

Cocoa - timber agroforestry systems: *Theobroma cacao* - *Cordiaalliodora* in Central America (2014) **E Somarriba,** et al. AgroforestSyst 88:1001–1019. DOI 10.1007/s10457-014-9692-7. (12 citations)

Trade-offs between crop intensification and ecosystem services: the role of agroforestry in cocoa cultivation (2014) P Vaast and **E Somarriba.** AgroforestSyst 88:947-956. DOI 10.1007/s10457-014-9762-x (12 citations)

Name: BERIA LEIMONA

Scientist FTA.3
Address: World Agroforestry Centre (ICRAF), SE Asia, Bogor, Indonesia
Phone: +62 251 8625415; Email: l.beria@cgiar.org
Link to Google Scholar profile: https://scholar.google.co.id/citations?user=qXkFULIAAAAJ&hl=en

Education

2012 PhD, Environmental system analysis, Wageningen University (the Netherlands)

Relevant disciplinary expertise and skills

Trained as a landscape planner at MSc level and with a PhD in ecological economics focused on payment for environmental services and synergy between research, action and policy making. Researcher and postgraduate student mentor in valuation of non-market resources, experimental economics and behavioral game and ecosystem service governance. He was a resource person for the Indonesian Ministry of Environment and Forestry for reviewing policies and national guidelines on incentive-based policy instruments for environmental protection and conservation. He joined the Ecosystem Service Partnership Network (ESP) as an Executive Steering Committee and a senior member of the Environment and Economics Institute of Indonesia (EEII) network. He is lead author for *Asia-Pacific Biodiversity and Ecosystem Services Assessment of Intergovernmental Panel for Biodiversity and Ecosystem Services* (IPBES).

Positions held (last 5 years)

2013–present World Agroforestry Centre: Scientist for Ecosystem Services
2005–2012 World Agroforestry Centre: Coordinator for Rewarding Upland Poor for Environmental Services (RUPES) project in Southeast Asia

Management experience and skills (last 5 years)

Designing and managing pro-poor payment for environmental services (PES) initiatives in Asia for 3 phases (2002–currently) in at least eight countries covering 20 action research sites. Coordinating projects involving international donor organizations, regional government partners, research and civil society organizations. Served, with Meine van Noordwijk as local organizer of the 5th Global Ecosystem Services Partnership conference in Bali.

Relevant publications (up to 10, during last 5 years, with Google Scholar citation numbers)

Boundary work: knowledge co-production for negotiating payment for watershed services (2015) **B Leimona**, et al. Ecosystem Services 15: 45-62.

Fairly efficient, efficiently fair: Lessons from designing and testing payment schemes for ecosystem services in Asia. 2015. **B Leimona**, M Van Noordwijk, R de Groot, R Leeman. Ecosystem Services 12, 16-28. (12 citation)

Payments for environmental services in Indonesia: What if economic signals were lost in translation? (2015) R Lapeyre, R Pirard, **B Leimona.** Land Use Policy 46, 283-291. (7 citation)

Indonesia's 'Green Agriculture' strategies and policies: closing the gap between aspirations and application (2015) **B Leimona**, et al. World Agroforestry Centre and World Bank, Bogor. http://worldagroforestry.org/regions/southeast_asia/publications?do=view_pub_detail&pub_no=OP0003-15

Co-investment paradigms as alternatives to payments for tree-based ecosystem services in Africa (2014) S Namirembe, **B Leimona**, M Van Noordwijk, F Bernard, KE Bacwayo. Current Opinion in Environmental Sustainability 6, 89-97. (22 citations)

Auction Design for the Private Provision of Public Goods in Developing Countries: Lessons from Payments for Environmental Services in Malawi and Indonesia (2012) OC Ajayi, BK Jack, and **B Leimona.** World Development 40(6), 1213-1223. (35 citations)

Payments for Environmental Services: Evolution Toward Efficient and Fair Incentives for Multifunctional Landscapes (2012) M Van Noordwijk, **B Leimona**, R Jindal, GB Villamor, M Vardhan, ... Annual Review of Environment and Resources 37, 389-420. (65 citations)

Principles for Fairness and Efficiency in Enhancing Environmental Services in Asia: Payments, Compensation, or Co-Investment? (2010) M van Noordwijk and **B Leimona.** Ecology and Society 15(4), 17. (81 citations)

A revealed preference approach to estimating supply curves for ecosystem services: use of auctions to set payments for soil erosion control in Indonesia (2009) BK Jack, **B Leimona**, and PJ Ferraro. Conservation Biology 23(2), 359-367. (101 citations)

Can rewards for environmental services benefit the poor? Lessons from Asia (2009) **B Leimona**, L Joshi, M Van Noordwijk. International Journal of the Commons 3(1), 82-107. (64 citations)

Name: DELIA C. CATACUTAN

Address: World Agroforestry Centre (ICRAF), Hanoi, Vietnam
Phone: +84 4 3783 4644; Email: d.c.catacutan@cgiar.org
Link to Google Scholar profile: https://scholar.google.com/citations?user=1SYNPPwAAAAJ&hl=en

Education

2005 PhD, Natural and rural systems management, University of Queensland (Australia)

Relevant disciplinary expertise and skills

Delia is trained as a natural and rural systems specialist with a masters degree in development management, a PhD in natural and rural systems management, and a post-doc on sustainability science. Her research areas spans from watershed and protected area management, policies, institutions and incentives for integrated natural resources management and agroforestry, collective action and property rights, and gender. She has been involved in numerous research projects in both Asia and Africa. She recently edited and published the volume*: In Equal Measure: User Guide for Gender Analysis in Agroforestry*, and collaborated with other editors (Minang P.A., van Noordwijk M, Freeman O, Mbow C, de Leeuw J) in: *Climate-Smart Landscapes: Multifunctionality in Practice.* 2015. Nairobi, Kenya.

Positions held (last 5 years)

2012 to present Senior Social Scientist and Country Representative to Vietnam; Gender Research Focal Point
2009–2011 Social Scientist and co-leader, ICRAF's Global Program on Incentives for Multi-Functional Landscapes

Management experience and skills (last 5 years)

Part of the FTA3 implementing team; ICRAF study leader on CAPRi under PIM; Served as gender focal point for ICRAF in FTA from 2011-2013; Country program coordinator for ICRAF Vietnam

Relevant publications (up to 10, during last 5 years, with Google Scholar citation numbers per 7/7/2015)

The Role of Gender and Kinship Structure in Household Decision-Making for Agriculture and Tree Planting in Malawi (2015) M Seline, GW Sileshi, **D Catacutan.** Journal of Gender, Agriculture & Food Security 1(1):P. 54-76. (4 citations)

The role of knowledge, attitudes and perceptions in the uptake of agricultural and agroforestry innovations among smallholder farmers in sub-Saharan Africa (2014) M Seline, **D Catacutan**, OC Ajayi, GW. Sileshi and M Nieuwenhuis. International Journal of Agricultural Sustainability 13(1): P40-54. (19 citations)

Pricing rainbow, green, blue and grey water: tree cover and geopolitics of climatic teleconnections (2014) M Van Noordwijk, S Namirembe, **D Catacutan**, D Williamson. Current Opinion in Environmental Sustainability 6, 41-47 (19 citations)

Toward a general theory of boundary work: insights from the CGIAR's Natural Resource Management Programs. (2014) WC Clark, TP Tomich, M Van Noordwijk, NM Dickson, **D Catacutan**, ... HKS Working Paper No. RWP10-035 (34 citations)

Hot spots of confusion: contested policies and competing carbon claims in the peatlands of Central Kalimantan, Indonesia. (2014) G Galudra, M Van Noordwijk, S Suyanto, I Sardi, U Pradhan, **D Catacutan.** International Forestry Review 13 (4), 431-441 (31 citations)

Payments for environmental services: evolution toward efficient and fair incentives for multifunctional landscapes (2014) M Van Noordwijk, B Leimona, R Jindal, GB Villamor, … **D Catacutan**... Annual Review of Environment and Resources 37, 389-420 (65 citations)

REDD+ Readiness progress across countries: Time for reconsideration (2014) PA Minang, M Van Noordwijk, LA Duguma, D Alemagi,... **D Catacutan.** Climate policy 14 (6), 685-708 (27 citations)

Boundary work for sustainable development: Natural resource management at the Consultative Group on International Agricultural Research (CGIAR).(2011) WC Clark, TP Tomich, M van Noordwijk, D Guston, and **D Catacutan**, Proceedings of the National Academy of Sciences (published online) (191 citations)

Name: BRYAN FINEGAN

Apartado 93-7170, CATIE, Turrialba, Costa Rica. Tel. +506 25582318, bfinegan@catie.ac.cr;
Google Scholar profile https://scholar.google.com/citations?user=SchM5S0AAAAJ&hl=es

Education
PhD (University of Cambridge, 1984)
Relevant disciplinary expertise and skills

Researcher and postgraduate student mentor in applied ecology, sustainable management, conservation and restoration of natural tropical forests in Latin America since 1985. Has made a career-long contribution to the understanding of forest dynamics underlying restoration through secondary succession and sustainable timber production, enhanced over the last decade by skills, experience and publications applying socio-ecological approaches to landscape management.

Positions held (last 5 years)

Leader, Production and Conservation in Forests Program, Tropical Agricultural Research and Higher Education Centre (CATIE); Coordinator of Chair of Ecology in the Management of Tropical Forests, CATIE; Affiliate Associate Professor, College of Natural Resources, University of Idaho. Associate Editor of *Biotropica*, international journal of the Association for Tropical Biology and Conservation.

Management experience and skills (last 5 years)

Leader of a 30-person program carrying out research, postgraduate education and outreach on sustainable production and conservation in natural and planted tropical forests in Latin America, coordinating with multiple partner organizations from local to global levels. Program works on territorial forest management, forest product value chains, forest policy and economics, protected areas and biological corridors, and ecology applied to forest management and restoration. Leads medium-term and strategic planning, coordinates fundraising and manages senior personnel.

Relevant publications (up to 10, during last 5 years, with Google Scholar citation numbers)

Diversity enhances carbon storage in tropical forests (2015) L Poorter, MT Sande, J Thompson, EJMM Arets, … **B Finegan**.... Global Ecology and Biogeography online DOI: 10.1111/geb.12364 (14 citations)

Tree regeneration and understory woody plants show diverse responses to forest-pasture edges in northeastern Costa Rica (2011) C Bouroncle and **B Finegan.** Biotropica 43, 562-571**.** (16 citations)

Litterfall Dynamics Under Different Tropical Forest Restoration Strategies in Costa Rica (2011) D Celentano, RA Zahawi, **B Finegan**, R Ostertag, RJ Cole, and KD Holl. Biotropica 43: 279-287. (44 citations)

Pollen flow in fragmented landscapes maintains genetic diversity following stand-replacing disturbance in a neotropical pioneer tree, Vochysia ferruginea Mart (2015) SJ Davies, S Cavers, **B Finegan**, A White, MF Breed and AJ Lowe. Heredity 115 (2), 125-129. (7 citations)

Linking functional diversity and social actor strategies: A framework for interdisciplinary analysis of nature's benefits to society (2011) S Díaz, F Quétier, DM Cáceres, SF Trainor, … **B Finegan**, …. PNAS 108: 895-902. (116 citations)

A 21st century viewpoint on tropical silviculture (In press) **B Finegan.** In: L. Pancelet al. (editors), Tropical Forestry Handbook. Springer-Verlag, Berlin. (not yet cited)

Does functional trait diversity predict above-ground biomass and productivity of tropical forests? Testing three alternative hypotheses (2015) **B Finegan**, et al. Journal of Ecology 103, 191-201. (11 citations)

Phylogenetic community structure during succession: Evidence from three Neotropical forest sites (2012) SG Letcher, RL Chazdon, ACS Andrade, F Bongers, … **B Finegan**... Perspectives in Plant Ecology, Evolution and Systematics 14, 79-87. (39 citations)

Successional dynamics in Neotropical forests are as uncertain as they are predictable (2015) N Norden, HA Angarita, F Bongers, M Martínez-Ramos, … **B Finegan**.... PNAS 112, 8013-8018. (24 citations).

Coupled social, economic and ecological outcomes of agricultural intensification in Costa Rica and thefuture of biodiversity conservation in tropical agricultural regions (2015) I Shaver, A Chain-Guadarrama, K Cleary, A Sanfiorenzo, … **B Finegan**... Global Environmental Change 32, 74-86. (3 citation)

Name: RENÉ GA BOOT

Director, Tropenbos International
LawickseAllee 11, P.O. Box 232, 6700 AE Wageningen, The Netherlands; +31 317 702 020; Email: rene.boot@tropenbos.org

Adjunct Professor, Ecology & Biodiversity
Department of Biology, Utrecht University, Padualaan 8, 3584 CH Utrecht, The Netherlands

Education
PhD in plant ecology, Department of Biology, Utrecht University, The Netherlands
Msc in biology, Radboud University Nijmegen, The Netherlands

Relevant disciplinary expertise and skills
International forest policy, rural development, forest governance and sustainable forest management, integrated landscape management, conservation ecology

Positions Held (last 5 years)
- Tropenbos International, Director (0.8 fte)
- Utrecht University, Adjunct Professor (0.2 fte)

Management experience and skills (last 5 years)
He is Director of Tropenbos International, a Dutch foundation governed by an international board. The foundation aims to improve governance and management of tropical forests through research, capacity building and promoting dialogue. It is funded by the Dutch Government, the EU and other donors and works in, among other countries: Indonesia, Vietnam, Ghana, Cameroon, Democratic Republic of Congo, Colombia, Suriname, Guyana and Bolivia.

His tasks and responsibilities are: Overall leadership and program management, financial and human resource management, resource mobilization and management of relationships with donors, host countries and partners.

Relevant publications, with citation numbers

Hyperdominance in Amazonianforestcarboncycling (2015) S Fauset, MO Johnson, M Gloor, TR Baker,… **RGA Boot**,…. Nature Communications 6:6857 http://www.nature.com/ncomms/2015/150428/ncomms7857/full/ncomms7857.html (Citations 18)

Long-term decline of the Amazon carbon sink (2015) RJW Brienen, OL Phillips, TRFeldpausch,E Gloor, TR Baker, … **RGA Boot**, … Nature 03/2015; 519(7543):344 http://www.nature.com/nature/journal/v519/n7543/full/nature14283.html (Citations 48)

The new face of debt peonage in the Bolivian Amazon: social networks and bargaining instruments. (2014) W Cano Cardona, W de Jong, PA Zuidema, **RGA Boot**. Human ecology 42(4), 541-549. http://link.springer.com/article/10.1007%2Fs10745-014-9666-4 (Citations 3)

Learning from the past: trends and dynamics in livelihoods of Bolivian forest communities (2014) M Zenteno, W de Jong, PA Zuidema, **RGA Boot**. Environmental Science and Policy 40: 36-48. http://www.sciencedirect.com/science/article/pii/S146290111400063X (Citations 8)

Diverse local regulatory responses to a new forestry regime in forest communities in the Bolivian Amazon (2014) W Cano Cardona, W de Jong, PA Zuidema, **RGA Boot**. Land use policy 2014; pp. 224 – 232. http://www.sciencedirect.com/science/article/pii/S0264837714000337 (Citations 7)

Livelihood strategies and forest dependence: new insights from Bolivian forest communities (2013) M Zenteno, PA Zuidema, W de Jong, **RGA Boot**. Forest Policy and Economics 26: 12-21. http://www.sciencedirect.com/science/article/pii/S1389934112002225 (Citations 29)

Forest Landscape Restoration in The Netherlands: Policy aspects and knowledge management (2012) RJJ Hendriks, **RGA Boot**, W de Haas, HJF Savenije. *In*: J Stanturf et al. (eds.) A Goal-Oriented Approach to Forest Landscape Restoration, World Forests 16, DOI 10.1007/978-94-007-5338-9_2, Springer Science+Business Media Dordrecht 2012 http://www.springer.com/us/book/9789400753372 (Citations 2)

Name: SONYA DEWI

Currently Senior Landscape Ecologist and Indonesia Country Coordinator

Address: World Agroforestry Centre (ICRAF), SE Asia, Bogor, Indonesia
Phone: +62 8121102320; Email: s.dewi@cgiar.org
Link to Google Scholar profile: https://scholar.google.co.id/citations?user=rivoUu8AAAAJ&hl=id

Education

1988 PhD ecology, evolution and systematics. Australian National University, Canberra, Australia.

Relevant disciplinary expertise and skills

During her 20 years of professional career as a scientist, she has focused on understanding the trade-offs and integration between conservation and development agendas at the landscape level. Land use and cover dynamics has been continuously the bases of her multi-disciplinary research. In particular, she has used spatial analysis to develop empirical models and tools and derive and analyze time series of remote sensing data. In the past 10 years, she has embraced climate change mitigation issues into landscape sustainability a studies, including national and subnational level carbon accounting and monitoring, peatland strategy, carbon footprint of palm oil production, and national-level REDD+ strategy discussions. In recent years, she has been actively promoting a landscape approach within integrated and inclusive spatial land-use planning in rural areas for low=emission development and for multiple environmental services through negotiation support tools. She is leading several research activities in the green economy and low-emission development pathways in Indonesia and is involved in multiple country studies.

Positions held (last 5 years)

2013–present Indonesia Country Coordinator, World Agroforestry Centre (ICRAF)
2010–present Senior Ecologist, World Agroforestry Centre (ICRAF) HQ, posted in Bogor, Indonesia

Management experience and skills (last 5 years)

Developed and managed projects:

2013–present Green Economy and Locally Appropriate Mitigation Action, full proposal submitted to BMU-IKI (Total budget: 4M Euros)
2012–present Locally Appropriate Mitigation Action in Indonesia, funded by DANIDA (Total budget: DKK 26.5 million)
2011–present Participatory Civil Society Monitoring of Land Use Planning for Low-Emission Development in Papua, funded by European Commission (Total budget: EUR 2.5 million)

Relevant publications (up to 10, during last 5 years, with Google Scholar citation numbers per 14/7/2015)

Reducing emissions from land use in Indonesia: motivation, policy instruments and expected funding streams (2014) M van Noordwijk, F Agus, **S Dewi**, and H Purnomo. Mitigation and Adaptation Strategies for Global Change 19 (6), 677-692 (24 citations)

Will funding to Reduce Emissions from Deforestation and (forest) Degradation (REDD+) stop conversion of peat swamps to oil palm in orangutan habitat in Tripa in Aceh, Indonesia? (2014) HL Tata, M van Noordwijk, D Ruysschaert, R Mulia, S Rahayu, **S Dewi**… Mitigation and Adaptation Strategies for Global Change 19 (6), 693-713 (6 citations)

Protected areas within multifunctional landscapes: Squeezing out intermediate land use intensities in the tropics? (2013) **S Dewi**, M van Noordwijk, A Ekadinata and JL Pfund. Land Use Policy 30 (1), 38-56 (41 citations)

Using systematic conservation planning to minimize REDD+ conflict with agriculture and logging in the tropics(2013) O Venter, HP Possingham, L Hovani, **S Dewi**, B Griscom… Conservation Letters 6 (2), 116-124 (18 citations)

Negotiation-support toolkit for learning landscapes (2013) M van Noordwijk, B Lusiana, B Leimona, **S Dewi**, and D Wulandari. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional (15 citations)

Segregate or integrate for multifunctionality and sustained change through rubber-based agroforestry in Indonesia and China (2012) M van Noordwijk, HL Tata, J Xu, **S Dewi** and PA Minang. Agroforestry-The Future of Global Land Use, 69-104 (32 citations)

Indonesia's forest moratorium: A stepping stone to better forest governance? (2011) D Murdiyarso, **S Dewi**, D Lawrence, F Seymour. CIFOR (73 citations)

Influence of coastal vegetation on the 2004 tsunami wave impact in west Aceh (2011) JCL Bayas, C Marohn, G Dercon, **S Dewi**, HP Piepho and L Joshi. Proceedings of the National Academy of Sciences 108 (46), 18612-18617 (46 citations)

Measuring carbon stocks across land use systems: a manual (2011). K Hairiah, **S Dewi**, F Agus, SJ Velarde, A Ekadinata, S Rahayu. World Agroforestry Centre–ICRAF, South East Asia Regional Office, Bogor (60 citations)
LUWES: land use planning for low emission development strategy: selected cases from Indonesia (2011) **S Dewi**, A Ekadinata, G Galudra, P Agung, and F Johana. World Agroforestry Centre (21 citations)

Name: SVEN WUNDER

Currently Principal Scientist, CIFOR-Brazil (from 2016, CIFOR-Peru)
Address: Las Jacarangas 280. La Molina Vieja, Lima, Peru
Phone: +51-1-5022 358; Email: swunder@cgiar.org
Google Scholar profile: https://scholar.google.com.br/citations?user=wCHF4H8AAAAJ&hl=en

Education

2001	DSc, forestry (dr. agro), Royal Veterinary and Agricultural University, Copenhagen
1992	PhD, economics, University of Copenhagen, Denmark

Relevant disciplinary expertise and skills
During his more than two decades of postdoctoral scientific work, of which 16 years were with CIFOR, he has focused on broad natural resource management issues, in particular payments for environmental services (PES), deforestation, REDD/climate change, NTFPs; ecotourism, and forest-poverty linkages. He is listed in Thomsen-Reuters' *The World's Most Influential Scientific Minds 2014* and 2015 *Economics & Business* list.

Position held (last 5 years)

2010–	Principal Scientist, CIFOR

Management experience and skills (last 5 years)

2010–15	Head of Brazil office

Relevant publications (up to 10, during last 5 years, with Google Scholar citation numbers per 14/7/2015)
Revisiting the concept of payments for environmental services (2015) **S Wunder**. Ecological Economics, doi:10.1016/j.ecolecon.2014.08.016 (35 citations)
Getting the science right when paying for nature's services (2015) S Naeem, JC Ingram, A Varga, … **S Wunder.** Science, 13 March, 347(6227): 1206-1207 DOI: 10.1126/science.aaa1403. (For some reason, not available yet in google scholar)
Forests, livelihoods, and conservation: broadening the empirical base (2014) **S Wunder**, A Angelsen and B Belcher. World Development, Volume 64, Supplement 1, December 2014, Pages S1–S11. (31 citations)
Linking forest tenure reform, environmental compliance, and incentives: lessons from REDD+ initiatives in the Brazilian Amazon (2014) AE Duchelle, M Cromberg, MF Gebara, R Guerra,... **S Wunder**. World Development 55, 53-67, 2014 (54 citations)
Synergies and trade-offs between ecosystem services in Costa Rica (2014) B Locatelli, P Imbach and **S Wunder**. Environmental Conservation 41 (01), 27-36, 2014. (22 citations)
Promoting Forest Stewardship in the Bolsa Floresta Programme: Local Livelihood Strategies and Preliminary Impacts (2013) J Börner, **S Wunder**, F Reimer, RK Bakkegaard, V Viana, …. Rio de Janeiro, Manaus & Bonn: Center for International Forestry Research (CIFOR), Fundação Amazonas Sustentável (FAS); ZentrumfürEntwicklungsforschung (ZEF), University of Bonn (pp.63) http://www.cifor.org/publications/pdf_files/Books/BBorner1301.pdf (9 citations)
When payments for environmental services will work for conservation (2013) **S Wunder**. Conservation Letters 6 (4), 230-237, 2013 (90 citations)
Heterogeneous users and willingness to pay in an ongoing payment for watershed protection initiative in the Colombian Andes (2012) R Moreno-Sanchez, JH Maldonado, **S Wunder** and C Borda-Almanza. Ecological Economics 75: 126-134 (20 citations)
Measuring livelihoods and environmental dependence: Methods for research and fieldwork (2011) A Angelsen, HO Larsen, JF Lund, C Smith-Hall and **S Wunder**. Routledge (94 citations)
Show me the money: Do payments supply environmental services in developing countries? (2010) SK Pattanayak, **S Wunder** and PJ Ferraro. Review of Environmental Economics and Policy, doi: 10.1093/reep/req006 (405 citations)

Flagship 5 CVs

CHRISTOPHER MARTIUS 124
BRUNO LOCATELLI 125
NAVIN SHARMA 126
MARIA BROCKHAUS 127
HOURIA DJOUDI 128
LALISA A DUGAMA 129
HIMLAL BARAL 130
GLENN HYMAN 131
ARILD ANGELSEN 132
MARKKU KANNINEN 133

Name: CHRISTOPHER MARTIUS

Current position and affiliation: Team Leader for Climate Change and Energy, at Center for International Forestry Research (CIFOR), Bogor, Indonesia; Email: c.martius@cgiar.org

Profile: Has 25 years of leadership experience in in development research, climate change, dryland agriculture, and tropical biology - in Brazilian Amazonia, Central Asia, and Africa. Published 140 articles on tropical ecology, nutrient cycling, soil ecology, biodiversity and climate change, ca. 80 policy briefs, and co-edited 7 scientific books. Among the 25 most published scientists in Indonesia in 2015, and the 20 most published scientists on Central Asia. Coordinates CIFOR's Global Comparative Study on REDD+. From 2009-2011 coordinated the Global Change Research Program of the IAI, with 200 partners in 17 countries, at about USD 2 million/year. 2000-2007 coordinated an international, interdisciplinary project on land and water resource management in Uzbekistan, funded by German Federal Ministry for Education and Research at € 1 million/year. 2008-2009 coordinated the international program for sustainable agriculture of the CGIAR in Central Asia and the Caucasus, with project funding of about USD 3 million/year.

Employment: Team Leader for Climate Change and Energy, at Center for International Forestry Research (CIFOR), Bogor, Indonesia, since 2013.

Education: PhD in Biology (Göttingen University, Germany), specialized in ecology; lecturer in Agroecology at Bonn University, Germany

Selected Recent Peer-reviewed publications:

- Aleksandrova, M., Lamers, J.P.A., Martius, C., Tischbein, B. (2014). Rural vulnerability to environmental change in the irrigated lowlands of Central Asia and options for policy-makers: A review. Environmental Science & Policy 41, 77–88. DOI: 10.1016/j.envsci.2014.03.001
- Cerutti, P.O., et al. (2015): The socioeconomic and environmental impacts of wood energy value chains in Sub-Saharan Africa: a systematic map protocol. Environmental Evidence 4, 12. DOI: 10.1186/s13750-015-0038-3
- Coutinho, H., Noellemeyer, E., Balieiro, F., Piñeiro, G., Fidalgo, E.C.C., Martius, C., Silva, C.F. da (2014): Impacts of Land-use Change on Carbon Stocks and Dynamics in Central-Southern South American Biomes: Cerrado, Atlantic Forest and Southern Grasslands. In: Banwart, S.A., Noellemeyer, E., Milne, E. (Eds.), Soil Carbon Science, Management and Policy for Multiple Benefits, SCOPE 71. 243-264, CABI
- Elias, P., et al. (2014): Synergies across a REDD+ landscape: non-carbon benefits, joint mitigation and adaptation and an analysis of submissions to the SBSTA. CIFOR Infobrief no. 71. 8 pp. http://www.cifor.org/library/4549/synergies-across-a-redd-landscape-non-carbon-benefits-joint-mitigation-and-adaptation-and-an-analysis-of-submissions-to-the-sbsta/
- Herawati H., et al. (2015): Tools for assessing the impacts of climate variability and change on wildfire regimes in forests. Forests 2015, 6(5), 1476-1499. DOI: 10.3390/f6051476 http://www.mdpi.com/1999-4907/6/5/1476

Other Evidence of Leadership, large-program management and delivery: Has 25 years of leadership experience in in development research, climate change, dryland agriculture, and tropical biology - in Brazilian Amazonia, Central Asia, and Africa

Role in FTA II FP 5: FP 5 leader, CoA 5.2 lead

Name: BRUNO LOCATELLI

Current position and affiliation: Research scientist with CIRAD and is currently seconded to CIFOR b.locatelli@cgiar.org**;** More info at: http://agents.cirad.fr/index.php/Bruno+LOCATELLI/index or at Google Scholar: https://scholar.google.com/citations?user=V7D1F9gAAAAJ).

Profile: His research interests are focused on how ecosystem services contribute to reducing the vulnerability of people to climate variations and how ecosystem-based adaptation can be designed and implemented in local initiatives and national or international policies. His interests are also related to the assessment, mapping and modeling of ecosystem services and the synergies or tradeoffs between climate change adaptation and mitigation in ecosystem management and policies.

Employment: He has been based in Peru since 2013 (with CIRAD and CIFOR) and previously worked in Indonesia (2008-2013 with CIRAD and CIFOR) and Costa Rica (2002-2007 with CIRAD and CATIE). From 2008 to 2011, he was leading CIFOR research domain on forests and adaptation to climate change.

Education: PhD in environmental sciences (Engref, Paris, 2000)

Selected Recent Peer-reviewed publications:

- Kongsager R., Locatelli B., Chazarin F., 2016. Addressing climate change mitigation and adaptation together: A global assessment of agriculture and forestry projects. Environmental Management 57(2): 271-282.
- Labrière N., Laumonier Y, Locatelli B., Vieilledent G., Comptour M., 2015. Ecosystem Services and Biodiversity in a Rapidly Transforming Landscape in Northern Borneo. PLOS ONE 10(10): e0140423. doi: 10.1371/journal.pone.0140423
- Locatelli B., Fedele G., Fayolle V., Baglee A., 2016. Synergies between adaptation and mitigation in climate change finance. International Journal of Climate Change Strategies and Management 8(1): 112-128. doi:10.1108/IJCCSM-07-2014-0088
- Locatelli B., Pavageau C., Pramova E., Di Gregorio M., 2015. Integrating climate change mitigation and adaptation in agriculture and forestry: Opportunities and trade-offs. WIREs Climate Change 6(6): 585-598. doi:10.1002/wcc.357
- Locatelli B., Catterall C.P., Imbach P., Kumar C., Lasco R., Marín-Spiotta E., Mercer B., Powers J.S., Schwartz N., Uriarte M., 2015. Tropical reforestation and climate change: Beyond carbon. Restoration Ecology 23(4): 337-343. doi:10.1111/rec.12209

Role in FTA II FP 5: CoA 5.2 lead

Name: NAVIN SHARMA

Current position and affiliation: Programme Director – Biofuels, at World Agroforestry Centre (ICRAF); Navin.sharma@cgiar.org

Profile: The Biofuels programme aims to identify alternative biofuels production models that avoids food vs fuel controversy by using trees in agroforestry systems. Besides managing the Oilseeds and Biofuels programme at ICRAF (USD 3.5 million), he has also actively managed various projects in Unilever and ITC. Navin represents ICRAF in GBEP as an observer and has been contributing to GBEP discussions on Bioenergy. He was a Principal Scientist at Unilever and Chief Scientist at ITC Ltd. At ITC Ltd, Navin looked after the research on agroforestry for their pulp and Paper business. He was being trained as a Plant Breeder and Biotechnologist, subsequently handled various programmes in corporate world and delivered the 'products' to businesses. He is also expert in tree based Bioenergy.

Employment: Programme Director – Biofuels, at World Agroforestry Centre (ICRAF) since 2013

Education: Ph.D in Applied Biology, from University of Cambridge, in 1989.

Selected Recent Peer-reviewed publications:

- Bala R Thumma, Navin Sharma and Simon G Southerton (2012). Transcriptome sequencing of *Eucalyptus camaldulensis* seedlings subjected to water stress reveals functional single nucleotide polymorphisms and genes under selection. BMC Genomics 2012, 13:364
- Bindumadhava H, Jagdish Tamak, K. Mahavishnan, A. P. Upadhya, Mohan Varghese and N. Sharma (2011) Clonal propagation in Eucalyptus camaldulensis using minicutting technique. Current Science 101, NO. 12 (25) 1578 – 1585
- Bindumadhava H., T G Prasad & Navin Sharma (2011). Plant isotope signatures : For crop traits. Lambert Scademic Publishing. ISBN 10: 3845402164; ISBN 13: 978-3845402161
- Miyuki Iiyama, Steven Franzel, Navin Sharma, Violet Mogaka, Jeremias Mowo, Ramni Jamnadass (2014). Retrospective on the hype: bottlenecks for *Jatropha curcas* bioenergy value chain development in Africa – A Kenyan case. CTA's Knowledge for Development website http://knowledge.cta.int/Dossiers/CTA-and-S-T/Selected-publications/Retrospective-bottlenecks-to-Jatropha-curcas-bioenergy-value-chain-development-in-Africa-a-Kenyan-case
- **Navin Sharma** (2014). Climate change and biofuels – current status and way forward. In: climate change impacts and adaptations for food and environmental security "Sustaining Agriculture Under Changing Climate". Editors : Prof. H.P.M. Gunasena, Dr. H.A.J. Gunathilake, Dr. J.M.D.T. Everard, Dr. C.S. Ranasinghe, Dr. A.D. Nainanayake. Published by: Coconut Research Institute of Sri Lanka, Ministry of Environment and Renewable Energy, Sri Lanka, World Agroforestry Centre, Regional Office, New Delhi, India
- Wouter MJ Achten, **Navin Sharma**, Bart Muys , Erik Mathijs and Paul Vantomme (2014). Opportunities and constraints of promoting new tree crops - lessons learned from Jatropha. **Sustainability. 2014, 6, 3213-3231; doi:10.3390/su6063213**

Role in FTA II FP 5: CoA 5.3 lead

Name: MARIA BROCKHAUS

Current position and affiliation: Senior Scientist with CIFOR's Forest and Governance Programme; m.brockhaus@cgiar.org

Profile: Maria Brockhaus is an economist and policy analyst in forestry and agricultural sciences. She has nearly twenty years of professional experience, in particular at the interface of policy/economics and research/development in anglo- and francophone countries in West & Central Africa, Middle East, and in Latin America and Southeast Asia. Her main research themes are forest governance in climate change mitigation and adaptation with a focus on political economy, policy and institutional change and social network analysis. She is interested in theory and practice of transformational change in policy and society, and the underlying shifts in economic incentives, mental models and power relations. She has published extensively on power and politics within REDD+ and forest adaptation, and has co-edited and contributed chapters to numerous books that serve as key references in this area. Since 2009, Maria has been leading CIFOR's REDD+ policy research with a budget of ca. 1.2 million annually, and has been establishing a policy research network in 15 countries with nearly 100 members.

Education: PhD in Agricultural Policy from University of Giessen, Germany, 2005

Selected Recent Peer-reviewed publications:

- Brockhaus, M., Di Gregorio, M., Carmenta, R., 2014. REDD+ policy networks: Exploring actors and power structures in an emerging policy domain. Ecology & Society 19(4):29. [8];
- Brockhaus, M., Di Gregorio, M., Mardiah, S., 2014. Governing the design of national REDD+: An analysis of the power of agency. Forest Policy and Economics 49, 23-33. [27];
- Brockhaus, M., Djoudi, H., Locatelli, B., 2013. Envisioning the future and learning from the past: Adapting to a changing environment in northern Mali. Environmental Science & Policy 25c, 94-106. [16];
- Brockhaus, M., Obidzinski, K., Dermawan, A., Laumonier, Y., Luttrell, C., 2012. An overview of forest and land allocation policies in Indonesia: Is the current framework sufficient to meet the needs of REDD+? Forest Policy and Economics 18, 30-37. [68];
- Djoudi, H., and Brockhaus, M., 2011. Is adaptation to climate change gender neutral? Lessons from communities dependent on livestock and forest in northern Mali. International Forestry Review 13(2), 123-135. [35];
- Gallemore C, Di Gregorio M, Moeliono M, Brockhaus M, Dini Prasti R. 2015. Transaction Costs, Power, and Multi-level Forest Governance in Indonesia. Ecological Economics (114):168-179. [2];
- Hosonuma, N., Herold, M., De Sy, V., De Fries, R.S., Brockhaus, M., Verchot, L., Angelsen, A., Romijn, E., 2012. An assessment of deforestation and forest degradation drivers in developing countries. Environmental Research Letters 7, 044009. [151].

Role in FTA II FP 5: CoA 5.4 lead

Name: HOURIA DJOUDI

Current position and affiliation: h.djoudi@cgiar.org

Profile: Houria's core competencies includes strong background in socio-ecological systems analysis, particularly environmental, social and institutional changes; including multi-scale dynamics; particularly applied to questions of linkages and feed becks in socio-ecological systems, sound experience in vulnerability assessment and adaptation to climate change, core competencies in gender dimensions of climate change, core competencies in participatory analysis, experience in interdisciplinary analysis at the interface of research and development.

Education: PhD from the Department of tropical agriculture and Livestock Production and Ecology, Justus Liebig University, Giessen, Germany

Selected Recent Peer-reviewed publications:

- D Rowland, RR Blackie, B Powell, H Djoudi, E Vergles, B Vinceti, (2015) International Forestry Review 17, 45-53(9) Direct contributions of dry forests to nutrition: a review, 2015
- Dayamba, S. D., Djoudi, H., Zida, M., Sawadogo, L., & Verchot, L. (2016). Biodiversity and carbon stocks in different land use types in the Sudanian Zone of Burkina Faso, West Africa. *Agriculture, Ecosystems & Environment*, *216*, 61-72.
- H Djoudi, E Vergles, RR Blackie, CK Koame, D Gautier (2015) Dry forests, livelihoods and poverty alleviation: understanding current trends International Forestry Review 17, 54-69(16), 2015
- PO Cerutti, P Sola, A Chenevoy, M Iiyama, J Yila, W Zhou, H Djoudi, (2015) The socioeconomic and environmental impacts of wood energy value chains in Sub-Saharan Africa: a systematic map protocol, Environmental Evidence 4 (1), 12

Other Evidence of Leadership, large-program management and delivery:

- "Forest and Climate change adaptation in Africa" ACFAO in Burkina and Mali
- "Capacity Development for Adaptation to Climate Change and GHG Mitigation: Development of Community-based Risk Screening Tool - Adaptation and Livelihoods", West and East Africa (Burkina, Kenia and Uganda).
- "Developing systems for Reducing Emissions from Land Use" in Burkina Faso
- Global Comparative Study (GCS)-Module 4 "Synergies between adaptation and mitigation"
- "Migration and gendered landscapes: Adding a gender dimension to CIFOR's research on mobility" Burkina Faso, Ethiopia, Nepal.
- "Food trees Threats to priority food tree species in Burkina Faso: Drivers of resource losses and mitigation measures".
- "Strengthening smallholder food security, income, and gender equity within West Africa's forest-farm interface" in Burkina Faso and Ghana
- "Understanding migration and remittances to improve forest management projects and policies" Indonesia, Nepal and Tajikstan.

Role in FTA II FP 5: CoA 5.2 lead

Name: LALISA A DUGAMA

Current position and affiliation: l.duguma@cgiar.org

Profile: From January 2011 to May 2012 he worked as Postdoctoral Fellow at the same university jointly with Bioversity International. From June 2012 – May 30, 2014 he was a postdoctoral fellow at the World Agroforestry Centre and ASB Partnership for Tropical Forest Margins. His postdoctoral fellow is specifically on developing the conceptual frameworks for synergies and tradeoffs between climate change Mitigation and adaptation. The position further included providing some empirical evidences on current efforts of promoting synergies between mitigation and adaptation in the land use sector. From June 2014 to date, he is a scientist working mainly on integrated climate actions and sustainable landscapes.

Employment: Scientist

Education: PhD in Agricultural Sciences from University of Life Sciences Vienna Austria, December 2010

Selected Recent Peer-reviewed publications:

- Atela, J. O., Minang, P. A., Quinn, C. H., & **Duguma, L. A.** (2015). Implementing REDD+ at the local level: Assessing the key enablers for credible mitigation and sustainable livelihood outcomes. *Journal of environmental management*, *157*, 238-249.
- Atela, J. O., Quinn, C. H., Minang, P. A., & **Duguma, L. A.** (2015). Implementing REDD+ in view of integrated conservation and development projects: Leveraging empirical lessons. *Land Use Policy*, *48*, 329-340.
- **Duguma, L. A.**, Minang, P. A., Freeman, O. E., & Hager, H. (2014). System wide impacts of fuel usage patterns in the Ethiopian highlands: Potentials for breaking the negative reinforcing feedback cycles. *Energy for Sustainable Development*, *20*, 77-85.
- **Duguma, L. A**., Minang, P. A., & van Noordwijk, M. (2014). Climate change mitigation and adaptation in the land use sector: from complementarity to synergy. *Environmental management*, *54*(3), 420-432.
- **Duguma, L. A.,** Wambugu, S. W., Minang, P. A., & van Noordwijk, M. (2014). A systematic analysis of enabling conditions for synergy between climate change mitigation and adaptation measures in developing countries. *Environmental Science & Policy*, *42*, 138-148.
- Freeman, Olivia E., **Lalisa A. Duguma**, and Peter A. Minang. (2015). Operationalizing the integrated landscape approach in practice. *Ecology and Society* 20, no. 1 (2015): 24ff. http://dx.doi.org/10.5751/ES-07175-200124
- Mbow, C., Smith, P., Skole, D., **Duguma, L.,** & Bustamante, M. (2014). Achieving mitigation and adaptation to climate change through sustainable agroforestry practices in Africa. *Current Opinion in Environmental Sustainability*, *6*, 8-14.

Name: HIMLAL BARAL

Current position and affiliation: Forest and Environment Scientist at Center for International Forestry Research (CIFOR) h.baral@cgiar.org

Profile: Prior to joining CIFOR, he was postdoctoral fellow at UoM and a forest and environment consultant in Asia and Pacific from 2010-2013. He is also an honorary Research Fellow at the University of Melbourne since 2013. He is currently leading a CIFOR/KFRI (Korean Forest Research Institute) research project on assessing bioenergy production potential on degraded and marginal land in Indonesia. He has also involved in several research projects related to forests and climate change such as, forest landscape restoration in Asia and pacific, role of planted forests in mitigating climate change.

Education: MSc in Forest and Ecosystem Science and PhD in Land and Environment from the University of Melbourne (UoM).

Selected Recent Peer-reviewed publications:

- **Baral, H.,** Holmgren, P. 2015. A framework for measuring sustainability outcomes in landscapes. Working Paper 195. Bogor, Indonesia: CIFOR.
- **Baral, H.,** Keenan, R.J., Sharma, S.K., Stork, N.E., Kasel, S. 2014. Spatial assessment of biodiversity and conservation priorities in a heavily modified and fragmented production landscape in north-central Victoria, Australia. *Ecological Indicators 36,* 52-62
- **Baral, H**., Keenan, R.J., Sharma, S.K., Stork, N.E., Kasel, S. 2014. Economic evaluation of landscape management scenarios in north-central Victoria, Australia. *Land Use Policy* 39. 54-64
- **Baral, H.,** Keenan, R. J., Stork, N. E., Kasel, S. 2014. Measuring and managing ecosystem goods and services in changing landscapes: a south-east Australian perspective. *Journal of Environmental Planning and Management*, *57*(7), 961–983.
- **Baral, H.,** Keenan, R.J., Fox, J.C., Stork, N.E., Kasel, S. 2013. Spatial assessment of ecosystem goods and services in complex production landscapes: A case study south-eastern Australia. *Ecological Complexity* 13, 35-45*.*
- Bhatta, L. D., van Oort, B. E. H., Stork, N. E**., Baral, H.** 2015. Ecosystem services and livelihoods in a changing climate: Understanding local adaptations in the Upper Koshi, Nepal. *International Journal of Biodiversity Science, Ecosystem Services & Management* 11(2) 145-155.
- Bhatta, L. D., Eric, B., van Oort, B., Rucevska, I., **Baral, H.** 2014. Payment for ecosystem services : possible instrument for managing ecosystem services in Nepal. *International Journal of Biodiversity Science, Ecosystem Services & Management*, 10(4), 289–299.

Role in FTA II FP 5: CoA 5.3 lead

Name: GLENN HYMAN

Current position and affiliation: Senior Researcher, International Centre for Tropical Agriculture (CIAT in Cali, Colombia); g.hyman@cgiar.org
http://goo.gl/nmVHb

Profile: Dr. Glenn Hyman has lived and worked in the Latin American tropics for nearly 23 years. Research and project work have focused on geographic dimensions of tropical agriculture, land use and environment interaction and natural resources management (NRM). Glenn worked as a consultant for the Centre for Tropical Agriculture Training and Research (CATIE, 1993-1995 in Turrialba, Costa Rica) before joining the International Centre for Tropical Agriculture (CIAT in Cali, Colombia) as a postdoctoral fellow (1996-1998), project manager (1999-2000) and senior researcher (2001-present). Glenn has worked on trade-offs between livelihoods and environment in the tropical forest margins, the social and poverty dimensions of agriculture, agricultural technology impact assessment and the application of geographic information science and technology to tropical agriculture.

Education: Master's degree from Appalachian State University, PhD in physical geography from the University of Tennessee in 1997

Role in FTA II FP 5: CoA 5.4 co-lead

Name: ARILD ANGELSEN

Current position and affiliation: Senior Associate of CIFOR, Bogor, Indonesia and professor of economics at the Norwegian University of Life Sciences (NMBU), arild.angelsen@nmbu.no

Profile: Arild Angelsen has over the past two decades done extensive research and published on causes of tropical deforestation, and its interaction with poverty, tenure and government policies. Recent work deals with how efforts to Reducing Emissions from Deforestation and forest Degradation (REDD+) can be included in a global climate regime, and the national strategies and policies needed to achieve REDD+. He has edited three REDD+ books that have become standard references in the debate. Angelsen is global coordinator of the Poverty Environment Network (PEN), a CIFOR-led research programme collecting detailed information from 8 000 households in 24 developing countries on forest uses and management. He has broad field experience from Southeast Asia and Eastern Africa, and is editor of a book on field research methods. Angelsen has lived in Norway, Uganda, Indonesia, the USA, Australia and Spain. He has administrative and leadership experience from, *inter alia,* coordination of large research projects (e.g. PEN), member of expert committees, and as head of research and chair of research committee at the School of Economics and Business, NMBU.

Employment: Professor of economics at the Norwegian University of Life Sciences (NMBU)

Selected Recent Peer-reviewed publications:

- Ainembabazi, John Herbert and **Arild Angelsen**. 2014. *Do commercial forest plantations reduce pressure on natural forests? Evidence from forest policy reforms in Uganda*. Journal of Forest Policy and Economics, 40: 48-56.
- **Angelsen, Arild**. 2015. *REDD+: What should come next?* In **Scott Barrett, Carlo Carraro and Jaime de Melo (eds.):** Towards a Workable and Effective Climate Regime. FERDI/Economics, Paris
- **Angelsen, Arild, Pamela Jagger, Ronnie Babigumira, Brian Belcher, Nicholas Hogarth, Simone Bauch, Jan Börner, Carsten Smith-Hall, and Sven Wunder. 2014.** *Environmental Income and Rural Livelihoods: A Global-Comparative Analysis.* World Development.
- **Angelsen, Arild**, Caroline Wang Gierløff, Angelica Mendoza Beltrán and Michel den Elzen. 2014. "REDD credits in a global carbon market: Options and impacts". Tema Nord report 2014: 541. Copenhagen: Nordic Council. http://www.norden.org/en/publications/publikationer/2014-541
- **Angelsen, Arild**. 2014. *The economics of REDD+.* In: Shashi Kant and Janaki Alavalapati (eds.): Handbook in forest economics. Routledge.
- **Angelsen, Arild** and Thomas K. Rudel. 2013. *Designing and Implementing Effective REDD + Policies: A Forest Transition Approach.* Review of Environmental Economics and Policy, 7: 91-113.
- Angelsen**, Arild**, Maria Brockhaus, William D. Sunderlin and Louis V. Verchot (eds.). 2012. *Analyzing REDD+: Challenges and Choices.* Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Name: MARKKU KANNINEN

Current position and affiliation: Seconded Principal Scientist of CIFOR and Professor of tropical silviculture and forest management and Director of Viikki Tropical Resources Institute (VITRI) of the University of Helsinki; m.kanninen@cgiar.org

Profile: Markku Kanninen is an expert in tropical forestry, climate change, forest ecology, and forest management. He has published over 300 publications, including over 70 internationally peer-reviewed scientific articles in high-quality journals. He has been involved in tropical forest research for about 30 years and climate change research for about 25 years. He is the professor of tropical silviculture and forest management and Director of Viikki Tropical Resources Institute (VITRI) of the University of Helsinki. Prior to his current position, he was Director of the Environmental Services and Sustainable Use of Forests Program of CIFOR (2003-2010); Deputy Director General of CATIE (Costa Rica) (1996-2003); and earlier the Director of The Finnish Research Program on Climate Change (1990-1995). He has been involved in science policy dialogue on forests and climate change for about 25 years. He has been actively involved in the work of the Intergovernmental Panel on Climate Change (IPCC) since 1990. Currently, he is the member of the 15-person Finnish Climate Panel and the UNFCCC Adaptation Fund Board (AFB). He is a member of the Finnish Academy of Sciences and Letters. He received the Nobel Peace Prize as a member of the IPCC in 2007.

Employment: Professor of tropical silviculture and forest management and Director of Viikki Tropical Resources Institute (VITRI) of the University of Helsinki

Education: Dr.Sc. degree from the University of Helsinki, Finland

Selected Recent Peer-reviewed publications:

- Chia, E.L., Kalame, F., Kanninen, M. 2016. Exploring Opportunities for Promoting Synergies between Climate Change Adaptation and Mitigation in Forest Carbon Initiatives. Forests 7, 1-16. doi:10.3390/f7010024.
- Etongo, D., Djenontin, N., Kanninen, M., Djoudi, H., Korhonen-Kurki, K., Kalame, F., 2015. Land tenure, asset heterogeneity and deforestation in Southern Burkina Faso. Forest Policy and Economics 61:51-58.
- Kapos, V., Kurz, W.A., Gardner, T., Ferreira, J., Guariguata, M., Koh, L.P., Mansourian, S., Parrotta, J.A., Sasaki, N., Schmitt, C.B., Barlow, J., Kanninen, M., Okabe, K., Pan, Y., Thompson, I.D., Vliet, N.v., 2012. Impacts of forest and land management on biodiversity and carbon. In: Parrotta, J.A., Wildburger, C., Mansourian, S. (Eds.), Understanding Relationships between Biodiversity, Carbon, Forests and People: The Key to Achieving REDD+ Objectives. A Global Assessment Report. Prepared by the Global Forest Expert Panel on Biodiversity, Forest Management, and REDD+. IUFRO Vienna, pp. 53-80.
- Negash, M & Kanninen, M. 2015. Modeling biomass and soil carbon sequestration of indigenous agroforestry systems using CO2FIX approach. Agriculture, Ecosystems and Environment 203, 147–155.

Other Evidence of Leadership, large-program management and delivery: He has been involved in the work of the Intergovernmental Panel on Climate Change since 1990. He is a member of the 15-person Finnish Climate Panel and the UNFCCC Adaptation Fund Board (AFB). He is a member of the Finnish Academy of Sciences and Letters. He received the Nobel Peace Prize as a member of the IPCC in 2007.

Annex 3.9. Open Access (OA) and Open Data (OD) Management

FTA is committed to disseminating its research outputs as widely as possible, including through open access. FTA understands that wider data sharing requires credit mechanisms that reward projects to invest in better data collection efforts, as well as peer evaluation mechanisms that account for data quality and ensure alignment with community standards. Our data sharing platforms are: 1) the Landscape Portal, our online GIS platform with a number of features for visualization, data management and spatial modeling; and 2) our Center-based open data repositories FTA, CIFOR, BIOVERSITY, CIAT and ICRAF using the free Dataverse platform developed and maintained by Harvard University. The Tropical Managed Forests Observatory network consists of 23 partner institutions in 15 countries and provides data from 490 permanent sample plots in the three major rainforest basins where forest dynamics have been monitored for several decades to inform forest management to sustain production and environmental services. TropiTree, an interactive open-access database, provides detailed information on more than 5,000 genetic markers/species for 24 tree species important to smallholders, nine of African origin, five from Asia or Oceania, and nine from Latin America as well as one of multi-continental distribution.

This implementation plan is to support the free flow of information and contribute to the sharing and verification of research findings. It is intended to increase the visibility of FTA and facilitate the dissemination and recognition of its research and outputs as widely as possible.

Planning for and implementing open access and open data

Open access and open data are vitally important to increasing the visibility, accessibility and impact of FTA research. The FAIR Guiding Principles for Scientific Data Management and Stewardship[i] will guide the implementation activities on open access and open data through FTA, acting as a guide to data publishers and stewardship. CIFOR as FTA leader will actively promote FAIR and Data Stewardship principles within FTA members, partners and collaborators by:

- Ensuring data quality and reinforcing the preservation of FTA outputs by supporting governance and best practices for managing research outputs
- Accommodating knowledge discovery by encouraging the development of technology and infrastructure for FAIR Data Stewardship
- Increasing the visibility of FTA outputs by leveraging the use and reuse of the outputs

Research output covering the implementation plan applies to publications, data and databases, codes of methodology algorithms, digitizing research material, pictures, and audio and video as outputs of FTA research activity.

Table 1 describes how FTA handles the open access and open data initiative and how to ensure compliance. The implementation plan is consistent with the CGIAR Open Access and Data Management Policy, CGIAR Principles on the Management of Intellectual Assets, FTA Centers Research Data Management Policy, and FTA Centers Open Access Policy.

Table 1. Open Access and Open Data Implementation Plan

Objective	Actions	Key measures
Goal 1: To ensure data quality and reinforce the preservation of FTA outputs		
Improve the quality of published data	1. Improve the documentation and metadata of published data. 2. Improve the file formats of published data to enable the manipulation of data. 3. Provide guidelines on legal aspects of intellectual property rights to published data. 4. Assist FTA team members to translate their datasets to a FAIR format.	1. Publish data described with rich metadata and presented with complete and appropriate documentation. 2. Develop a standard format that can be used by many different kinds of software. 3. Develop a comprehensive training program on documentation practices and data licensing.

Objective	Actions	Key measures
Enhance Collection and Preservation of Research Outputs	1. Embed research output management activities into FTA Project Management Systems as one streamlined process. 2. Apply best practices from others, where applicable, for the preservation of digital materials. 3. Ensure staff who bear the responsibility for digital content understand the issues associated with data preservation through the exchange of knowledge and expertise within Centers and partners.	1. The output management lifecycle developed would continually be reviewed to ensure that they are as efficient and effective as possible to ensure quality, integrity and sharing capability.
Goal 2: To increase the visibility of FTA outputs by leveraging the use and re-use of the output		
Improve availability and accessibility	1. Strengthen the infrastructure and discovery platform. 2. Ensure infrastructure flexibility, scalability, securability and interoperability within FTA Centers and partners.	1. Data are retrievable by their identifiers using a standardized communications protocol. 2. The protocol allows for an authentication and authorization procedure, where necessary. 3. Metadata are accessible, even when the data are no longer available.
Share research data, information and knowledge	1. Adopt international standards and best practices. 2. Integrate the use of social media to communicate and disseminate outputs to stakeholders and the public. 3. Collaborate with the Communication and Outreach Team to ensure dissemination and information uptake. 4. Participate in CGIAR-wide data and information management initiatives. 5. Implement CGIAR Core Metadata Scheme. 6. Ensure the Open Access and Open Data Implementation Plans are developed and improved by each Centers. 7. Develop and maintain partnerships for sharing data with other organizations and universities. 8. Enable an automatic harvesting system.	1. Metadata use vocabularies that follow FAIR principles (i.e. Dublin Core, Agovoc, and/or CAB Abstract). 2. Numbers of open data and open access publication are increased and outputs are accessible to public. 3. Improved outreach and engagement mechanism. 4. Centers participation on CGIAR-wide data and information initiatives established. 5. CGIAR Core Metadata Scheme implemented in each Center. 6. Center Open Access and Open Data Implementation Plans are developed and improved. 7. Increased number of initiatives joined by FTA. 8. Automatic harvesting are tested and work appropriately.
Increase dissemination of FTA outputs	1. Work with flexible publishers with copyright rules. 2. Increase the availability of full-text articles through joint negotiations with publishers.	1. Increased numbers of open access articles and open data. 2. At least one joint partnership with a publisher is developed.
Goal 3: To accommodate knowledge discovery		
Enable data maturity	1. Explore opportunities to represent complex data through advanced charting and time series visualization. 2. Provide guidance on output licensing. 3. Ensure that published data is presented to aid interpretation and provide clarity.	1. Increased numbers of open data. 2. Data are published with a clear and accessible data usage license.
Standardizing the process model	1. Standardize process for collecting data to ensure that published data is structured 2. Ensure consistency within data and across data.	1. Data management focuses on ensuring the long-term accessibility of the dataset 2. Develop a quality checklist for published data

Objective	Actions	Key measures
	3. Design and implement clear verification and sign-off processes for all archived data.	

Unless subject to the terms of contractual obligations, outputs generated by FTA Centers are the property of the FTA Centers and subject to the IP policies of those FTA Centers. Where the FTA Center is involved in a joint research project, an agreement should be reached in writing with the collaborating organizations detailing issues to do with authorship and intellectual property, confidentiality and copyright, responsibility for ethics and safety clearances, dissemination of results and reporting to appropriate agencies.

Whenever possible, outputs will be published under a Creative Commons Attribution (CC BY) license that allows others to reuse, re-distribute, translate, and make an adaptation to the work subject to the outputs being fully attributed. This license is chosen due to the nature of its 'right to offer', which ensures maximum dissemination.

When research outputs could not be made openly accessible because they are subject to confidentiality or are of a highly sensitive nature, two kinds of restricted access can be given:

1. Through an access agreement, which allows the data owners to specify the terms of access
2. Researcher-mediated access, in which access is allowed based on approval from researchers, ensuring that the data is used correctly through the provision of further context.

To prevent misuse of data, the following precautions will be applied:

- A specific citation for all data will be provided.
- A permission statement will be provided.

Technical considerations and operations

FTA research outputs will be retained by FTA Centers in a durable, indexed and retrievable form. Centers will manage the repositories and ensure its accessibility. Centers will provide the necessary resources, including through advice and training, for research data management consistent with the CGIAR OA/DM policies and guideline.

FTA publication and/or data repositories – as listed in Table 2 – comply with the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) standards and Dublin Core, and have the ability to transform into CGIAR Core Metadata. A metadata crosswalk[ii] to the CGIAR Core Metadata Elements will developed by each Center. An Application Profile will list and describe the use of the various metadata elements based on both the Dataverse metadata and CGIAR Core.

As leader of FTA, CIFOR has developed a good collaboration with the Google Scholar Technical Team to ensure publications are indexed and monitored through Google Scholar. This collaboration has helped CIFOR monitor its citation performance and helped other Centers to improve their availability and accessibility. This was proven when CIFOR assisted the CGSpace team to fix a "bug" in the CGSpace repository.

Agrovoc and CAB Thesauruses are used to describe the content of the output. The use of two different thesauruses used by FTA Centers does not pose a compatibility problem, as a conversion table used in AGRICOLA can be used to reconcile descriptors from the two thesauruses.

All information within FTA will be assigned a unique "owner" who will be the guardian of the information on behalf of the FTA and will be responsible for ensuring that the information is managed in accordance with CGIAR and partner policies. In general, the preservation strategies within FTA Centers will be as follows:

1. Selecting appropriate preservation media to cover at least 10 years.
2. Open standards file formats are preferable to proprietary ones.
3. The capacity of the media and the physical size of the archival storage should be appropriate for the quantity of data to be stored.

4. The maintenance of archival storage for deposited content should be within reasonable limits of difficulty and expense.
5. The digital object should be accompanied with descriptive metadata about the object connected to it.

Two methods of backup are applied for all outputs, on-campus and off-campus backup, using a third-party service provider.

Coordination and decision-making

As FTA Lead Center, CIFOR will draw key output information from all partner Centers at the outset of the project through its project management systems. At project closure, outputs will be linked to the supporting platform so that all bibliographic data and research outputs can be accessed. In FTA II we will concentrate on ensuring that all participating Centers are improving the open access open data implementation plan. With the Data Management Task force and Open Access working group already in place, the respective Center members will lead in the operationalization of OA-OD implementation plans, which will enable the Centers to better plan for their OA-OD needs. To ensure readiness, each Center will conduct a baseline survey on the current position on open access and open data in order to identify areas to improve and streamline workflows.

Required resources

To better manage the implementation of Open Access and Open Data, a group comprised of representatives from FTA Management Services, Communications, IT, Fundraising and Project Management Office, Legal assistance, Data Expert, and the Research to Impact team will work together to ensure compliance.

As a subject specialist, the data expert is responsible for ensuring overall data integrity and conformity of information gathered by their portfolio. The Library Team is responsible for managing repositories, maintaining procedures and providing training and support. The Information Technology Unit is responsible for developing and maintaining a centrally supported institutional repository for the provision of open and/or controlled access to secure storage of research data. Researchers work with the Project Management Office and Legal Assistance to ensure that where projects span several institutions an agreement is developed at the outset to define the ownership and storage of research data and primary materials within each institution in accordance with CGIAR policies and guidelines.

Annually, FTA Centers spend almost USD 2 million per year on OA/OD implementation (see Table 3), with approximately USD 250,000 coming from the W1/W2 of the cross-cutting platform (see Table 4). The rest is funded via research support costs and bilateral funding (of which USD 90,000 will likely be secured via the Gates Foundation contribution to OA). The right infrastructure, applications and technologies are needed to encourage the cultural and operational changes required to effectively manage and share data specifically for the transition period, in which the current repository (Dataverse) needs to be enhanced to be able to answer all of the demands of data management processes.

Table 2. List of FTA repositories

Indicative Datatype	Repository or Platform		
	Name/s	**URL/s**	
GIS/ remote sensing	Landscape Portal	http://landscapeportal.org/	Online GIS platform with a number of features for visualization, data management and spatial modeling
GIS/ remote sensing	InfoAmazonia	http://infoamazonia.org/es/	Provides timely news and reports of the endangered Amazon region
GIS/ remote sensing	MAAP PROJECT	http://geoservidor.minam.gob.pe/intro	The Monitoring of the Andean Amazon Project (MAAP) is a web portal dedicated to presenting novel technical information and analysis pertaining to the Andean Amazon (the sections of Bolivia, Colombia, Ecuador, and Peru within the Amazon watershed).
Genetic/ genomic	tropiTree	http://ics.hutton.ac.uk/tropiTree/	
Socioeconomic (all FTA)	FTA data repository	https://dataverse.harvard.edu/dataverse/crp6	FTA data repositories on Sentinel Landscapes
Socioeconomic	CIFOR data repository	https://data.cifor.org	Center-based open data repositories
Socioeconomics	Bioversity repository	https://dataverse.harvard.edu/dataverse/Bioversity	Center-based open data repositories
Socioeconomics	CIAT	https://dataverse.harvard.edu/dataverse/CIAT	Center-based open data repositories
Socioeconomics	ICRAF	https://thedata.harvard.edu/dvn/dv/icraf	Center-based open data repositories
Others	Tropical Managed Forests Observatory	http://tmfo.org/	Network consisting of 23 partner institutions in 15 countries and providing data from 490 permanent sample plots in the three major rainforest basins
monitoring and alert system	TERRA-I	http://www.terra-i.org/	Terra-i is a complementary platform to Global Forest Watch. It enables users to put tree cover loss alerts into context with data on relevant forest cover, community and biodiversity for an increased understanding of where, and why, forests are disappearing.
Publication	CIFOR	http://www.cifor.org/library/	Center publication repository
Publication	Bioversity	http://www.bioversityinternational.org/e-library/publications/	Center publication repository
Publication	CIAT	https://ciat.cgiar.org/data-information-knowledge/ciat-research-online	Center publication repository
Publication	ICRAF	http://outputs.worldagroforestry.org	Center publication repository
Photo	CIFOR Photo	https://www.flickr.com/photos/cifor	Center photo collection

Slide presentation	CIFOR Slide Collection	http://www.slideshare.net/cifor	Center grey literature collection
GIS/spatial data; socioeconomics data and Toolbox	Global Forest Watch	http://www.globalforestwatch.org/	
Toolbox	SWAMP Toolbox	www.cifor.org/swamp-toolbox www.cifor.org/ipn-toolbox	The Sustainable Wetlands for Mitigation and Adaptation Program (SWAMP) Toolbox has been developed to guide users in understanding the importance of wetlands ecosystems as carbon reservoirs for climate change adaptation and mitigation strategies. The scope of the toolbox ranges from global to national and local perspectives.

Table 3. Funding required annually to fully fund the OA/OD work

Human, technical and other resources	**Annual amount 2016 – 2017 (transition period)**	**Annual amount 2018+ (after 2nd round of CRPs in effect)**	**Explanatory notes**
Technology			
Data Repository	USD 5,000	USD 5,500	ICRAF OD hosting fee and CIFOR data repository upgrading
Publications Repository	USD 15,000		Three Center publication repositories hosted on CGSpace (CIAT, Bioversity, CIFOR)
Hardware/storage (cloud etc.)	USD 35,000	USD 25,000	32 terabyte storage for dataset and processing in 128 gigs byte of memory on 4 Processor with Lenovo Server X3250M5-B2A, 4 host cluster design – for CIFOR and ICRAF Open data server
Bandwidth	USD 120,000	USD 150,000	50% of bandwidth use for OA/OD implementation
Programming/development	USD 60,000		2 consultants (system analyst and programmer) for working with the team on definition of development requirement and priorities, technical implementation and design of the Dataverse repository enhancement
Annual maintenance fees	USD 20,000	USD 30,000	Publication repository hosting
Website development related to repositories	USD 40,000		CIFOR DSpace and Dataverse to be fully integrated into CIFOR website. The development is included the 2 programmers for DACE development, Interface development, and also taxonomy builder

Backup maintenance	USD 3,500	USD 4,500	Tape backup storage at Crown Indonesia
Staffing			
Staff salaries – Open Data and Data Management	USD 600,000	USD 650,000	0.40 of Data Manager; 0.60 of Senior Research Data Officer; 0.30 of GIS Officer; 0.30 of Research Specialist; 0.50 of Technical assistant; 0.50 of Qualitative Research Scientist; 0.30 of Scientist
Data Quality/Curation	USD 170,000	USD 200,000	0.30 of Data Manager; 2 @ 0.30 of Information Manager; 3@ 0.40 of Research Officers; 2 @ 0.30 of GIS Officer; 2@0.30 of Repository
Open Access publications and Information Management	USD 350,000	USD 400,000	2 @ 0.70 of Repository Librarian; 2@ 0.40 Information Manager; 0.30 Information System services; 0.30 of Data Manager
IP/Legal in support of OA/OD	USD 10,000	USD 11,000	0.30 of Team Leader of Program Management and Coordination and 0.30 of Legal Officer
IT in support of OA/OD	USD 50,000	USD 55,000	0.30 of Senior IT Infrastructure Officer; 0.30 of Information System Manager; 0.30 of Web Team Leader; 0.30 of Multimedia and Web Officer; 0.40 of Senior Research Data Officer
Membership Fees			
Altmetrics provider(s)	USD 9,500	USD 11,000	Altmetric.com
PILA Membership	USD 2,000	USD 2,500	CrossRef membership
iThenticate	USD 2,000	USD 2,500	Plagiarism verification using iThenticate software
RDA Toolkits	USD 350	USD 400	ICRAF Resource Description and Access (RDA) Toolkit institutional subscription (2x)
Other Expenses			
Marketing/promotion materials in support of OA/OD	USD 20,000	USD 25,000	Cost for Blog and social media processing.
Professional development/ training to support OA/DM	USD 60,000	USD 90,000	Cost covers six main staff at CIFOR, ICRAF, Bioversity and CIAT
OA Fees for Articles	USD 500,000	USD 600,000	Based on FTA phase 1 we produced about 250 articles per year. Total cost if the Center is paying for these fees (APC is about USD 3000/article). This can cover for all Centers and partners.

Table 4. Cost covered via the Data to Impact component of the Support Platform

Item	Cost	Explanatory notes
Hardware	USD 70,000	- 32 terabyte storage for dataset and processing in 128 gigs byte of memory on 4 Processor with Lenovo Server X3250M5-B2A, 4 host cluster design. - GIS server maintenance
Capacity building	USD 30,000	Awareness and capacity building activities cost for: - Training on Big data (https://www.coursera.org/specializations/big-data/) - Awareness building for CIFOR scientists
Staff time	USD 120,000	Staff time of the following: 0.40 of Data and Information Services Manager 0.60 of Senior Research Data Officer 0.20 of GIS Officer 0.10 of Senior IT Infrastructure Officer 0.10 of Information System Manager 0.10 of Web Team Leader 0.20 of Multimedia and Web Officer 0.30 of Qualitative Research Specialist/Scientist
Consultant for full integration	USD 9,000	Consultant for full integration with FTA PM Systems
Consultant for Taxonomy Database	USD 7,000	Programmer for development of forest-tree species database
iThenticate	USD 4,000	To ensure the quality assurance
Altmetrics	USD 10,000	To monitor the popularity of the output
Total	**USD 250,000**	

[i] Wilkinson MD1, Dumontier M2, Aalbersberg IJ, et al. 2016 The FAIR Guiding Principles for scientific data management and stewardship. *Scientific Data*. 3:160018. doi: 10.1038/sdata.2016.18.

[ii] https://en.wikipedia.org/wiki/Schema_crosswalk

Annex 3.10 Intellectual Asset Management (IA Management)

Relevance of IA management to FTA (issues to address in FTA implementation and anticipated **Annex 3.10 Intellectual Asset Management**

1. Relevance of IA management to FTA (issues to address in FTA implementation and anticipated challenges)

   The adoption of CGIAR IA principles establishes a common standard with respect to all IAs produced or acquired by the CGIAR Consortium and CGIAR Centers. CIFOR is committed (and in compliance with the CGIAR IA principles through the adoption of CIFOR IA management policy) to facilitate and assist in the implementation of best practice in managing IAs.

   The CGIAR IA principles are part of the common operational framework, which applies to all funding and implementation aspects of the strategy and results framework, including FTA, regardless of the funding source or implementing entity.

   Challenges may appear, particularly when dealing with non-CGIAR partners, as they are not governed by IA principles. Thus, it is important to ensure that the IAs they produce are for global access.

2. Project planning and implementation

   FTA project outputs shall be managed according to the CGIAR IA principles and CIFOR IA management policy. At contract level, IAs are managed through IA/IP provisions stipulated in collaboration agreements, which CIFOR and its strategic partners sign. To ensure that the IA provisions will maximize global access of FTA research results, the agreements should be systematically reviewed and approved before being signed by the authorized representatives of both parties.

   CIFOR recognizes that it is important to connect more with the partner Centers to ensure that intellectual property rights (IPR) are managed correctly across FTA. The following mechanisms will help to assure compliances with CGIAR IA principles and CIFOR IA management policy:

   - CIFOR will obtain the agreement templates used by non-CGIAR partners (i.e. CIRAD and CATIE) ensuring that there will be global access to all FTA-related outputs.
   - CIFOR will ensure that the outputs are compliant with the IP clauses in the signed agreements by requiring the partner Centers to report to CIFOR on their compliance with the IP clause for global access.

   To better manage IAs, CIFOR has initiated a tracking system for background IP through the project management (PM) system so that in future, background IP will be recorded prior to commencement of project activities.

   CIFOR's resulting IP have been recorded in two different management systems, i.e. the PM system managed by the team leader of the Program Management and Coordination (PMC) unit, and the data and information service managed by the Data and Information Service Manager. To better track and manage CIFOR's resulting IA/IP, a plan to link the resulting IAs/IPs in CIFOR's PM system and OA has been initiated and is currently under development.

   To share and leverage knowledge on IA/IP and OA, trainings/workshops shall be planned together with the Data and Information Service Manager for capacity development, ensuring compliance with IA principles across FTA.

3. Key dissemination pathways for maximizing global impact

To achieve global access, FTA research results are disseminated through open access with prompt dissemination in compliance with Art. 6.1 of CGIAR IA principles. Nondisclosure agreements (NDA) that may impede publication for global access shall be avoided.

Limited exclusivity agreements

CIFOR as the Lead Center of FTA and its CGIAR partners may enter into a limited exclusivity agreement (LEA) with partners including private partners who are granted limited exclusivity for commercialization of the IAs they produce, provided that:

a) such exclusivity is:
   i. necessary for the further improvement of such IAs or to enhance the scale or scope of impact on target beneficiaries, in furtherance of the CGIAR vision
   ii. as limited as possible in duration, territory and/or field of use
b) and the LEAs provide that the IAs remain available in all countries:
   i. for noncommercial research conducted by public sector organizations in furtherance of the CGIAR vision ("research exemption")
   ii. in the event of a national or regional food security emergency for the duration of the emergency ("emergency exemption").

CIFOR and its CGIAR partners under FTA may deviate from the above research and emergency exemption by obtaining prior approval from the Consortium. In order to obtain such approval, a written request shall be submitted to the Consortium as follows:

- showing that the LEA meets the conditions provided under Article 6.2.1 (a) of the CGIAR IA principles
- explaining the reasons for the requested deviation
- showing that the deviation does not jeopardize the furtherance of the CGIAR vision.

Incorporation of third party intellectual assets

CIFOR and its CGIAR partners under FTA may enter into agreements with partners and private partners for the acquisition and use of third party IAs that restrict the global accessibility of the products/services resulting from the use of such IAs for commercialization, research and development (restricted use agreements/RUA), provided that:

a) to the best of CIFOR and its FTA CGIAR partners' knowledge, they are unable to acquire equivalent IAs from other sources under no or less restrictive conditions
b) the products/services that are intended to result from the use of such third party IAs will further the CGIAR vision in the countries where they can be made available
c) CIFOR and its FTA CGIAR partners shall use their best efforts to ensure that such third party IAs are only used in relation to or incorporated into such intended products/services.

The IA management approach underlying the dissemination pathways used by FTA, including its strategic issues and challenges are described under the Impact Pathway and Theory of Change sections in the CRP narrative of the proposal. As stated, high-quality research in the respective areas will be core to the work of each Flagship, which will take place throughout the research project cycle, right from the research concept stage through to the generation and dissemination of results and beyond. Specific details with examples are elaborated further in the section.

CIFOR has a Monitoring Evaluating and Impact Assessment (MEIA) unit to monitor, evaluate and assess the research results of FTA to achieve outcomes and impacts, either directly or through intermediaries. To strengthen the dissemination pathways and maximizing global accessibility, CIFOR shall ensure that its MEIA unit is guided carefully by IP unit in making sure that the IAs managed allows them to be disseminated to target beneficiaries. There may be cases where authorships and licensing with certain conditions and restrictions apply. In this regard, CIFOR complies with the rules binding on it as CIFOR

recognizes the importance of a balance between maintaining the value of global accessibility of the research outputs and proactively achieving targeted impacts by making use of IPR and licensing to better ensure that the outcomes of research reach those who need them most.

As indicated earlier, one of the challenges in FTA is when dealing with non-CGIAR partners including equal partners because they are not governed by IA principles. In order to address this issue, CIFOR needs to make sure that the IAs they produce are for global access and/or considered as global public goods. This shall be reflected clearly in agreements entered into between CIFOR and non-CGIAR partners.

Furthermore, meeting donor requirements may also become a challenge and more guidance is needed in this area. It is important to set out the roles and responsibilities of CIFOR and its CGIAR FTA partners clearly in an agreement entered with the CGIAR system organization. However, the current CGIAR transition document, particularly the *Financial Framework Agreement* which is replacing the *Program Implementation Agreement* (PIA) do not specifically indicate the roles of the CGIAR partners in CRP.

4. Operations

CIFOR invests in its Center's capacity to implement the policies indicated in No. 5 below through human, financial and hardware and software resources.

a. Partnership contracts

Collaborations with CGIAR partners under FTA are implemented through program participant agreements (PPA) that contain provisions on IA/IP management for global access in compliance with the CGIAR IA principles and CIFOR's IA management policy. Whereas collaborations with non-CGIAR partners are implemented through a letter of agreements (LoA) which contains IA management provisions compliant with the CGIAR IA principles and CIFOR's IA management policy.

In terms of ownership, all IPR derived from resulting IAs from partnership collaborations are mostly jointly owned or CIFOR owned. If the ownership of IP rights is owned by one party, the party will grant the other party a non-exclusive, worldwide, royalty-free, irrevocable license to use and sublicense the resulting IAs to the other party. The party introducing background IP grants the other party a license to use and sublicense the background IP for the purpose of the research project.

b. Consultancy contracts

Consultants hired through Human Resources (HR) under the FTA grant of CIFOR shall enter into consultancy agreements, which contain standard IA management provisions. Ownership of IPR in resulting IAs is vested in CIFOR, and the consultant is granted a non-exclusive, worldwide, royalty-free, irrevocable license to use and sublicense the resulting IAs for the purposes of research and education.

c. FTA project database

FTA outputs are recorded and maintained in the FTA project database system managed by the FTA Management Support Unit (MSU). The system has been specifically designed for FTA so that accountability for its outputs is transparent. Progress in meeting the outputs specified in the plan of work and budget (POWB) can be measured via the traffic light report, which is run at least twice per calendar year. The key measures in place to ensure accountability are:

- outputs that are included in the POWB can not be modified
- outputs that are overdue but are in progress are rolled over into the following year's POWB
- outputs must be linked to bilateral projects or window one/two funded activities.

The system is accessible to CIFOR and CGIAR partners, including non-CGIAR partners.

d. Information on maintaining FTA publications
Subject to IA principles, publications will be disseminated through open access. FTA is currently developing an open data platform based on big data principles, which will allow the public to visualize, analyze and collaborate using available FTA data. More information is available in the open access section below.

e. Reporting
Each year, CIFOR provides a satisfactory IA report to the Consortium, reporting its application and compliance of CGIAR IA principles, particularly that the requirements of provisions of Article 5 and 6 have been met for the reported time of year. A statement of assurances is also submitted to the Consortium annually by CIFOR's board of trustees assuring compliances with the CGIAR IA principles.

5. Coordination and decision-making
CIFOR ensures that the coordination of IA management in FTA is subject to the following policies:

a. CGIAR IA policy
In pursuing the CGIAR vision, the CGIAR IA principles and their implementation guidelines have been adopted since 7 March 2012 as part of the common operational framework. The IA principles and guidelines govern the management of IAs across FTA with its strategic partners, consistent with the Convention on Biological Diversity (CBD) and its objectives, including the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of the utilization of genetic resources. Furthermore, the IA principles and their guidelines are also consistent with fundamental human rights as stated in particular in the Universal Declaration on Human Rights and other relevant international treaties.

b. CIFOR IA management policy
Enforced since 23 December 2013, CIFOR endorses and complies with the CGIAR IA principles and their implementation guidelines through CIFOR IA management policy in order to facilitate and assist in the implementation of best practice in CIFOR's management of the IAs it generates.

c. CGIAR open access (OA) policy
To achieve global access for maximum impact, CIFOR is subject to CGIAR open access policy to enhance the visibility, accessibility and impact of its research and development activities. Open access improves the speed, efficiency and efficacy of research. It enables interdisciplinary research, assists novel computation of the research literature and allows the global public to benefit from CGIAR research.

d. CIFOR's policy on open access
CIFOR is committed to disseminating its research results as widely as possible through open access and hence, this policy has been developed in line with CGIAR IA policy and CGIAR OA policy, to support the free flow of information and increase the diffusion of research results and outputs.

e. CIFOR's research ethics review (RER) policy and process
In ensuring the ethical conduct of research by CIFOR and its FTA partners, CIFOR adopts research ethics review (RER) policy as articulated by CIFOR principles of ethical research consistent with international norms and principles which include the Singapore Statement on Research Integrity, the Australian National Statement of Ethical Conduct in Human Research 2007 and the Canadian Tri-Council Policy Statement Ethical Conduct of Research Involving Humans 2010.

f. CIFOR Institutional agreements policy and guidelines

CIFOR has implemented its institutional agreements policy and guidelines since 10 May 2013 for CIFOR's institutional activities with partners and donors including collaborations in research projects. The non-research institutional agreements that CIFOR signs may or may not result in IAs, but CIFOR ensures that its non-research institutional agreements that contain IA provisions are subject to CGIAR IA principles and CIFOR IA management policy. Furthermore, CIFOR ensures that all research agreements contain IA provisions subject to CGIAR IA principles and CIFOR IA management policy. CIFOR's standard non-research institutional agreements include hosting agreements (HA) and memorandums of understanding (MoUs). CIFOR's standard research agreements include letter of agreements (LoA) with donors and partners and event management agreements. The business processes of all institutional agreements are managed internally at CIFOR through the project management system which involves systematic processes of: clearances of the terms and conditions and overall legality of agreements to ensure compliances with the policies listed in this section and standard practices; approval of the process by all levels of CIFOR authorized representatives upon clearance; and signing process by CIFOR authorized representatives prior to commencement of activities and research projects.

g. CIFOR project management (PM) guidelines and procedures
CIFOR has been implementing its project management (PM) guidelines and procedures since 10 May 2013 to effectively manage and guide the submission of a grant application for funding in response to a funding opportunity, including mapping of project contributions to FTA where all projects in FTA are expected to contribute to FTA's high-level result (intermediate development outcomes) through defined impact pathways. The FTA MSU has developed a set of project information fields that once populated by FTA projects, will allow all FTA staff to better plan, monitor and learn from their activities. These information fields have been incorporated into the PM system in order to better facilitate data collection by integrating the PM system and the FTA's information systems.

h. CIFOR research data management policy and data management guidelines and procedures
To ensure that research data generated by CIFOR and its FTA strategic partners are stored, retained and made accessible for use and reuse, according to legal, statutory and ethical requirements, including those of funding bodies and formal research agreements, CIFOR has adopted a research data management policy, which was enforced on 1 July 2013. This policy also helps to ensure that data from FTA research projects become and remain an asset for both CIFOR and the broader research community, consistent with the CGIAR's commitment to open access.

The data management guidelines and procedures follow the principles outlined in the research data management policy, explaining the implementation of research data management (RDM) practices.

The procedure of IA management in terms of its decision-making involves a robust and systematic review and clearance process through a chain of approval from all levels through the PM system in accordance with the policies listed above. Managing the delivery of all deliverables and outputs committed in agreements is considered a very important job by CIFOR, particularly in assuring compliance with CGIAR IA principles.

CIFOR, as the Lead Center of FTA, does not develop a CRP-level IP policy framework as CRP is not a legal entity and thus does not have IP rights. The IP policy framework to guide the FTA implementing partners are the CGIAR IA principles, CIFOR IA policy and the CGIAR Center partners' IA policy.

FTA and the IA management across FTA are supported by the Legal/IP staff of CIFOR and its FTA CGIAR partners, including the FTA Management.

6. Indicative resources

   Two staff members at CIFOR manage IA and IP issues. The team leader of the Program Management and Coordination (PMC) unit (who is also the IP focal point) and is advised by an in-house Legal Officer, is responsible for IA and IP issues. The Data and Information Services Manager supports the implementation of IA and IP issues.

   For capacity development, training shall be planned to leverage knowledge and ensure effective and consistent IA management across FTA. This can be conducted by working together with the CIFOR Data and Information Services Manager who manages open access.

The amount of funding needed to fulfill the FTA requirements in terms of IA management is estimated at USD 350,000 annually.

Annex 3.11 Communications tools and approaches

To support FTA in achieving its goals and in accordance with its Theory of Change, the CRP deploys a communications model that is designed to leverage existing strengths, opportunities, areas of expertise and spheres of access. In particular, a central communications coordination unit maintains FTA-dedicated platforms, creates and shares FTA-focused materials, and connects communications units and Flagships across the program for broader reach and greater development impact.

Table 1 outlines the tools used in FTA's communications activities and their relevance at the CRP and FP level.

Table 1. FTA communications tools

Communications tools	Examples/Details	Responsibility	Contribution to communications goals	Contributes to	
				CRP level	FP level
FTA-focused knowledge products	FTA impact stories; FTA project news; FTA Flagship leaders' views/analysis; FTA-focused blogs/video packages; FTA-focused fact files and tool kits; supporting social media , embedded in theory of change for Flagships	FTA Communications Coordinator, sourcing content from Centers and Flagship leaders	• Creation of FTA-branded communications products raises program visibility, and provides evidence of activities/outcomes for accountability • Communication of research results, program, activities, science, results, progress • Creates format for sharing Flagship results, etc. for greater sharing across Centers, CRPs and partners and hence greater reach, including via social media, events, etc. • Improves keywording in FTA website for SEO and greater web traffic through search engines	Yes	Yes
Center-generated communications materials	Stories, blogs, multimedia, etc. published and promoted by individual Centers, all marked as part of FTA; these are then cross-posted via FTA and shared by all Centers where possible (e.g. CIFOR's Forests News (blog.cifor.org), with average monthly readership of 50,000 and 98% of content related to FTA)	Individual Centers' communications teams; sharing supported by FTA Communications Coordinator	• CRP gains greater visibility by being embedded into Centers' communications outputs and shared through their networks • Communication of research results, program, activities, science, results, progress	Yes	Yes
Engagement	Meetings, online seminars, workshops, training, etc. with policy and practice partners,	Researchers within Flagships undertake engagement activities;	• Strategic Engagement with policy and practice partners is a key element in the Theory of Change at Flagship level	Yes	Yes

Communications tools	Examples/Details	Responsibility	Contribution to communications goals	Contributes to	
				CRP level	FP level
	embedded in Theory of Change	share information about activities/outcomes with communications team or FTA Communications Coordinator	• Outcomes communicated and shared as FTA stories, etc., which increases visibility/accountability for CRP as a whole, as well as communicating Flagship work		
FTA website (ForestsTreesAgroforestry.org)	Dedicated digital platform for storing and sharing all FTA research outputs, FTA communications materials and related communications materials by Centers	FTA Communications Coordinator	• Provides visibility for the CRP as a whole, and means for greater sharing (e.g. links) with stakeholders, interested parties and networks more broadly • Redesign to focus on content within knowledge areas (Flagships) to increase usefulness as a resources, boost SEO and shareability through networks	Yes	Yes
FTA newsletter (foreststreesagroforestry.org/newsletter/)	Released every 2 months to a growing contact list, effectively driving traffic to stories on FTA website; list includes all those in FTA, partners, and other CRPs, as well as anyone else interested	FTA Communications Coordinator	• Provides visibility for the CRP as a whole • Provides evidence of activities/outputs to strengthen reporting and accountability • Facilitates knowledge-sharing and communications among Flagships, partners, Centers and CRPs • Communication of research results, program, activities, science, results, progress, etc. to subscribed audience	Yes	Yes
Center websites (cifor.org, worldagroforestry.org,	Information on FTA and link to central website; stories or other content related to FTA marked/branded as such	Individual Centers' communications teams FTA Communications; Coordinator to circulate	• Provides visibility for the CRP as a whole • Creates potential sources of traffic to FTA website	Yes	Yes

Communications tools	Examples/Details	Responsibility	Contribution to communications goals	Contributes to	
				CRP level	FP level
bioversityinternational.org, ciat.cgiar.org)		visibility guidelines	• Communication of research results, program, activities, science, results, progress, etc. to established audience		
CGIAR website (CGIAR.org)	Curate content onto CGIAR website	FTA Communications Coordinator, individual Centers	• Provides visibility of the CRP as a whole • Communication of research results, program, activities, science, results, progress, etc.	Yes	Yes
Social media (primarily Twitter, Facebook)	Established social media channels maintained by Centers, CGIAR and other CRPs, used to share content and attract web traffic (e.g. followers on Twitter (expect overlaps) ICRAF: 26.4K, CIFOR: 28.5K, Bioversity: 18.9K, CIAT: 13.5K, CCAFS: 32.6K; WLE: 11.7K, CGIAR: 42.5K)	FTA Communications Coordinator for sharing FTA-dedicated content in social-media-friendly format (e.g. e-cards, pre-drafted Tweets, posts); Individual Centers for own channels and supporting work by other Centers and FTA	• Raises visibility of the CRP more broadly through use of FTA branding on materials, hashtags, etc. • Drives traffic to FTA website, for visibility of CRP as a whole and for communication of research results, program, activities, science, results, progress etc.	Yes	Yes
Videos and multimedia	FTA branding on video and multimedia products released by individual Centers Sharing among Centers and on FTA through social media	Individual Centers' communications teams (FTA Communications Coordinator to circulate visibility guidelines)	• Provides visibility of the CRP as a whole • Communication of research results, program, activities, science, progress, etc.	Yes	Yes
National, regional, global events	FTA booth and/or promotional materials where applicable; Centers to include FTA branding on their booths. Engagement in Global Landscapes Forum and other major events	Individual Centers (based on visibility guidelines); FTA Communications Coordinator to identify potential for FTA	• Provides visibility of the CRP as a whole • Creates opportunities to share research results, program, activities, science, progress etc. directly with appropriate audiences	Yes	Yes

Communications tools	Examples/Details	Responsibility	Contribution to communications goals	Contributes to	
				CRP level	FP level
		involvement and coordinate with approval of FTA Director and/or FTA Communications Director (CIFOR)			
Open access	Outputs available on FTA website and Centers where possible; Implementation plan in Annex 3.9	See Annex 3.9 (Open Access Data Management Implementation Plan)		Yes	Yes

Annex 3.12. Assumptions and evidence used to develop aspirational targets

FTA covers areas (more than 2.5 billion ha) which is larger than most of the agri-food CRPs populated by more than 1 billion people who depend on FT&A resources to some extent for their livelihoods. Recent global assessments suggest that there is 10% or more tree cover on over 43% of agricultural land (about a billion ha) that is home to 900 million people and that up to 28% of household income is derived from forest resources for smallholders living at forest margins[2]. FAO[3] estimates that grasslands are by far the largest agricultural use of land (26% of all land globally and >70% of agricultural land) and contribute to the livelihoods of 800 million people. Tree crops produce important globally traded commodities including cocoa, coffee, coconut, rubber and oil palm that form the basis of smallholder livelihoods. Cocoa and coffee alone cover 20 million ha and are the mainstay of over 30 million smallholder households. Coconut contributes a critical source of income and nutrient-rich food for 50 million people. Smallholders cultivate a large part of the world's oil palm. Trees in pastures are ubiquitous in the Sahel and much of Latin America and provide fodder and shade for animals as well as sustaining soil fertility and contributing to biodiversity conservation. The world is covered by approximately 4 billion ha of forests, of which 95% is natural forest and 5% is plantations[4]. Work under FTA is taking place in countries that together represent approximately 46% of global forest cover, including approximately 1.3 billion ha of closed forests, among which 400 million ha are designated for logging and 500 million ha are open and fragmented forests.

FTA contribution to the SRF aspirational targets for 2022 is summarized in Table 1.

Table 1. FTA contribution to SRF aspirational targets for 2022

SRF 2022 targets	FTA contribution
SLO1: Reduced poverty	
100 million more farm households have adopted improved varieties, breeds or trees, and/or improved management practices	31 million more farm/smallholder households have adopted improved varieties, breeds or trees, and/or improved management practices
30 million people – of which 50% are women – helped to exit poverty	19 million people, 50% women, assisted to exit poverty
SLO2: Improved food and nutrition security for health	
Improve the rate of yield increase for major food staples from current <1% to 1.2–1.5% $year^{-1}$	Improve the rate of yield increase by an additional 0.18% $year^{-1}$
30 million more people, of which 50% are women, meeting minimum dietary energy requirements	17 million people, 50% women, meeting minimum dietary requirements
SLO3: Improved natural resource systems and ecosystem services	
5% increase in water and nutrient (inorganic, biological) use efficiency in agroecosystems, including through recycling and reuse	0.225% increase in either water- or nutrient-use efficiency is achieved
Reduce agricultural-related greenhouse gas emissions by 0.2 Gt CO_2-e yr^{-1} (5%) compared with business-as-usual scenario in 2022	FT&A GHG emissions reduced by 0.2 Gt CO_2-e yr^{-1} compared with business-as-usual scenario
55 million ha degraded land area restored	30 million ha of degraded forests under restoration
2.5 million ha of forest saved from deforestation	2.0–2.5 million ha of avoided annual deforestation

Each FTA contribution is explained in the following and the bases for our claims detailed following the same structure:

- Population: Existence of a "target" population (people, forest or land areas) having the identified problem
- FTA research: FT&A solutions exist and FTA research and knowledge sharing can help
- Contribution: argument for a recognizable contribution through the place we work and people we engage
- Past and current achievement: existence of past track record from FTA or its core partners, adoption or impact studies
- Eventual caveats

These targets and their associated populations are not independent and therefore the numbers cannot be added across (e.g. "x" millions of people can meet minimum dietary requirement (SLO2 – target 2) because they have adopted better management practices (SLO1 – target 1) that increased yield (SLO2 – target 1) or because they have better purchasing power (SLO1 – target 2) or (likely a mix of all.)

SLO1

FTA target 1: **31 million more farm households have adopted improved varieties, breeds or trees, and/or improved management practices**

- **Population**: FT&A systems concern 46% of global forest cover, including approximately 1.3 billion ha of closed forests, among which 400 million ha are designated for logging and 500 million ha are open and fragmented forests, which are home to about 400 million people and 43% of agricultural land – about a billion ha – with 10% or more tree cover, which is home to about 900 million people. The 1.3 billion of people depending on trees and forests represents about 260 million households (5 people per household)
- **FTA research** develops improved varieties of trees (Flagship 1); improved agroforestry (Flagship 2) and production forestry (Flagship 3) management practices concerning major tree-based commodities; seeks to influence public and private policies (all Flagships) that foster the adoption of these improved practices and the removal of incentives towards more sustainable production patterns.
- **Contribution**: The FTA contribution is either through adoption of technology at farm/enterprise level (household is the unit) or by improved management at the landscape level (area better managed is the unit and number of household is derived from population living in these landscapes). Previous FTA research showed that trees on farm (i.e. fertilizer trees, tree fodder, fruit trees) play a significant role in agricultural systems by increasing production, closing yield gaps and maintaining soil fertility. Considering our geographic coverage and current portfolio of bilateral projects and our context approach to scaling-up improved management practices and use of appropriate genetic material, we estimate that we will have about 17 million households adopting FTA improved tree planting material and agroforestry management practices at farm level. We also consider based on Sentinel Landscape data that improved management of landscapes for multiple use would benefit about 19 million households. These farm-level and landscape-level beneficiaries are not completely independent and we estimate roughly a 50% overlap, giving us a target population of about 31 million households. In terms of improved management practices, we could also consider the adoption of about 30 million ha of sustainable forest management at forest management unit level, representing about 1 million households, but we decided to consider it under the "avoided degradation" angle in terms of avoided greenhouse gas (GHG) emissions (SLO3 – target 2).
- **Past and current achievements: *Tree crops***: FTA works on coffee in Eastern Africa (Ethiopia, Kenya, Rwanda, Tanzania and Uganda), Central America, Peru, India, Indonesia and Vietnam. The CAFNET EU-funded cross-regional research program (Vaast 2011) on production and ecosystem services in coffee directly benefited

over 232,000 coffee farm households through dissemination of improved technology, market and policy innovations, comprising 10,000 farmers in Nicaragua, 9,000 in Costa Rica, 3000 in Guatemala, 25,000 in Uganda, 15,000 in Rwanda, 140,000 in Kenya, and 20,000 in India. FTA works principally on cocoa in Côte d'Ivoire (responsible for 40% of world trade), Indonesia, Peru and Central America. Mainly through promoting rejuvenation by grafting higher yielding and more pest and disease resistant genetic material, coupled with good agronomic practice, a Mars program increased average cocoa yields in Sulawesi, Indonesia from 0.5 to over 2 t ha^{-1} for 40,000 farm households (Pye Smith 2011). The current FTA Vision for Change program funded by Mars in Côte d'Ivoire targets raising current yields of 0.2–0.5 t ha^{-1} to 1.5 t ha^{-1} for 150,000 farmers by 2020 with 17 cocoa development centers serving 17,000 farmers already established. FTA research (Smith-Dumond et al. 2014) revealed that farmers in Cote d'Ivoire want more trees and more tree diversity in their cocoa farms to improve their income and food security, changing perspectives about cocoa agroforestry in the industry, leading to a new national agroforestry strategy. IDH, leading a public-private partnership to distribute fertilizer to 200,000 fertilizer-ready cocoa farmers in Cote d'Ivoire by 2020, recognized that inclusion of leguminous shade trees in cocoa systems could compensate for nitrogen (N) export. FTA is leading the tree-crop value chain program for the African Development Bank's Transforming African Agriculture with Technology (TAAT) program that includes promoting FTA outputs to (i) 500,000 cocoa farmers in Cameroon, Cote d'Ivoire, Ghana, Nigeria and Togo; and (ii) 400,000 coffee farmers in Ethiopia, Kenya, Rwanda, Tanzania and Uganda. FTA cocoa knowledge and technologies reach some 300,000 households in all the central and Latin American countries i.e. Colombia, Dominican Republic, Ecuador, Haiti Jamaica, and Peru through CATIE's outreach work. ***Fertilizer trees***: More than 160,000 Zambian farmers grow food crops under *Faidherbia albida* fertilizer trees and more than 200,000 farmers in Malawi have adopted tree–maize intercropping systems. A meta-analysis (Sileshi et al. 2008) found that across sub-Saharan Africa, fertilizer trees produced a mean maize yield increase of 1.3–1.6 t ha^{-1} for non-coppiced and coppiced trees, respectively[2]. Ethiopia had a national policy for smallholder farmers to plant 100 million fertilizer trees between 2011 and 2014 (involving over 1.3 million farmers and impacting 6.5 million people). ***Fodder trees***: In 2006, adoption of fodder trees was estimated at over 205,000 farm households in 2006 in Kenya, Rwanda, Tanzania and Uganda (Place et al. 2009). Since then, a vibrant market for fodder tree seedlings has emerged in Kenya, indicating considerable spontaneous diffusion (Franzel et al. 2014) with one initiative alone – the East African Dairy Development (EADD) program having reached over 203,000 households between 2008 and 2014 with projections to reach 315,000 by 2018. Within EADD phase 2, women's participation in decision-making on control of production assets was 62% in Kenya, 53% in Uganda and 77% in Tanzania. ***Policies***: FTA research on sustainable timber production and marketing from agroforestry led to a key change in forest law in Peru that affects 4.5 million ha and unlocks opportunities for smallholder farm households in the Amazon to market timber, benefitting well over a million people. The key change published by the National Forest Service on 29 October 2014 (in *Resolución de Dirección Ejecutiva* N. 065-2014-SERFOR-DE), Article 2.3, now includes associations of trees and crops, in time as well as space, as legitimate forms of agroforestry, allowing farmers to legally market timber from fallow plots. FTA research on agroforestry options for India contributed to a new national policy on agroforestry aimed at removing barriers to adoption of agroforestry by over 15 million smallholder farmers.

FTA target 2: **19 million people, of which 50% are women, helped to exit poverty**

- **Population**: Data is variable but the world counts about 800 million poor women, children and men who live in rural environments. Based on data from PEN special issue in World Development plus supplements from Noack et al. (2015), an infographic by the World Bank group shows that forests and trees represent on average 22% of the income (second to crops at 29%) of 1.3 billion people and that 1 in 11 people with access to forests are lifted out of poverty thanks to forest resources making a potential target population of 119 million poor, forest-dependent people.

- **FTA research** develops new, transformed products, new technologies, influences policies and the existing enabling environment to foster markets (Flagship 2) and global value chains (Flagship 3) for FT&A commodities that are smallholder-, climate- and environment-friendly.
- **Contribution**: We estimate, given our geographic coverage, that FTA research, if adopted, has the potential to provide income benefits to approximately 100 million poor people (intersection of the smallholder population on agricultural land with FT&A targeted agroecosystems, tree-crop commodity smallholders and people at forest margins). Based on our current involvement in R4D projects on tree crops and developing diversified production systems combined with improved livelihood opportunities involving timber, fruit and non-timber forest products (NTFPs) we intend to contribute to a 25% increase in income for about 19 million people, representing about 20% of our total target population.
- **Past and current achievements:** [AR 2015] FTA research has developed nonperishable products from the indigenous fruit tree *Son tra* (*Docinya indica*) in Vietnam, taken up by a local export company, that is growing the size of the market for the fruit so that prices are maintained as more farmers adopt fruit growing. A hectare of land with 500 trees earns a farmer USD 2000 per annum; one mature tree can produce fruit in a single year with the value equivalent to the cost of a motorcycle. Average cash income of rural households in Nusa Tenggara Timur (NTT) and Nusa Tenggara Barat (NTB) are less than USD 100 per year, well below that in other parts of Indonesia, while Yogyakarta is one of the most densely populated parts of the country, with a higher-than-average proportion of the rural population classified as poor. The FTA Kanoppi project works in these areas to develop and promote improved integrated timber and NTFP production and marketing systems for smallholders. It directly enhances the livelihoods of 149,000 farm families. An economic evaluation indicates that per hectare net present values can increase from AUD 165 (current practice) through AUD 2356 (improved timber productivity only) to AUD 5098 (improved productivity for both timber and NTFPs). There are 1.3 million smallholder households who derive their main income from rubber in Indonesia. ICRAF and CIRAD together with a range of national partners developed and promoted three rubber agroforestry (RAS) options in Jambi, West Sumatra and West Kalimantan. Economic analysis of RAS adopted in West Kalimantan provided higher returns to land and labor than traditional rubber cultivation and higher returns to labor than intensive monoculture rubber. Permanent rubber agroforestry systems were found to be adopted by 33% to 66% of smallholders in seven villages surveyed across Jambi, outperforming cyclical systems in terms of economic returns (NPVs from IDR 1,300,000 to IDR 3,900,000 for permanent versus IDR 250,000 for cyclical). The impact of fodder trees on farm income from increased milk production in Kenya were measured at between USD 62 and USD 122 per annum for a household with one cow (Place et al. 2009) contributing from 17% to 33% of what is required for a household to exit poverty. This does not include benefits from fuelwood, soil fertility improvement, soil erosion control, fencing, stakes and sale of seedlings, which are also derived from trees. INBAR action research across the world has improved livelihoods and brought over 300,000 people out of poverty over the last 15 years. Women beneficiaries have made up well over 50% of the total. Our work with the Jepara furniture maker association improved the income of about 5000 small and medium enterprises through certification and better access to credit and only marketing. This is the subject of an ongoing SPIA study by Virginia Tech University in the US. Households that practice farmer-managed natural regeneration derived an average additional income of USD 200 from tree products (Binam et al. 2015) despite selling only 10–25% of their harvested tree products (e.g. leaves, pods, fruits and wood).
- **Caveats**
    - **SLO1-target 1 population**: Increased income and exit from extreme poverty will also come from improved genetic material and management practices (SLO1-target 1). This means that the 19 million people we intend to help in exiting poverty are a subset of the 30 million households targeted in SLO1-target 1.

- **Gender**: We are less confident about the 50% of women than about the total number of targeted people. To ensure that women are not inadvertently negatively impacted and benefit from the expected income increases, FTA will work on two levels:
  - At the farm level – research projects will: analyze gender interests, priorities, roles and time-labor burdens and will address disparities or gaps in women's and men's participation and benefits in the research design; engage both men and women particularly from low socioeconomic backgrounds in participatory processes that allow them to voice their opinions and meaningfully participate in the research process, and develop their confidence and capacities; develop M&E mechanisms to measure how men and women participate in and benefit from the research projects.
  - At the landscape level – we will create knowledge hubs in collaboration with a wide network of boundary partners (NGOs, women's organizations, UN and government agencies) to develop and disseminate tool kits and practical guidance for researchers and practitioners on mainstreaming gender in forest policy and practice; and hold stakeholder dialogues to communicate research findings on how gender shapes forest/tree-based livelihood strategies and landscape planning and governance; we will identify entry points via policies, institutions and interventions, such us certification schemes, extension approaches and management systems, that promote gender equitable access to and benefit from forests, trees and agroforestry resources.

SLO2

FTA target 1: **Improve the rate of yield increase by an additional 0.18% / year**

- **Population**: about 1 billion ha of agricultural land with at least 10% of tree cover
- **FTA research**: The main purpose of our 'production' research is to improve the productivity of FT&A systems while keeping the systems in a sustainable state. We work collaboratively on maize, wheat and teff with CIMMYT in Ethiopia; across a range of dryland cereals with ICRISAT in Mali, Niger and Burkina Faso, globally on tree-crop interactions in a range of smallholder systems and in Phase II we will commence work with AfricaRice on rice agroforestry in East and West Africa. We have shown that 1) the land equivalent ratio of tree-crop systems is often greater >1 where tree-crop mixtures are designed to exploit niche differentiation, that is, where the trees and crops capture resources differently in space or time; 2) that trees can buffer temperatures and recycle water (and nutrients) from deeper soil layers through hydraulic redistribution, benefiting crop yield; 3) the presence of appropriate trees in fields accounts for 15 to 30% of cereal yields across the Sahel parklands and in smallholder maize farms across East and Southern Africa and is crucial to closing yield gaps in several agricultural systems; 4) the development of diversified and more sustainable tree crop systems using appropriate genetic material translate into increased production; 5) higher tree biodveristy is associated with higher productivity in tropical forests 6) by adding appropriate fodder trees into pasture or as fodder banks in smallholder farms, to complement grass feed, we increase the productivity of silvopastoral systems and stall fed livestock.
- **Contribution**: For all these production systems, we have estimated reasonable and conservative but significant targets looking for an increase in (1) cereal production through the use of appropriate trees in agricultural systems over 10 million ha; (2) tree crop system productivity by 75% over 450,000 ha and by 50% over 1.25 million ha; (3) livestock productivity by 25% for two million smallholder farmers; and (4) sustainable forest management practices adopted over at least 30 million ha.
- **Past and current achievements:** A meta-analysis found that across sub-saharan Africa fertilizer trees produced a mean maize yield increase of 1.3 and 1.6 t ha-1 for non-coppiced and coppiced trees,

respectively. In an impact survey across Mali, Niger, Burkina Faso and Senegal, farmers managing natural regeneration of trees on their fields achieved 15-30% higher crop yields (depending on tree species, location and crop type) than other farmers, with benefits positively correlated with the density and maturity of trees. More than 160,000 Zambian farmers grow food crops under Faidherbia fertiliser trees and more than 200,000 farmers in Malawi have adopted tree-maize intercropping systems (DFID 2013). Analysis of a wide range of maize – teak intercropping management options in Indonesia demonstrated land equivalent ratios close to 2.0 (Khasanah et al. 2015). Wheat yields in Ethiopia were found to be higher under faidherbia trees, in part because of reduced temperatures that increase the grain filling period, the buffering of temperature is anticipated to become increasingly important in determining grain yield as climate change raises temperatures during the crop growing period (Baudron 2013). Cf. also to SLO1-target 1

FTA target 2: **17 million more people, of which 50% are women, meeting minimum dietary energy requirements**

- **Population**: The latest State of Food Insecurity Report announces 795 million undernourished people; the number of undernourished people in our targeted countries is about 344 million.
- **FTA research**: In addition to the research into sustainable intensification for more productive FT&A systems (Flagships 1 and 2 mainly) and poverty alleviation already exposed in SLO1-target descriptions, FTA is working (Flagship 4) on healthy diets from diverse landscapes looking at ways landscape diversity contribute to healthier food systems and diets across FT&A systems.
- **Contribution**: FTA research contributes to improving the food security of rural people via several indirect routes (more productive FT&A systems; people having more disposable income to buy more diverse food) mainly relating to SLO1 and previously described. FTA research contributes more directly to the question of food security and dietary diversity through the understanding of the importance and use of wild foods (plants and animals) in the diet of forest-dependent dwellers and smallholder farmers and proposing ways to manage these wild resources. Considering that the people benefiting from improved material, improved management practices and better income are more likely to meet minimum dietary energy requirements, we estimate that FTA work can target 17 million people.
- **Past and current achievements:** In FTA I, using DHS surveys and remote sensing, we demonstrated the clear relationship between tree cover and food security and diet diversity[6]. We demonstrated the importance of wild and cultivated biodiversity to the dietary requirements of smallholders and forest dwellers[7]. We also showed a link between the availability of bushmeat, the hunting pressure and the level of stunting in the Congo Basin[8].
- **Caveats**
  - **SLO1-targets 1 and 2 population**: because of the important indirect contribution via actions targeting the populations for SLO1 targets, the 17 million people we intend to help meeting minimum dietary requirement are a subset of the households targeted in SLO1-targets.
  - **Gender**: same caveat as for SLO1-target 2.

SLO3

FTA target 1: 0.225% increase in either water or nutrient use efficiency is achieved.

- **Population:** about 1 billion ha of agricultural land with at least 10% tree cover
- **FTA research:** Flagship 2 research on better management of trees on farms, coupled with Flagship 4 work on tree cover across landscapes, leads to improvements in nutrient and water use efficiency at field, farm and

landscape scales with an emerging research area on how tree cover change influences atmospheric water cycles at continental scale. For nutrients, FTA research focuses on: the use of fertilizer trees that fix nitrogen and recycle nutrients leached below the crop rooting zone, the use of trees in controlling soil erosion and better management of nutrient resources at farm and livelihood level (for example, through providing farm grown firewood so that manure can be used as fertilizer rather than fuel and tree fodder contributing to tree-crop-livestock intensification). For water, FTA research focuses on how trees influence field level water balance and tree-crop interactions, including measurement of tree water use by monitoring sap flow, groundwater recharge at landscape scale and how tree cover influences short-cycle rainfall derived from evapotranspiration over land at continental scale. There are synergies on research on WUE and NUE because plant uptake of nutrients and water are connected and changes in water affect surface flow and hence soil erosion.

- **Contribution:** In 15 of the countries that Flagships 2 and 4 work in, we estimate that a 5% average increase in water and / or nutrient use efficiency will be achieved over 12.23 million ha by 2022. These improvements contribute 0.225 percentage points to the 5% global SRF target.
- **Past and current achievements:** Fertilizer trees increase nutrient use efficiency through nitrogen fixation and recycling nutrients from below the crop rooting zone, with N use efficiency of fertilizer trees ranging from 49% to 59% compared to 10–22% for synthetic fertilizer (Sileshi et al. 2014). More than 160,000 Zambian farmers grow food crops under *Faidherbia* fertiliser trees; more than 200,000 farmers in Malawi have adopted tree-maize intercropping systems (DFID 2013); and farmers in southern Niger are practicing farmer-managed natural regeneration with fertilizer trees on over 5 million ha of agricultural land (Pye-Smith 2013). Fodder trees increase nutrient use efficiency at farm level through intensification of tree-crop-livestock interactions. Adoption of fodder trees was estimated at over 205,000 farms in 2006 from review of household surveys and reports from organisations promoting them in Kenya, Uganda, Rwanda and Tanzania (Place et al. 2009). Since then a vibrant market for fodder tree seedlings has emerged in Kenya, indicating considerable spontaneous diffusion (Franzel et al. 2014) with one initiative alone – the East African Dairy Development (EADD) program – having reached over 203,000 farms between 2008 and 2014 with projections to reach 315,000 farms by 2018 (EADD 2014). Analysis of a wide range of maize–teak intercropping management options in Indonesia demonstrated land equivalent ratios close to 2.0 with increased nitrogen use efficiency, compared to the current practice of fertilized maize and unfertilized teak as separate monocultures (Khasanah et al. 2015). Increases in nitrogen use efficiency are directly linked to efforts to reduce greenhouse gas emissions; a recent analysis for oil palm quantified a footprint-minimizing fertilizer regime as potentially different from a profitability-maximizing regime (van Noordwijk et al. 2016). Similar analysis on the relationship between efficiency gaps and yield gaps is under way (van Noordwijk and Brussaard 2014).
- The direction and extent to which tree cover affects water use efficiency depends on context, but FTA research has revealed a range of contexts in which, at field scale, trees increase water infiltration (also increasing ground water recharge) and reduce bare soil evaporation (Bayala and Wallace 2015). It has also been shown that WUE is maximized at landscape scale with an intermediate level of tree cover (Ilstedt et al. 2016). FTA's DryDev programme has developed participatory watershed management plans in Burkina Faso, Ethiopia, Kenya, Mali and Niger, covering more than 1 million ha (http://drydev.org). They involve integrated interventions at field scale, including *zai* pits as microcatchments, through exclosures to regenerate vegetation on degraded land. FTA has initiated informed debate on bringing the impact of changing tree cover on the atmospheric water cycle (rainbow water) into the frame of payments for ecosystem services (van Noordwijk et al. 2014).

- **Caveat**
    - In calculating the contribution to the SRF target, estimates of percentage increases of nutrient use efficiency (NUE) and water use efficiency (WUE) per unit area are scaled to a global efficiency gain in terms of the proportion of global agricultural land area affected.

FTA target 2: **Reduce agricultural-related GHG emissions by 0.2 Gt CO_2-e yr^{-1} compared with business-as-usual scenario in 2022**

- **Population**: In 2010, AFOLU (Agriculture, Forestry and other Land Uses) related GHG emissions had an annual value of 21.2 Gt CO2-e with very little change between the 1990s and the 2010s values. Of these 21.2, 11.2 can be attributed to agriculture (A) and 10.0 to forestry and other land-uses (FOLU) (Tubiello et al. 2014). Widespread forest and peatland fires burn over large parts of maritime Southeast Asia, most notably Indonesia, releasing large amounts of terrestrially stored carbon into the atmosphere (Hujinen et al. 2016). With a mean emission rate of 11.3 Tg CO_2 per day during Sept-Oct 2015, emissions from these fires exceeded the fossil fuel CO 2 release rate of the European Union (EU28)(8.9 Tg CO_2 per day)
- **FTA research** seeks reduction of AFOLU based emissions by i) avoiding deforestation (Flagships 1,3,4,5 cf. SLO3-target 4), ii) reducing degradation by improving the sustainability of FT&A production systems e.g. via adoption of better management practices or eco-certification (Flagships 1,2,3), iii) increasing standing C-stock via increasing trees-on-farm (Flagships 1,2), reducing wildfires on peat and restoring peat forests (Flagships 4, 5).
- **Contribution**: For the FOLU sectors, Flagship 5 addresses mitigation policies (REDD+) that should contribute to reducing deforestation by 10–30% in six countries with 55% of global tropical forest cover (Brazil, Cameroon, Democratic Republic of Congo, Indonesia, Peru and Vietnam). This is achieved through better policy formulation and more efficient climate action on the side of the users of the knowledge generated in the program. If successful, 0.5–1.6 million ha of forests could be saved annually, resulting in annual avoided emissions of approximately 0.2–0.6 gigatonnes (Gt) CO_2, positively affecting at least 0.5 million forest-dependent people directly, and 1.5 million people indirectly (those depending on remote forest products and services). For the A sector, Brazil, Indonesia, China and India, Zomer et al. (2016) documented a net increase of trees-on-farm biomass responsible for a net sequestration of 0.64 Gt CO_2-e yr^{-1}. Elsewhere on the globe, losses and gains in this pool were almost in balance, and global net CO_2 sequestration in this pool was estimated to be 0.73 Gt CO_2-e yr^{-1}, due to a 3.7% increase in tree cover on agricultural lands between 2000 and 2010, resulting in an increase of >2 Pg C of biomass carbon. This C sequestration is additional to the default IPCC accounting data. The target could thus be exceeded if current trends can be retained in these four countries alone and/or if a similar positive trend can be supported in other countries via the works of Flagships 1, 2 and 4.
- **Past and current achievements**: The 800,000 ha of avoided deforestation (SLO3-target 4) represents 0.4 Gt CO_2-e. [AR 2014] An external evaluation (Euréval 2014) of the impact of FTA research in the Congo Basin has determined that the research, capacity development and outreach work contributed to changes in forestry policies and to sustainable forest management practices in the region. These changes would not have occurred without FTA research. Since 2004, the changes in policies and practices have led to avoided emissions of about 0.02 Gt CO_2-e yr^{-1} sequestered in standing trees in the Congo Basin forests. [AR 2015] An external outcome evaluation (Young and Bird 2015) of our REDD+ findings demonstrated adoption of FTA outputs at global (UNFCCC and UNREDD) and national (in Cameroon, Ethiopia, Guyana, Indonesia and Peru) levels. This policy adoption has not yet led to changes in the area under REDD, or changes in protected forest, but it is a step on the pathway to impact, and

the assessment shows that we are on the right track and our contribution is significant. The 2015 fire and haze episode in Indonesia led to a high-level policy change with a new coordinating body (Peatland Management Agency: BRG) directly reporting to the president and initiating a cross-sectoral review and change to which FTA science and FTA scientists are actively contributing. We are currently supporting a change in local legislation (PERDA) on fire prevention at the district level in Sumatra, directly impacting 2.3 million ha with a potential for adoption of 837 million ha in the Riau province that combined with restoration efforts (e.g. blocking canals and replanting) can generate huge amounts of avoided emissions but limiting occurrence of wildfires on peat. FTA supported Indonesia in developing its Indonesian National Carbon Accounting System (INCAS). In its Intended Nationally Determined Contributions (INDC), the Government of Indonesia has set itself the target of reducing GHG emissions by 29% by 2030. To date, INCAS has been used to produce an annual account of GHG emissions and removals from all of Indonesia's forests and peatland for 2001–12. This refers to key activities related to REDD+ such as deforestation, forest degradation, and sustainable management of forests and enhancement of forest carbon stocks. Emissions from biological oxidation and from fires on disturbed peatlands are also included. Eventually, INCAS will include full coverage of all sectors under agriculture, forestry and other land uses. We could also consider the increased sequestration linked to the widespread re-greening using *Faidherbia albida* involving 5 million ha of cropland in southern Niger and the adoption of fodder trees by 315,000 farms in the East African Dairy Program (see SLO1 targets).

FTA target 3: **30 million ha degraded land area restored**

- **Population**: There is no shortage of degraded lands; recent estimates (Gibbs and Salmon 2016) show a 1–6 billion ha range (depending on land use, proxy and degradation definitions). UNCCD considers that 12 million ha of productive lands are degraded and lost every year.
- **FTA research** seeks to avoid degradation of productive land related to AFOLU sector activities via improved technologies and sustainable intensification – including agroforestry and sustainable forest management (Flagships 2, 3) and to restore degraded land via appropriate restoration activities at farm (Flagship 2) and landscape (Flagship 4) levels using the best genetic material possible (Flagship 1) and making sure that restoration contributes to national efforts underpinning the ambitious Paris goal of reduced GHG emissions (Flagship 5). In this target, we only consider restoration activities as the avoided degradation has been accounted for in SLO3 – target 2).
- **Contribution**: FTA partners are involved either as founding members, scientific advisors or knowledge brokers in all the major forest landscape restoration initiatives at global level (Bonn Challenge, AFR 100, Initiative 20 x 20) representing close to 100 million ha of restoration commitments. We are also members of the Global Partnership for Forest Landscape Restoration (GPFLR), the Forest and Landscape Restoration Mechanism (FLRM), People and Restoration in the Tropics (PARTNERS). We work on the ground with major forest restoration programs at national level (e.g. Conversion of Cropland to Forest Program CCFP, China; Bamboo restoration in Cameroon, Ethiopia, Kenya, Peru and Uganda). We consider that our participation all these initiatives will allow us to contribute via research and knowledge-sharing to the restoration of 30 million ha of degraded forests (including at least 1 million ha of peat swamp forests and 1 million ha of mangroves) by 2022. This will result in an additional provision of ecosystem services lost when forests were degraded. The latest estimate of the value of ecosystem services stemming from tropical forests is USD 5300 ha^{-1} yr^{-1}, from mangroves, USD 193,800 ha^{-1} yr^{-1} and from peat swamps, USD 25,500 ha^{-1} yr^{-1}. Restoring these forests to 25% of their initial value (discounting for the time necessary to restore forest landscapes) would represent a gain in restored ecosystem service value of USD 92 billion ha^{-1} yr^{-1}.

- **Past and current achievements**: INBAR is currently supporting its 41 member states to meet a commitment to restore 5 million ha with bamboo by 2020 under the Bonn Challenge (China has already restored over 3 million ha of land with bamboo under the CCFP). CATIE has a long-term commitment to supporting forest landscape restoration in a degraded cattle-ranching landscape on the Nicoya peninsula in Costa Rica. The major part of this seasonally dry landscape was converted to cattle ranching in the period 1960–1980. Forest cover increased from approximately 170,000 ha in 1980 to almost 400,000 ha in 2000, and has continued to increase since. Satellite data shows over 5 million ha of re-greening via farmer managed natural regeneration (FMNR) on farmland in southern Niger alone, with similar patterns evident across the Sahel. FTA I (Flagship 1) mounted the first widespread, rigorous study on the impact of FMNR underpinning re-greening in the Sahel, replacing, what until then, had been anecdotal accounts of the impacts of regenerating trees on crop yields, livestock productivity and farm income (SLO1 targets). The FTA IFAD/EU land restoration project is a good example of integration (contribution to more than one target), leverage and scaling-up generated by a bilateral project. It receives approximately USD 5 million to work in five countries (Ethiopia, Kenya, Mali, Niger and Tanzania) over 5 years. In Kenya, this work informs an IFAD/FAO/WFP investment of USD 116 million in the KCEP-CRAL project across eight counties over five years and is embedded in the Netherlands DryDev investment (USD 10 million in Kenya) that co-locates in three of these counties. The KCEP–CRAL investment aims to reach 100,000 farmers and sustainably lift 80,000 of them out of poverty by 2022.

FTA target 4: **2.0–2.5 million ha of forest saved from deforestation**

- **Population**: In the period 1990–2015, the world has been losing annually about 8 million ha of tropical forests (Achard et al. 2014; FAO 2015)
- **FTA research**: is developing technologies and influencing policy and processes that lead to conservation supporting the use of forest genetic resources (Flagship 1), improved forest management practices (Flagship 3) and multi-functional landscapes (Flagship 4), reduced deforestation linked to major commodities (Flagship 3) and in the context of REDD+ (Flagship 5)
- **Contribution**: FTA II target countries account for about 55% of global tropical forest cover (about 1 billion ha) and assuming conservatively that our research can contribute to reducing the annual deforestation rate by 10%, an estimated 0.5 million ha of forest can be saved annually from deforestation, resulting[15] in reduced emissions of about 0.2–0.6 Gt CO_2 yr^{-1} (SLO3 – target 2) and an ecosystem service value of USD 15.9 billion yr^{-1}.
- **Past and current achievements**: At least 800,000 ha of avoided deforestation (without considering forests maintained as forests for production under sustainable forest management) are reported in FTA annual reports; [AR 2012], 300,000 ha of avoided deforestation in Papua linked to our work on suitability of oil palm investments in the province; [AR 2013] 100,000 ha of avoided deforestation on conflict lands between Brazil nut concessions and agricultural titling in Peru; [AR 2014] 400,000 ha of watershed protected in Indonesia as part of the River Care Program under a payment for ecosystem services agreement; [AR 2015] The Terra-I program has developed a major partnership with the Government of Peru. This partnership has led to the use of Terra-I deforestation monitoring data by the government authorities that enforce laws and policies to restrict deforestation. WRI Decision in 2014 to incorporate Terra-I into the Global Forest Watch platform allowed us to extend the program across the global tropics.

Additional sources

Achard F, Renébeuchle, Mayaux P, Stibig H-J, Bodart C, Brink A, Carboni S, Desclée B, Donnay F, Eva HD, et al. 2014. Determination of tropical deforestation rates and related carbon losses from 1990 to 2010. *Global Change Biology* 20(8):2540–54

Bayala J and Wallace J. 2015. The water balance of mixed tree-crop systems. In: C Black, J. Wilson, C.K Ong (Eds.) *Tree–Crop Interactions: Agroforestry in a Changing Climate.* CABI, pp. 140racti

Baudron F. 2013. Trees keep Ethiopia's wheat cool and productive. CIMMYT News. http://www.cimmyt.org/trees-keep-ethiopias-wheat-cool-and-productive/

Binam JN, Place F, Kalinganire A, Hamade S, Boureima M, Tougiani A, Dakouo J, Moukoro B, Diaminatou S, Badji M, et al. 2015. Effects of farmer managed natural regeneration on livelihoods in semi-arid West Africa. *Environmental Economics and Policy Studies* 17(4):543–75.

DFID. 2013. DFID Research: Climate Week Award for DFID. News. https://www.gov.uk/government/news/dfid-research-climate-week-award-for-dfid

[EADD]. 2014. *East Africa Dairy Development Phase II Annual Report 2014*.

http://www.heifer.org/ending-hunger/our-work/programs/eadd/index.html

Euréval 2014. *Evaluation of CIFOR's and CIRAD's contribution to sustainable forest management in Central Africa.* Volumes I and II.

[FAO] Food and Agriculture Organization of the United Nations. 2015. *Global forest resources assessment 2015 – How are the world's forests changing?* 2nd ed. Rome: FAO. http://www.fao.org/3/a-i4793e.pdf

Franzel S, Carsan S, Lukuyu B, Sinja J and Wambugu C. 2014. Fodder trees for improving productivity and smallholder livelihoods in Africa. *Current Opinion in Environmental Sustainability* 6(1):98–103.

Gibbs HK and Salmon JM. 2016. Mapping the world's degraded lands. *Applied Geography* 57:12–21.

Hujinen V, Wooster MJ, Kaiser JW, Gaveau DLA, Flemming J, Parrington M, Inness A, Murdiyarso D, Main B and Van Weele M. 2016. *Fire carbon emissions over maritime southeast Asia in 2015 largest since 1997.* Scientific Reports 6, Article number: 26886. doi: 10.1038/srep26886

Ilstedt U et al. 2016. Intermediate tree cover can maximize groundwater recharge in the seasonally dry tropics. *Scientific Reports* 6, Article number: 21930.

Khasanah N, Perdana A, Rahmanullah A, Manurung G , Roshetko JM, van Noordwijk M. 2015. Intercropping teak (Tectona grandis) and maize (Zea mays): Bioeconomic trade-off analysis of agroforestry management practices in Gunungkidul, West Java. *Agroforestry Systems* 89(6): 1019–1033.

Noack F, Wunder S, Angelsen A and Börner J. 2015. *Responses to weather and climate: A cross-section analysis of rural incomes.* World Bank Policy Research Working Paper no. 7478, The World Bank: Washington DC. Commissioned paper for "Shock Waves: Managing the Impacts of Climate Change on Poverty".

Place F, Roothaert R, Maina L, Franzel S, Sinja J and Wanjiku J. 2009. *The impact of fodder trees on milk production and income among smallholder dairy farmers in East Africa and the role of research. ICRAF Occasional Paper No. 12.* Nairobi: World Agroforestry Centre. http://www.worldagroforestry.org/downloads/Publications/PDFS/OP16490.pdf

Pye-Smith C. 2011. *Cocoa Futures: An innovative programme of research and training is transforming the lives of cocoa growers in Indonesia and beyond*. ICRAF Trees for Change No. 9. Nairobi: World Agroforestry Centre.

Pye-Smith C. 2013. *The quiet revolution: How Niger's farmers are re-greening the parklands of the Sahel*. ICRAF Trees for Change no. 12. http://www.worldagroforestry.org/downloads/Publications/PDFS/BL17569.pdf

Sileshi G, Akinnifesi FK, Ajayi OC and Place F. 2008. Meta-analysis of maize yield response to planted legume fallows and green manures in sub-Saharan Africa. *Plant and Soil* 307(1):1–19.

Sileshi GW, Mafongoya PL, Akinnifesi FK, Phiri E, Chirwa P, Beedy T, Makumba W, Nyamadzawo G, Njoloma J, Wuta M, Nyamugafata P, and Jiri O. 2014. Agroforestry: Fertilizer trees. *In:* Van Alfen N. (Editor-in-chief) *Encyclopedia of Agriculture and Food Systems*, Vol. 1. San Diego: Elsevier, pp. 222–234. https://www.researchgate.net/publication/267191045_Gudeta_W_Sileshi_Paramu_L_Mafongoya_Festus_K_Akinnifesi_Elijah_Phiri_Paxie_Chirwa_Tracy_Beedy_Wilkson_Makumba_G_Nyamadzawo_Joyce_Njoloma_M_Wuta_P_Nyamugafata_and_O_Jiri_2014_Chapter_22_Agroforestry_Fe

Smith Dumont E, Gnahoua GM, Ohouo L, Sinclair FL and Vaast P. 2014. Farmers in Côte d'Ivoire value integrating tree diversity in cocoa for the provision of ecosystem services. *Agroforestry Systems* 88(6):1047–66.

Tubiello FN, Salvatore M, Ferrara AF, House J, Federici S, Rossi S, Biancalani R, Condor Golec RD, Jacobs H, Flammini A, et al. 2015. The contribution of agriculture, forestry and other land use activities to global warming, 1990–2012. *Global Change Biology* 21(7):2655–60.

Vaast P. 2011. *CAFNET final narrative report.* Project ENV/2006/114-382. https://agritrop.cirad.fr/562251/1/document_562251.pdf

van Noordwijk M, Brussaard L. 2014. Minimizing the ecological footprint of food: Closing yield and efficiency gaps simultaneously? *Current Opinions on Environmental Sustainability* 8:62–70.

van Noordwijk M, Khasanah N, Dewi S. 2016. Optimal intensification levels to minimize emissions per unit biofuel? Oil palm yields, N fertilizer and C-debt in Indonesia. *Global Change Biology Bioenergy* (accepted)

van Noordwijk M, Namirembe S, Catacutan DC, Williamson D and Gebrekirstos A. 2014. Pricing rainbow, green, blue and grey water: Tree cover and geopolitics of climatic teleconnections. *Current Opinion in Environmental Sustainability* 6:41–47

Young J and Bird N. 2015. *Informing REDD+ policy: An assessment of CIFOR's global comparative study.* Overseas Development Institute, London. http://www.odi.org/publications/9932-informing-redd-policy-assessment-cifors-global-comparative-study

Annex 3.13 Accountability Matrix – Caveats to address during development of CRP2 full proposals

As set out in Annex 1 to the Final Guidance for the 2nd Call for Full Proposals, the collective portfolio submitted by the Centers/partners in response to this call for full proposals must be accompanied by a summary of how the 23 caveats raised in that Annex by the respective stakeholders have been addressed. This annex sets out those caveats, grouped by the body putting forward the topic for added attention in the full proposals.

1. Caveats expressed by the Joint Consortium Board/Centers/Fund Council Working Group, in its Memorandum to the Fund Council to express support for a 'green light' to move to full proposal development, dated 30 November 2015

Recognizing the advances already made in the resubmitted portfolio in the highly constrained time available, **the full proposals submitted by 31 March 2016 for ISPC review must address to the satisfaction of the ISPC, and contributors, the points set out below, to strengthen further the rationale and coherence of the planned research agenda.** Thereby delivering increased confidence that with funding from 2017 onwards, it has the capacity to deliver on SDGs in general and the Results Framework and CGIAR targets as set out in the SRF:

No	Item to address	Relevant CRP(s)	Summary of how matters has been adequately addressed
1	Greater attention to discerning the role of regionally focused yield-gap closing/sustainable intensification research in the system, as distinct from and a complement to global public goods research in areas such as crop breeding, livestock health, food policy and others.	AFS programs; genetic gain platform	The sub-optimal management of forests, trees and agroforestry resources is central to FTA and this issue was not raised by the ISPC during its review of the pre-proposal. We do nevertheless have 3 Flagships (Tree Genetic Resources, Livelihoods Systems, Sustainable Value Chains) that are researching both forest-based and high-value tree crop production systems to increase smallholder incomes and support sustainable agricultural intensification working on technologies, policies and innovative business models
2	More clearly articulating the strength of the arguments for maintaining genebanks and genetic gain as two separate platforms rather than an integrated effort[iii]	Genebank; genetic gain platform	Not relevant for FTA. We do collaborate with both – see Annex 3.7.
3	Crosschecking that consolidation at the cluster of activities or Flagship level has not delivered unintended adverse consequences such as removing clarity for key research priorities and/or increasing transaction costs	All	The case of the FP "Management and restoration of forests" has been examined by our Independent Steering Committee and a recommendation made to and agreed by the CIFOR Board of Trustees to discontinue the pursuit of this FP for the full-proposal. We immediately consulted with WLE for the restoration part but unfortunately the WLE management was

No	Item to address	Relevant CRP(s)	Summary of how matters has been adequately addressed
			not ready to accept the shifting of our restoration work into WLE for budgetary reasons. As we considered Forest Landscape Restoration (FLR) an important and politically supported issue we decided to recalibrate and redistribute the FLR work as follows: 1) production of improved germplasm for FLR into our FP1 Tree Genetic Resources; 2) FLR methods and governance related issues into our (new) FP4 Landscapes. The other part of FP4 "Management and restoration of forests" about sustainable forest management and the production of wood and timber has been incorporated in our (new) FP3 Sustainable Value Chains. FLR also continues to be addressed in the climate change policy context of FP5. Thanks to this new redistribution, the salient part of the FLR agenda of the former FP4 has been preserved. The Support Platform is not a Flagship anymore but all the important cross-cutting themes have been preserved (Gender, Youth, Capacity Development, Partnerships, Data to impact, Site integration)
4	Providing a clearer understanding of National Partners' requirements, and how the scientific and financial program elements support them	All	We have provided a revised and stronger partnership strategy in the proposal but the issue of our relevance to national partners was never an issue (see independent evaluation of FTA).
5	Setting out more clearly the interconnection and resources available for the proposed Communities of Practice in gender/youth and capacity development, with particular attention to ensuring engagement of partners in the respective Communities of Practice. Specifically, ensuring that the proposed communities of practice operate in a way that will result in meaningful progress towards sustainable engagement and impact	All	FTA has been involved since the beginning in the various CoP and has been recognized since the beginning as a leader for the Gender integration. We have senior FTA staff participating actively in all existing CoP: Gender/Youth, Capacity Development, MEL, OA/OD, IA, etc. (which represents a significant cost that is unlikely to be covered by bilateral funds).
6	Reducing as many transaction costs as	All	We apply a fully transparent subsidiarity

No	Item to address	Relevant CRP(s)	Summary of how matters has been adequately addressed
	possible, particularly regarding management burden		principle in our planning and day-to-day operation of FTA. We don't charge overheads to passing through funds. We have a very modest management support unit and our overall management costs are below 2.5%. In short, we don't think that we are responsible for transaction costs or management burdens (especially when they are imposed on us)
7	Providing greater emphasis on soils, animal genetic conservation and the potential impact of big data across the portfolio, not limited to genetic gain	WLE, all AFS, Livestock, Big Data platform	We are collaborating with WLE on the restoration issue. The FP3 CoA on "Trees supporting sustainable agroecological intensification" looks at soil fertility in relation to the presence of trees and interact with WLE CoA on soil restoration and soil carbon within their FP on "Restoring Degraded Landscapes" and, with DCL FP "Sustainable land and water management"

2. Caveats expressed by the ISPC, dated 9 December 2015

ISPC comments on the portfolio (a paraphrase of a longer document)

No	Item to address	Relevant CRP(s)	Centers' summary of how the matters has been adequately addressed
Portfolio level			
8	Seek explicit prioritization within CRPs (and also between CRPs); balancing research on 'upstream' science with research on how to scale out and up relevant new knowledge and technologies (while leaving the delivery of impact at scale to organizations with that remit)	All	The overall balance between upstream/downstream, pilot/scaling up/scaling out is explicated in each FP narrative and underlies our various theories of change.
9	Important to capture synergies between CRPs so that the System delivers more than the sum of the CRPs (the One System One Portfolio mantra)	All (statement of portfolio synthesis required)	FTA is collaborating actively with all integrating CRP and most AFS CRP (see Section 1.0.7 and Annex 3.7 of the pre-proposal). Building on the progress made in FTA I (i.e. collaboration with CCAFS and WLE, as well as pilots with A4NH and PIM), FTA II is designed to have a greater focus on formal collaboration across CRPs in order to achieve the portfolio approach promoted in the guidance document. All five FTA Flagships (FP) and the Support Platform (SP) have links with other CRPs.
10	Clearer explanations of what W1&2 funding will be used for	All	The W1&2 funding use is explicated in the various budget narratives at CRP and FP levels
11	CRPs should not be expected to adhere to the 'prioritization' undertaken in a very short timeframe to produce the 'Refreshed' submission, but should hold serious discussion with their partners on which activities to prioritize according to the principles which were agreed at FC14	All	Our priorities have been recognized as highly relevant by the independent evaluation and therefore remain largely valid to this day. We have shifted emphasis in some areas however to cater for the various developments in the international agenda and through lessons learned in FTA I. Following the conclusion of the evaluation about the structure of FTA I[iv] and the comments on the FTA II pre-proposal[v] we structured the program around five Flagships supported by a series of crosscutting themes. A structure somewhat similar to FTA I, avoiding major disruption and ensuring consistencies with the internal organization of the main FTA partners but also incorporating major changes. These changes are 1) the creation of a crosscutting

No	Item to address	Relevant CRP(s)	Centers' summary of how the matters has been adequately addressed
			support platform to improve prioritization, impact at scale and social inclusion; 2) the creation of a Flagship on tree genetic resources; 3) the positioning of a significant part of the tenure work in PIM; 4) a reassessment of the Flagship on Forest Management and Restoration and the merging of its two clusters into other Flagships and 5) a greater emphasis on the production side of FT&A systems looking at forest and tree products from different entry points: smallholder livelihood systems using multiple products; global value chains and high-value tree crops (oil palm, cocoa, rubber); forest management, timber and biodiversity.
Platforms			
12	Two new platforms are proposed: Genebanks and Genetic Gains. The ISPC is comfortable with the platform on Genebanks.	Not applicable	N/A
13	Have concerns about the focus of the proposed Genetic Gains and what the creation of such a platform will mean for the AFS CRPs (and theories of change). The ISPC also found the title of 'Genetic Gains' to be inappropriate as what is proposed is only part of the research required to deliver 'Genetic Gains'. The budget needs to be reviewed.	Genetics Gain platform	N/A
14	Supports the concept of an initiative in Big Data and does not want to see this de-emphasized.	Big Data platform	N/A
15	Identify where budget is placed for other arrangements to meet cross cutting system work originally considered through Expressions of Interest at the pre-proposal stage	All c.f. Guidance doc	N/A
AFS CRPs			
16	DCLAS: The rationale for DCLAS receiving a 'C' rating overall (from the ISPC) related to the breadth of species being considered; the funders	This addressed to funders not to CRPs	N/A

No	Item to address	Relevant CRP(s)	Centers' summary of how the matters has been adequately addressed
	are requested to indicate their priorities for this CRP		
17	FTA has moved tenure and rights to PIM – although PIM don't mention that. FTA also wants to move the restoration work to WLE. Given the decreased budgets overall, these 2 CRPs may not accept these moves and the topics may hence disappear. Clarity on the potential loss of these areas is required	FTA, PIM, WLE	**Tenure**: FTA conducted robust research on tenure and natural resources in Phase 1, and CIFOR, as FTA lead, has decided to map most of its work on these topics to PIM, while retaining FTA's comparative advantage in effecting change within forest-based institutions. **Restoration**: We consulted with WLE for the restoration part but unfortunately WLE management was not ready to accept the shifting of our restoration work into WLE for budgetary reasons. As we considered Forest Landscape Restoration (FLR) an important and politically supported issue we decided to recalibrate and redistribute the FLR work as follows: 1) production of improved germplasm for FLR into our FP1 Tree Genetic Resources; 2) FLR methods and governance related issues into our (new) FP4 Landscapes. A network of "learning landscapes" (CoA4) will connect work on the ground, including INBAR as a new partner for this FP, while integration with this FP can lead to stronger focus on the drivers of degradation that need to be addressed in effective restoration, and clarity on the ecosystem service functions that motivate the efforts
18	Livestock and Fish both wish to move some genetics research across to the new platform as may other CRPs, yet the budget sources for those moves are not clear	Livestock, Fish, Genetic Gain platform	N/A
19	Maize proposes to move some bilateral projects out of the CRP due to budget cuts. What is an appropriate balance of W1/W2 bilateral at the base funding scenario?	Maize	N/A
20	RAFS (and presumably other CRPs) proposes to reduce the number of targeted IDOs and sub-IDOs – and both RAFS and Wheat make	RAFS, Wheat	N/A

No	Item to address	Relevant CRP(s)	Centers' summary of how the matters has been adequately addressed
	reference to cutting back on capacity development due to budget cuts. Realistic adjustments to current funding and base scenario funding will need to be considered by CRPs and funders		
Global Integrating Programs			
21	The ISPC is glad that PIM has agreed to take on the role of co-ordination of a system-wide platform or Community of Practice for gender work, although we hope that it will be possible to reinstate the original budget. It is hoped that down-rating gender from a Flagship to 'Cross-cutting work' does not reflect diminishing importance of gender	PIM re role of the FP on gender	N/A
22	A4NH and WLE seem to be following the ISPC recommendations (through additional steps for integration with CRPs through defined Flagships, while the CCAFS Summary in Annex 2 suggests the budget cuts: 'need a totally new business model', the ISPC understands that only minor changes are now being proposed	A4NH, WLE, CCAFS, PIM	N/A

3. Additional caveats expressed by the Fund Council during its ad hoc meeting on 11 December 2015.

The Fund Council noted that its granting of a 'green light' to move to full proposal development was subject to the caveats noted by the Working Group and ISPC (in their written submission) and the Fund Council's request for enhanced focus on gender and capacity building. The Fund Council also specifically acknowledged that CGIAR is engaged in an incremental process and some concerns raised by Fund Council members will require additional time and attention before the new portfolio of CRPs is approved.

No	Item to address	Relevant CRP(s)	Summary of how the matters has been adequately addressed
23	Enhanced focus on gender and capacity building	All	FTA invests at least USD 13 million annually in gender/youth research and gender mainstreaming (enhancing the enabling environment related to gender equity and women empowerment), and at least USD 10 million annually in capacity development actions. Details of activities are provided throughout the proposal, and specifically in Sections 1.0.4, 1.0.5 and Annexes 3.4, 3.5 for gender and youth, and in Section 1.0.10 and Annex 3.10 for capacity development (see also the relevant sections 2.x.1.9 and 2x.1.10 in the Flagship narratives, on gender and capacity building, respectively).

Annex 3.14 Response to ISPC comments

Note: All references to sections and annexes in this Annex use the original numbering in the full proposal submitted in April 2016.

At CRP level

*Note: Areas highlighted as requiring more work during ISPC pre-proposal review are given below in **bold italics**, each followed by a summary of our response to the issue. Numbering is following the one of the full proposal.*

The ISPC considered the FTA pre-proposal Satisfactory with adjustment, and recommended inviting the proponents to submit a full proposal, taking into account the ISPC's comments below or providing justification for the lack of change.

FTA should continue to consider and explicitly state its comparative and collaborative advantage in establishing and deepening strategic partnerships.

We have sought new strategic partners for the core FTA partnership, and as explained in Section 1.8 and Annex 3.2 we have two new non-CGIAR managing partners: INBAR and Tropenbos International. The core FTA partnership is now the world's largest research-in-development partnership dealing with the sub-optimal management of Forests, Trees & Agroforestry resources. Our collaborative advantage rests in our capacity to work across continents in a wide range of countries, ecosystems and species. FTA partnership is seen as a "neutral" research organization with complementary areas of expertise and is therefore strategically suited to work across governments, NGOs and the private sector. National partners feel that FTA partnership plays an important role as 'hubs' for global research information and good practices that can be shared at national and subnational levels.

The full proposal should specify assumptions (based on credible science) underlying the CRP-level ToC and FP-level hypotheses, including consideration of the trade-offs.

We have completely reworked our hypotheses and targets at the CRP level (cf. Sections 1.1, 1.2 and related annexes) and we have provided testable hypotheses at the Flagship and Cluster of Activities levels. The overall ToC and the FP level ToCs have been homogenized and special care has been given in highlighting the possible pathways between outputs and end of program outcomes. We have specified assumptions underlying the CRP-level ToC in the last table of the narrative in Section 1.3. These are the key conditions that we assume are important for a lower-level result to translate into a higher-level one, and a significant part of the M&E efforts will focus on monitoring whether these assumptions are holding.

The pre-proposal's consideration of enabling environment is at a fairly high level, and the full proposal should clearly spell out how this has (and will) influenced framing of research questions and strategies at all levels.

We put great attention to specifying, explicitly in different sections (e.g. in the FP rationales, challenges, backgrounds and in the narrative of the different CoAs) our research on the different factors that shape the enabling environment and may influence the achievement of outcomes. We made explicit reference to policy frameworks and regulations or processes impacting the sub-optimal management of Forests, Trees and Agroforestry resources, and we are explicitly addressing the political economy of managing forests for climate change mitigation in FP5 (cf. Figure 1 in FP5). These different processes are informing our Theories of Change, so to identify what are the opportunities in the policy and institutional environmental that could contribute to making progress towards the achievement of FTA expected end of program outcomes.

While FTA Phase II has a clearer rationale on sentinel sites, now nested within four ecological observatory landscapes, the linkage and integration of activities in these sites with other Flagships needs to be clearly articulated. Similarly, site integration plans with other CRPs need better rationale and justification.

The Sentinel Landscapes (SL) characterized in FTA I represent a 5% sample of the tropics in terms of area and people, with a fair balance (and quantified bias) across ecological zones (Figure 1 in FP4) and forest transition stages. All FP's can now benefit from the theory of place that is derived from the portfolio of SL. The SL quantify the context in which FP2 seeks to enhance options for livelihoods and jointly with FP1 understand (GxE)xM interactions between germplasm, environment and management. They also form a background for the value chains FP3 aims to understand, while the FP will add areas where specific commodities have *prima donna* status. The integrated response options to climate change in FP5 will benefit from the interactions with all other FP's through the SL. Ultimately, however, the success of SL as interesting frame will depend on opportunities for bilateral funding beyond predetermined geographic focus of donors/investors. We expect that the relationship between observatory SL and more easily adaptable learning landscapes will help to further increase coherence in FTA II.

FP4 (management and restoration of trees) requires reconsideration, and three Flagships (FP1, FP5, FP7) need reformulation or reconceptualization as per the commentaries below for specific Flagships

Key elements of FP4 have been merged into other Flagships, and the modifications of FP2 and FP5 (formerly, FP5 and FP7 in the pre-proposal numbering system) are explained in the relevant sections hereinafter.

FP1 (SP1 in the pre-proposal), our supporting platform, is not considered a Flagship anymore because of the instructions given following the Rome meetings in 2015. However we still consider this crosscutting work of the utmost importance (like the ISPC "*The opportunities to leverage additional funds may be limited for this key component program, and in those respects, the budget for this FP may be too small and it also probably merits priority for W1/W2 funds going to FTA.*"). We have therefore proposed a higher percentage (39%) of w1-2 allocation compared to other FPs and have also managed to secure more than USD 3.5 million in bilateral funds.

The case of FP4 "Management and restoration of forests" has been examined by our Independent Steering Committee and a recommendation made to and agreed by the CIFOR Board of Trustees to discontinue the pursuit of this FP for the full proposal. We immediately consulted with WLE for the restoration part but unfortunately the WLE management was not ready to accept the shifting of our restoration work into WLE for budgetary reasons. As we considered Forest Landscape Restoration (FLR) an important and politically supported issue we decided to recalibrate and redistribute the FLR work as follows: 1) production of improved germplasm for FLR into our FP1 Tree Genetic Resources; 2) FLR methods and governance related issues into our (new) FP4 Landscapes. The other part of FP4 "Management and restoration of forests" about sustainable forest management and the production of wood and timber has been incorporated in our (new) FP3 Sustainable Value Chains. FLR also continues to be addressed in the climate change policy context of FP5. Thanks to this new redistribution the salient part of the FLR agenda of the former FP4 has been preserved.

At Flagship (FP) level

*Note: Areas highlighted as requiring more work during ISPC pre-proposal review are given below in **bold italics**, each followed by a summary of our response to the issue. Numbering is following the one of the full proposal.*

FLAGSHIP 1 Tree Genetic Resources (FP2 in pre-proposal)

The Flagship was rated A. Some strong points were identified and some suggestions made for improvement. The main comments are reproduced below together with an explanation of how we have addressed them

There is no impact pathway diagram for the FP or CoAs and some impact claims are debatable. Elaboration would strengthen the narrative

We have developed an impact pathway diagram for the Flagship, using a common format adopted by other FTA Phase II Flagship proposals, and inserted it into the proposal as part of the theory of change (see also below on linkages). A separate wider schematic description of the Flagship was also developed but not integrated into the proposal itself.

Explicit statements of underlying hypotheses and assumptions are needed for the cluster research questions

For each of the three CoAs, we now explicitly list the underlying assumptions and hypotheses that relate to the given research questions.

Clarity is needed on how outputs and outcomes will achieve synergy or be integrated with other AFS-CRPs; the connections between FP1 and FP2 (livelihood systems) should be made stronger.

Linkages between FP1 and other Flagships within the FTA Phase II portfolio are indicated with regard to specific areas of collaborative research (see Table 3 in FP1). In addition, Table 3 in FP1 describes reciprocal linkages with other CRPs and platforms. We have also illustrated nested linkages beginning at the CoA level and extending to other CRPs and platforms in a schematic that we have not integrated into the proposal but is available below for reviewers. This diagram helps to explain interactions that support the Flagship's impact. To elaborate in more detail than is possible in the proposal on the interactions between FP1 and other FTA Phase II Flagships and Support Platform (Table 3 in FP1), below are examples of specific research:

FP2 (Livelihood Systems): Joint testing of genetic variation in different systems ensures Flagship 1 outputs are scaled up and out effectively and equitably, and that land use efficiency is optimized for sustainable intensification. Boundaries for the production of different tree products and services are determined, and the domains of different planting material delivery options are described for production systems.

FP3 (Value Chains): Joint testing of the efficacy of different approaches to integrate tree planting material into product value chains (from germplasm to product market; e.g. by using 'out-grower' schemes) ensures maximum efficiency in delivering farmers' inputs, including germplasm. Research includes different methods for the development of small-scale entrepreneurial tree planting material delivery systems.

FP4 (Landscapes): Joint testing of the effects of different/evolving landscape configurations on genetic diversity across scales indicates the effectiveness of particular environmental service rewards and appropriate options for TGR safeguarding; joint testing of different planting material delivery approaches across landscapes allows the development of appropriate models bounded by landscapes/transitions.

FP5 (Climate Change): Joint testing of climate analogue models combined with common garden trials indicates the planting domain shifts required to cope with future climate changes. This indicates the planting suitability domains for tree species and species complexes, and the germplasm delivery systems and delivery policies to be put in place to ensure 'climate smart' agroforestry systems. This is based on appropriate co-location with climate analogues, and with novel climates at particular sites.

SP (Impact and Inclusion): Joint testing of the utility of indicators for monitoring the effectiveness of safeguarding, domestication and delivery clusters. A major barrier to Flagship 1's theory of change is the undervaluation of TGR by potential implementers. Significant efforts in quantification and demonstration of value are therefore required to support mainstreaming, and linkages with SP are essential in this regard.

Discussion on the 'enabling environment' could be strengthened: for instance, documenting what is known about failures in markets and policies (which could be an IPG relevant to other seed systems)

We have expanded the problem statement of the Flagship in the 'rationale and scope' section of the proposal. In the same section, we have explicitly described five developments that provide an enabling environment for the Flagship.

Given the emphasis on genetic material, there is a surprising lack of discussion on IP and open access/data sharing policy

We now give attention to IP and ABS issues in all CoA, with regard to possible constraints of such arrangements on impact, and in the development of arrangements that are supportive of smallholders and rural communities. We have added an extra research question to CoA 1.2 (domestication) on the appropriate measures to support wider participation of smallholders and local communities in developing new and unique 'cultivars' of a wide range of tree species, of which the protection of intellectual property is one aspect. Reference to how these issues will be addressed along with the Genebank platform is given in Table 3 in FP1. The section of the proposal on 'intellectual assets and open access management' provides further information. Work on tree commodity crops such as cacao and coconut provide models for newly domesticated trees and lesser-used species, indicating advantages and disadvantages of particular ABS arrangements.

Process for working up the pre-proposal and other additions

Working up the pre-proposal into the full proposal involved a meeting of a selection of Flagship members between 18 and 22 January 2016 at ICRAF HQ in Nairobi.

In the full proposal there are nine rather than seven research questions as in the pre-proposal, three under each CoA. One extra question has been added each to CoA 1.1 (safeguarding) and CoA 1.2 (domestication). Under CoA 1.1, the extra question regards stakeholder engagement, an issue that participants determined required specific attention. Under CoA 1.2, the extra question concerns smallholder and local community participation in domestication (this addition already discussed above).

With the removal from the full FTA Phase II proposal of the pre-proposal Flagship on restoration, some important aspects of work on restoration that are related to TGR are now incorporated in Flagship 1. This is most clearly evident in CoA 1.3 covering the development of appropriate tree planting material delivery pathways for restoration projects.

FLAGSHIP 2 Livelihood Systems (was FP3 in pre-proposal)

The Flagship was rated A. Some strong points were identified and some suggestions made for improvement. The main comments are reproduced below together with an explanation of how we have addressed them.

The strategic relevance to the CRP and CGIAR in addressing the farm-forest interface, through research on forest-based and high-value tree crop production systems to improve smallholder economic outcomes, is clear.

We note this and have sought to retain this clarity.

The "Research in Development" (RiD) concept presented here (in general terms) is clear conceptually but the statement does not, by itself, constitute a ToC

We note this and have retained the articulation of the concept but moved it from the ToC section to the rationale. We have now articulated the ToC separately see below.

It seems appropriate to expect well-developed, clear, compelling RinD hypotheses and assumptions in a coherent and credible ToC for this FP and its CoAs.

We have completely revised the ToC section (2.3), replacing the RinD diagram with a more conventional ToC formulation following an agreed format for FTA as a whole (Figure 2 in FP2) as well as adding an impact pathway diagram (Figure 3 in FP2) and accompanying table that anatomizes risks and assumptions. The narrative sets out

clearly why and how research can effect change and what is required to get from the research to desired impact. We have added hypotheses for each CoA in Section 2.6.

Upstream partnerships appear strategically chosen as are local partners, and strong private sector partnerships continue. However, given the ambitious targets (100 million smallholders) and reliance on development partners, FTA should give considerable thought to how it will handle partners failing to engage or deliver.

We have added a six-point risk management strategy for partner engagement and delivery in Section 2.3 and tabulated risks with respect to the impact pathways shown in Figure 3 in FP2.

For CoAs 2.2 and 2.3, many of the key questions have been pursued for some time. While these questions have practical significance, FTA could better clarify the IPGs that will be produced by replicating these studies beyond what past studies (over the decades) have already learned.

By adding CoA hypotheses we clarify the novelty in approach now being taken in these two CoAs that leads to innovation not previously achieved. Much of this is achieved by addressing the research questions through an 'options by context' lens. We have shown traction in respect of making impact in both CoAs through research in Phase 1. For example, research on sustainability of smallholder timber in the Peruvian Amazon (CoA 2.2) leading to legislative reform legalizing the sale of timber from managed fallows, raising smallholder income. In CoA2.3, pioneering research on farmer preferences for companion trees in cocoa led to a new national strategy for cocoa agroforestry in Cote d'Ivoire that previously focused on full sun systems. Recent predictions that climate change will impact cocoa in West Africa through higher temperatures, that management of shade can buffer (cited in the proposal), gives new impetus to these research lines.

The connections between FP1 and FP2 should be made stronger. For example, how does FP2 research shape FP1 priorities?

We have articulated the connections with FP1 in the first paragraph of Section 2.5, and included reference to this in Figure 3 in FP2 (the impact pathway diagram in Section 2.3). We made specific reference to collaboration in CoA 2.2 (timber and fruit) in Section 2.6 as well as on climate proofing (Section 2.8).

Lessons learned and how these have shaped plans for Phase II, evidence of greater focus is clear. Enabling environment is considered in CoAs 3.1, 3.2, 3.3 but could be stated in detail, and discussion of gender and capacity development could be made less generic.

We have included examples and references to specifics of research on enabling environments (Section 2.5) including reference to relevant details in published phase 1 research. We make specific reference to analysis of gender roles in NRM and efficacy of NRM in relation to gender and connect this to agency, including citation of published phase 1 research that frames this (Section 2.9). We refer explicitly to increasing the control that women have over production and income from trees and forests in Section 2.2 including resource allocation to gender outcomes. We refer to gender specifically in research questions (CoA 2.1) and lessons learned (Section 2.5) as well as in framing the ToC and impact pathways (Section 2.3). We have tabulated capacity development needs in Section 2.3 and explain how we address them in Section 2.10.

All 5 outcomes associated with this FP receive an equal amount of funding, and since they are at varying levels (e.g. closing yield gaps through improved pasture management and husbandry; increased food and nutrition security through closing yield gaps), FTA could do well to justify these allocations.

We have consolidated the project portfolio amongst the different Centers and managing partners across the Flagship (ICRAF, CIFOR, CATIE, INBAR, TROPENBOS) and more accurately allocated budget in relation to the five outcomes that now range in size from 15-25% of total budget. Allocations are explained in Section 2.2.

FLAGSHIP 3 Value Chains (was FP5 in pre-proposal)

The Flagship was rated B. Some strong points were identified and some suggestions made for improvement. The main comments are reproduced below together with an explanation of how we have addressed them.

The relative importance/magnitudes of links to the IDOs/SLOs is less clear. How this (the suggested outcomes) maps into significant prospects for impacts on IDOs/SLOs is unclear raising questions on CGIAR comparative advantage.

We have provided very specific and quantifiable outcomes that will be produced by Flagship 3 (see Section 2.2 on objectives and targets), and made a detailed explanation about the way in which these different outcomes contribute to the achievement of five IDOs and seven sub-IDOs. We consider that conducting work on sustainable value chains, business models and responsible finance can contribute in significant ways to achieve these sub-IDOs, given the type of outputs to be produced under three CoAs.

There are strong possibilities for linkage with FP2 here (this may enable FP2 sub-IDO/IDO delivery) as well other FPs.

While we consider that there are interesting opportunities for linking with current FP2 on livelihood and production systems, we have specified the different ways in which our work links with other Flagships in FTA and other CRPs (see Section 2.6, final paragraph, and also Figure 3). We made explicit links with all other FTA Flagships, specifically with: (1) FP1 (Tree Genetic Resources) by exploring opportunities from improved tree-planting material in some value chains; (2) FP2 (Livelihood Systems), through assessing the performance of smallholder production systems that embrace high-value trees (i.e. cocoa, coconut, coffee, oil palm) under different business models; (3) FP4 by exploring the impacts of global value chains in environmental services at the landscape level, and initiatives to deal with them such as certification, and; (4) FP5 by providing analysis of the effectiveness of governance arrangements in supporting the transition to more sustainable supply chains, and thus on reduced GHG emissions.

The ToC resembles a log frame of plausible impact pathways combined with aspirational statements and rationalizing assumptions. Overall, one can infer that information is the key constraint and many 'win-win' options for business are waiting to be discovered and replicated. Inclusion of political economy analysis (consideration of power and political dynamics) is needed to strengthen this argument.

We appreciate this comment since the pre-proposal did not articulate in a strong way a Theory of Change. Thus, the current version provides a much more elaborated Theory of Change, which acknowledges several economic, social, political and institutional barriers for achieving impacts, yet it also recognizes that there are opportunities that can be leveraged to trigger some transformative change. In this light, FP3 builds on identified processes on which there is opportunity to make a difference, and that can have multiplier effects on the political and economic systems, at different levels. The first is taking advantage of the possibility to build bridges between public policy, voluntary standard systems and corporate self-regulations. The second is taking advantage of the emergence of business and private sector-related platforms that are demanding for research to enhance their decision-making in order to improve their environmental performance. The third, is supporting ongoing processes in the finance sector to contribute to ESG integration as well as emerging financing schemes to support smallholders and SMEs. We will link our work in finance to an initiative that is being developed at CIFOR through The Landscape Fund as a way to scale up responsible finance and investments.

FTA should also examine if it has sufficient finance and business modelling expertise to produce IPGs in CoAs 5.2 and 5.3 (is this vis-à-vis collaboration with PIM?).

We are engaging partners with strong expertise in quantitative analysis and modeling, and finance. As mentioned above, CIFOR is linking the work to be conducted under The Landscape Fund to Flagship 3. This will bring different key partners to our work on finance such as the European Investment Bank, Innpact and UNEP-FI. This latter area of research will be strengthened by CIFOR hiring one finance expert. In addition, we are

partnering with PROFUNDO, a consultancy group with experience in finance, and with SNV, which is developing pilot projects for innovative financing of smallholders. In addition, economic analysis will be conducted with other partners of FP3 with strong economic modeling expertise such as IIASA, SEI and the Copernicus Institute.

In CoA 5.2, how does one know that there is a future for "resource poor" SMEs in these value chains, which, if they involve processing, often are capital intensive and characterized by economies of scale? At the very least, some sort of financial and economic feasibility studies would seem to be a necessary (and prudent) step before other research activities commence in full flow.

There is more explicit attention in the current version of the FP3 proposal on the need to conduct financial and economic feasibility studies across different types of business models in order to identify their financial and economic feasibility, as well as their opportunities to deliver improved social and environmental outcomes. Specific questions and outputs about this analysis have been built as part of CoA 3.2 on business models.

In the case of CoA 5.3, what evidence is there for the claim of "proliferation of sustainable and inclusive business models" that seems to underpin the idea that these will be picked up by companies interested in socially and environmentally "responsible investment"? Perhaps there have been many successful pilots, but have any of these grown to significant scale relative to the total turnover in these commodity markets?

In the current version, we don't take for granted that we will be able to find business models able to achieve sustainability and social inclusion outcomes, but also consider that other contextual factors such as enabling policy and the governance of value chains have to be improved to make that possible. We also recognize, based on lessons from the first phase, that there are some risks associated with supporting greater integration of smallholders and SMEs in global value chains (see Section 2.5 Lessons learned and unintended consequences). As a consequence, we suggest that targeted interventions are required to better manage the social and environmental trade-offs that arise from the adoption of alternative business models. More effective interventions are those combining actions at the company level with others to build social business capabilities.

In relation to partnerships, while there are strong linkages with PIM and CCAFS, there are questions on what other key partners will contribute.

We have provided a very detailed explanation of the partners that will be part of Flagship 3 implementation. Each of the clusters of activity will engage specific partners not only for conducting research, but also knowledge sharing and policy engagement, and those for supporting capacity development actions (See Section 2.7 on Partnerships). In addition, we have also specified the links to be established with CCAFS FP3 (low emissions development), specifically under CoA 3.3 for conducting research on options to enhance supply chain governance to avoid deforestation, with emphasis on beef production in the Amazon and palm oil in Indonesia. Also, we have specified the links with PIM FP3 (inclusive and efficient value chains), specially under CoA 3.3, with the primary focus on assessing business models for participation of smallholders in forest and tree crop products, and financial schemes, with potential for scaling up.

The attention to the enabling environment is surprisingly weak, considering the focus of the FP.

We appreciate this comment. We now have specified in different sections (e.g. in the rationale, challenges, background, and theory of change, as well as in the narrative of the different CoAs) the different factors that shape the enabling environment and that may influence the achievement of outcomes. We have made explicit reference to policy frameworks and regulations, business processes linked to the formulation and implementation of voluntary standard systems, private sector commitments to zero deforestation, social demands for greater smallholder integration in the value chain, and civil society organization efforts to improve social and environmental outcomes from investments in forests, agricultural and tree-crop sectors. These different processes are informing our Theory of Change, so to identify what are the opportunities in the policy

and institutional environmental that could contribute to making progress toward the achievement of FP3 ambitioned outcomes.

FLAGSHIP 4 Landscapes (was FP6 in the pre-proposal)

The Flagship was rated A. Some strong points were identified and some suggestions made for improvement. The main comments are reproduced below together with an explanation of how we have addressed them (while renumbering the comments to FP's in full proposal.

As there is no separate "**restoration**" FP in the full FTA proposal and current interest in and political commitment to restoration is substantial, we have integrated most of the research questions and associated bilateral projects in the Landscapes FP. A network of "learning landscapes" (CoA4) will connect work on the ground, including INBAR as a new partner for this FP, while integration with this FP can lead to stronger focus on the drivers of degradation that need to be addressed in effective restoration, and clarity on the ecosystem service functions that motivate the efforts.

Through this Flagship, the CRP aims to understand the patterns of change, the consequences for ecosystem services supporting production systems, and the diversity and governance of landscapes. It is a critical part of the core of the FTA pre-proposal. The description of general lessons learned demonstrates that, despite the significant legacy of past research, FP4 has the potential to break important new ground in Phase II: despite the advocacy of landscape approaches by FTA partners and others, there is a significant research and evidence gap. CoA 1 on current patterns and intensities of change in tree cover seems highly pertinent (and given its observatory role, attention on open access and data management should be addressed in the full proposal)."

FTA is fully committed to open access data management (with appropriate protection of individuals in socio-economic data). As soon as the data of the first round of SL characterization are cleaned and cured, they will be made available to the wider community.

But, while the lessons learned are suggestive of hypotheses, FP4 would benefit from a clearer, complete elaboration of a ToC: even if assumptions associated with the ToC can be inferred from the diagram, it is not clearly stated and would be useful in framing the RiD priorities. RiD seems highly relevant to all CoAs in this Flagship, but is only mentioned in CoA 3. FTA also needs to explicitly identify the (potential) unintended consequences of its work.

We have elaborated on the ToC and now provide hypotheses and research questions for each CoA. We have added a paragraph on "unintended consequences" and what can be done to manage the associated risks.

FP4 does have a strong track record; and, a strong research team and partnerships (A4NH, PIM, WLE, and FutureEarth). There is a much clearer rationale for sentinel sites (compared to Phase I), including link to IDOs/SLOs. FP4 has a clear comparative advantage in terms of research. The FP adequately addresses gender issues, but could improve consideration of capacity development and enabling environment. FP4 receives 15% of the overall budget, and while potential to leverage bilateral funding sources is indicated, given FP4's design, centrality to FTA, and the integrated delivery with WLE, A4NH and PIM, it appears to merit priority for W1/W2.

We have engaged in further dialogue with PIM, WLE and A4NH to make sure that the interfaces are clear – generally with FTA providing contextualized work on the ground and the integrative CRP's conceptualizations and methods that are relevant for a wider set of resource management issues.

FLAGSHIP 5 Climate Change (was FP7 in the pre-proposal)

The Flagship was rated B. The ISPC comments helped us identify some points that we could improve, and raised some others that helped us frame our objectives in clearer ways. The ISPCs comments on the Flagship are reproduced below together with explanations of how we have addressed them.

Considering the centrality of FT&A systems to climate change issues, FP7 will research policies and technologies for mitigation, adaptation and sustainable bioenergy provision, and their implementation within climate-smart landscapes. This Flagship is strategically relevant and involves a close and complementary collaboration with CCAFS.

We appreciate the recognition of the importance of this work in the context of the FTA, and the CRPs as a whole. We have further interacted with CCAFS in the meantime and updated/revised the description of the complementarity between the two programs (see Section 8 in the FP description, and Annex 3.7 in the full FTA proposal).

While the integration of research activities on mitigation with activities on adaptation, and the addition of biofuel-related research makes sense conceptually, it broadens the scope substantially – is the potential for IPG delivery diluted?

We take note of this concern, and we are aware of the broadened scope. But, the integration of these topics makes even more sense now in light of the Paris Agreement, which calls for Parties to integrate mitigation with adaptation, and both with development objectives and equity considerations. And we are confident that our multidisciplinary approach, developed and matured over Phase 1, is preparing the FP5 team well for this task. Climate change policy always needed to be multi-sectoral (drivers of deforestation are outside of forestry and need to be addressed in the sectors where they occur), and our emerging particular focus on multi-level governance and on multi-stakeholder partnerships is addressing these points already. We will also continue to analyze the work of the Parties (i.e. countries, particularly their elaboration on and implementation of NDCs), the climate convention, the Green Climate Fund, and other international players to provide knowledge that is useful to them, with our outputs tailored to their needs. We expect to produce IPGs valuable at all these levels due to our comparative approach.

Specifically, in CoA 5.1, apart from prospects for climate change mitigation, provision of IPGs through advancing knowledge isn't entirely clear.

We appreciate this remark and have revised the list of key research activities (research questions) in all CoAs, and also in CoA1. We believe that together with the list of deliverables and means of their verification (not in FP5 but part of the overall FTA proposal), they provide a clear indication of what can be expected from CoA1 in terms of IPGs. As the Paris Agreement is just out, it remains to be seen how the development landscape evolves, and we are trying to retain a certain flexibility by staying more generic in our descriptions (e.g. flagging 'mitigation' outcomes instead of specifically homing in on, say, REDD+ alone). We hope this approach provides enough firmness in the overall objectives while allowing for enough flexibility to address policy objective changes when they occur so that FP5 outputs will remain relevant (we also make remarks in FP5 Section 3 on the high dynamics of climate change politics in developing countries which require an additional degree of flexibility). Nevertheless, we believe the outcomes (and hence, IPGs) are clearly enough described at the level the templates permit that the FP can be held accountable against them.

In CoA 5.2, the hypotheses being tested are not apparent, and FTA will need to make a better case for why "case studies" are the best way to understand adaptation. In particular, how will these lead to IPGs.

We are thankful for this remark. We have reformulated the hypotheses for all CoAs in clearer ways in the beginning of Section 6. Deriving general lessons from the comparative analysis of commonalities and discrepancies between individual cases has worked well in our mitigation work (e.g. Global Comparative Study on REDD+) in Phase 1, and represents a compelling way to establish a comparative work program for adaptation. Adaptation is always very location-specific and hence case studies will be essential for understanding the risks, vulnerabilities and test interventions under varying local conditions. Higher-level summaries will then allow drawing common conclusions as IPGs.

In CoA 5.3, that aims to analyze "the climate benefits of growing tree-based bioenergy, and of national and international policies governing tree-/biomass-based energy policies", it is not apparent why these activities are placed in FP7 and not FP3 or even FP2.

We explain in the FP5 text that bioenergy will have to play an important role if the Paris goals (2.0/1.5°C goal) are to be reached. It is important to provide a coherent framework for the research on policies of tree-based bioenergy (i.e., woodfuel and charcoal) in the context of the analysis of country-level climate change policies (e.g. NDCs), and hence this topic is best placed with its center of gravity in the climate change Flagship, while we intend to reach out across FP boundaries to FP2 and 3 where needed.

For a Flagship that includes work on mitigation and low emissions development, the enabling environment is not sufficiently considered. For instance, it is not obvious that there is (currently) sufficient incentive for smallholders to engage in mitigation activities: what are the prospects for farmers to significantly benefit from these activities? If an international agreement does not emerge in the forthcoming UNFCCC Conference of Parties (CoP), do the various partial approaches constitute sufficient financial resources and good prospects for this line of research to produce significant development impacts?

We beg to differ and think this assessment is not entirely correct, as we build our entire Theory of Change on the enabling policy environment, with our political economy work at its center (cf. Figure 1 in FP5 for a generic rendition of the approach, and CoA1 for details on mitigation policy). We see enabling conditions as crucial to move climate change policy making forward.

The question raised (as an example) about incentives for smallholders to engage in mitigation activities are at the center of our studies of benefit sharing mechanisms in the Global Comparative Study on REDD+. The Flagship templates unfortunately don't allow to go down to discuss central questions at this level of granularity, but this is clearly contained in our work plans.

The question concerning the international climate agreement is now answered by the political reality of the Paris Agreement, to which we will adapt our work, but as this is just emerging, it is too early to lock us into too specific detail at this stage. We believe, however, that the Paris Agreement and the SDGs are opening the floor for a whole new world of potentially very impactful climate change research in support of what countries need to do in order to implement their low-emission development pathways, report and implement them as NDCs, and of what the international community will need in order to adjust to the post-Paris reality of implementation. We hope to have provided a clearer description of this new work in the proposal, as compared to the pre-proposal, e.g. by emphasizing INDC/NDC analysis and how it supports country level work while informing the global arena.

Finally, gender and youth are dealt with at a high-level, and the outcomes do seem ambitious.

We have improved out descriptions of work on gender and youth, particularly giving specific examples of how this informs our work on mitigation and adaptation, e.g. the gender-disaggregated analysis of risks and livelihoods, and working with youth on innovative solutions to climate change problems. It is part of our current work already, and hence we do see the outcomes as realistic.

Annex 3.15 Support Platform (SP) on delivering impact and inclusion

The purpose of this annex is to introduce each element of the Support Platform, which cuts across the FPs. Those elements are MELIA, Capacity Development, Data for Impact, Gender and Youth and Communications. Specifics and additional information about each element are available in various sections of the proposal, as referenced below.

Given its supporting function, the SP will receive USD 2,477,000 of W1/W2 in 2017. In addition, for 2017 the SP as a whole will be able to leverage USD 3,880,000 of bilateral funds. Finally, since the online submission system does not provide a space to incorporate the SP budget into the total CRP budget, we have distributed the above amounts equally across the FP budgets, in the Other Supplies and Services Classification.

Introduction and justification

Globally, forests and tree resources provide livelihoods for approximately 1.6 billion people and play an indispensable role in the climate system. Therefore, the potential for FTA to contribute to equitable poverty reduction, health improvement and sustainable natural resource management is immense.

This platform focuses on scaling the impacts of FTA. To do so, the platform has a research function and, equally importantly, a function to support the other Flagships to ensure that: (i) FTA research outputs are gender-sensitive, credible, relevant and legitimate; (ii) FTA engages in continuous learning and self-reflection to improve research design and engagement strategy, and to make a more substantial contribution to the SLOs; (iii) FTA implements the necessary activities to achieve impact at scale; (iv) knowledge generated by the project is easily accessible to interested parties; and (v) research findings are packaged and communicated in ways that optimize their reach, promote outcomes, and support engagement with target audiences and across FTA. In all its activities, SP will collaborate closely with the other FTA Flagships, including identifying research questions and geographic coverage.

Past achievements and lessons learned

During FTA I, the various Components (now Flagships) of this platform developed tools, tested methods and facilitated the other Flagships. The Gender Integration Team (CoA SP.4 in this new platform) identified and mapped out various mechanisms through which gender research outputs can lead to enhanced access of women and other disadvantaged groups at all levels. Complementing the early formative gender analytical studies that set critical baselines for substantive research across relevant Flagship projects were other activities that aimed to strengthen in-house capacity for gender analysis, collection of sex-disaggregated data and development of cross-thematic coherence in gender research. In addition, at least 180 scientists and partners have been trained in gender concepts and research methods; more than 20 toolkits and guidelines for gender research methods and gender integration have been developed. A gender integration monitoring tool – the Gender Equality in Research Scale (GEIRS) – was also developed and currently is being piloted across the CRP portfolio.

The Monitoring, Evaluation, Learning, and Impact Assessment (MELIA) team has started work, and continues to develop and test assessment methods that are applicable to natural resource management research. In 2013, the team implemented an evaluation of the contributions of two decades of sustainable forest management research in the Congo Basin. The evaluation uses the Contribution Analysis method, the first time the method was implemented in CGIAR. In 2014, an assessment of the contribution of the first six years of the climate mitigation research program was conducted, using a Performance Story Reporting method. In addition, the team has implemented quasi-experimental assessment methods in relevant contexts, such as on the impact of sustainable forest management on timber harvests in Cameroon, the impact of fruit trees in Central Asia and on an agriculture and food security in Malawi.

In addition to the above achievements, the most significant impact the MELIA team had during FTA I was changing the paradigm of scientific research. In less than four years, the team cultivated a more outcome- and impact-orientated focus among scientists. Currently, all research projects must identify the end-of-program outcomes and impacts, impact pathways and strategies to achieve them. Finally, the MELIA team began developing a project database system in August 2014. The database allows FTA management to view the outputs, outcomes, geographical coverage and other information from the project level up to the portfolio – and ultimately CRP – level in real time.

The main lesson learned from FTA I is that credible, salient and legitimate research on capacity development, gender and social inclusion, evaluation and impact assessments forms a necessary condition for FTA to achieve better results. Therefore in FTA II significant research capacity will be added to activities that were traditionally playing a supporting role. The research results will feed directly into other FTA Flagships and become a significant contributor to FTA's ability to achieve impact at scale. In addition, the research results from this platform will contribute to international public goods, and achieve outcomes and impacts in their own right.

Clusters of activities

CoA SP.1 Foresight, planning, monitoring and assessment (MELIA)

Cluster lead: Brian Belcher (CIFOR)

Budget 2017: USD 500,000 (W1/W2); USD 1,042,000 (Bilateral)

This CoA contributes to planning, monitoring and evaluation of outcomes and impacts of the whole CRP. To do so, the CoA will conduct three research activities: (i) foresight analysis, (ii) impact assessment, and (iii) policy analysis. The CoA will collaborate closely with all other parts of FTA to identify research topics and in the implementation of its activities.

Foresight analysis will be undertaken to: (i) examine the emerging trends in forests, trees and agroforestry, especially to predict their potential impact on the SLOs; and (ii) estimate the potential impact of FTA outputs on the IDOs and SLOs. The results of the foresight analysis will also be used to identify important research areas for FTA to address. The analysis will combine both quantitative methods, such as general or partial equilibrium models, and qualitative methods, such as participatory future scenario building. Trade-offs will be built into the analysis, allowing a simulation of the winners and losers in a particular situation, policy innovation or practice adoption.

In addition to foresight, the CoA will engage in *ex post* outcome and impact assessments to assess the achievements to date of FTA outputs, either individually or grouped by theme, geographical region or time period. These assessments will: contribute to internal learning; improve project design and implementation; support the development, testing and evidencing of innovations, as part of influencing policy and practice and scaling up and out what works; and provide evidence of FTA contributions to outcomes and impacts (IDOs and SLOs) demanded by donors and partners. The theory of change and impact pathway will be the main point of reference for *ex post* assessments.

Finally, the CoA will engage in research on policy change processes, giving special attention to understanding how research contributes to decision making and policies in both public and private sectors, in different contexts and faced with different constraints. The research results will contribute to increasing the effectiveness of FTA outputs to achieve impact at scale through better planning, more relevant research topics, and targeted engagement.

The CoA also continues to provide an important support function, encouraging an 'impact culture' within FTA in which research, engagement and capacity development activities are explicitly defined, designed and implemented to contribute to transformative change. Currently, all projects are required to follow a set of

planning guidelines that will ensure that the above is achieved. The CoA will also organize regular training events and facilitate project planning workshops. The FTA project database will also continue to be improved, adding more features that will support active portfolio management.

More detailed information is available in Annex 3.6.

CoA SP.2 Capacity development and partnerships for scaling

Cluster lead: Mehmood Ul Hassan (ICRAF)

Budget 2017: USD 550,000 (W1/W2); USD 1,530,000 (Bilateral)

FTA's theory of change considers capacity development and high-impact strategic partnerships with development actors and global initiatives as instrumental to moving its research results along impact pathways.

While most of the capacity development and partnerships will take place within various Flagships, in order to foster learning for impact across FTA the Capacity Development and Partnerships for scaling CoA will focus on two key dimensions of moving research results along impact pathways and learning from those actions:

- The Capacity Development Alignment sub-cluster will support the Flagships by: (i) aligning capacity development research and interventions to the CGIAR Capacity Development Framework elements; (ii) nurturing a vibrant FTA CapDev working group from among the research staff engaged in CapDev activities within various Flagships, which will share and learn from CapDev experiences across FTA portfolio as well as from cross-CRP experiences gathered through the CGIAR CapDev Platform; (iii) further operationalizing systems and tools to facilitate high-quality CapDev and monitor and assess CapDev interventions across the entire portfolio; (iv) assessing capacity needs at the CRP level to move research results along FTA's impact pathways; (v) designing strategic capacity development interventions for partnering CGIAR Centers and development partners; and (vi) where appropriate, commission FTA-specific *ex post* impact assessments of CapDev interventions in selected FTA mapped projects.
- The partnerships sub-cluster will help identify models and collaborative mechanisms for partnerships with high impact on sub-IDOs and other elements of the Strategy and Results Framework (SRF). The models include research partners for developing research outputs and outcomes, knowledge-sharing partners who will transmit FTA knowledge further, and development partners who will help translate these into development outcomes and impacts. Findings from this research will help to devise, operationalize and implement partnership guidelines for FTA-level strategic partnerships interested in the FT&A policy arena.

At the operational level, high-impact models will be identified through analysis of collaborative mechanisms employed by various Flagships and FTA partnering Centers – for example, the seedling delivery systems in Flagship 1 (Tree Genetic Resources), business models and partnerships in Flagship 3 (Value Chains), and the multi-stakeholder platforms in Flagship 4 (Landscapes). At the strategic level, this CoA will assist in structurally and systematically engaging partnerships at the CRP level for outcomes at various policy scales. It will also document the learning process, including the assessment of the effectiveness of various partnership models being deployed by FTA research and development (R&D) projects in order to gain insight into which kinds of partnerships work where, why and how. This function will also align FTA's research agenda to the needs and aspirations in priority countries for FTA through an annual partnership event held back-to-back with FTA's science meeting. During this event, innovative, high-impact partnership models and mechanisms will be presented and rewarded, and the needs and aspirations of partners will be revisited and communicated to Flagships for realignment. The function will also map influence of FTA's research efforts through partnerships by using social network analysis tools to take stock of FTA's journey towards achieving SLOs.

More detailed information is in Sections 1.0.8 and 1.0.10, and Annexes 3.2 and 3.3.

CoA SP.3 Data for impact

Cluster lead: Anja Gassner (ICRAF)

Budget 2017: USD 250,000 (W1/W2)

As highlighted in the SRF, insights from the study of large integrated datasets have been shown to contribute to increasing the resilience of food systems. FTA aims to contribute to this by delivering high-value datasets of global relevance that provide the evidence needed for poor people to use the benefits of forests, trees and agroforestry systems to increase their agricultural productivity. High-value datasets contribute to the SLOs not only by measuring progress, but also by driving it, by supporting a more consensual definition of the problems, reducing uncertainty, informing political positions, and ultimately strengthening the effectiveness of investments towards the Sustainable Development Goals.

In FTA I, together with partners we have generated a rich trove of multi-location, multidisciplinary, and long-term data and associated information, which we make accessible for sharing, interrogation or repurposing through our data-sharing platforms. The Landscape Portal, our online GIS platform, provides users with a platform for visualizing and sharing spatial data and maps, as well as map stories. Our Center-based open data repositories FTA, CIFOR and ICRAF, using the Dataverse platform, have published more than 300 datasets. CIFOR archives spatial data at the Forest Spatial Information Catalog (FSIC) portal. The Tropical managed Forests Observatory network, which has 23 partner institutions in 15 countries representing data from 490 permanent sample plots in the three major rainforest basins where forest dynamics have been monitored for several decades, informs forest management to sustain production and environmental services. In addition we launched tropiTree, an interactive open-access database that provides detailed information on more than 5000 genetic markers for 24 tree species important to smallholders, nine of African origin, five from Asia or Oceania, and nine from Latin America, as well as one of multicontinental distribution.

From the experience of the Sentinel Landscape network, we learned that while it is generally agreed that integrated datasets at a scale relevant to farmers' decision making are important to drive progress on sustainable development goals, donors are reluctant to provide long-term investments for data-intensive methods. We therefore treat the collation, integration and publishing of high-value datasets as one of the key outputs from FTA II. Examples of high-value datasets produced during FTA I are the baseline data of the Sentinel Landscapes, the Poverty Environment Network, and genomic data.

The 'Data for impact' CoA will ensure that all projects carried out under FTA will contribute to knowledge on how change comes about, by:

- embracing research methodologies that allow analysis of complexity and research at scale
- publishing datasets that are of high global value to FT&A
- articulating our understanding of change and acknowledging uncertainties about outcomes.

Through a community of practice, drawing on FTA research staff with a strong technical understanding of research methodologies and long-standing field experience from both participating Centers and key partners, this CoA will implement a research quality system to provide research method support along the entire project cycle, from design to implementation to evaluation. Strategic investments in online training materials and regional workshops will facilitate reciprocal learning on appropriate methodologies to ensure that FTA is able to:

- design projects that interrogate the assumptions underlying research in development
- use prospective and (quasi-)experimental approaches, whenever applicable, for increasing the internal validity of results
- understand and articulate the domain boundaries of our work

- design and test interventions that are tailored to the specific environmental, social and institutional contexts of the target community
- address relevant heterogeneity at all scales (e.g. from the farm and family to the global level) when planning and reporting research and when communicating the results derived from it
- be aware and implement, if appropriate, tried, tested, and validated measurement instruments and protocols
- use standard approaches across projects, sites and regions to allow for comparative analysis.

In line with the Consortium Open Access and Data Management Policy, this CoA will provide state-of-the-art data management tools and foster a spirit of data sharing.
Also see Section 1.0.13 and Annex 3.9.

CoA SP.4 Gender and Youth: Supporting inclusion and equity

Cluster lead: Margaret Kroma (ICRAF)

Budget 2017: USD 1,027,000 (W1/W2); USD 424,000 (Bilateral)

Coordinating gender research, mainstreaming, partnerships and outreach under one theme in the new phase of CRP research would facilitate a more systematic and effective monitoring and evaluation of the contributions of theme activities towards gender equality and women's empowerment. In the long run, the aim is to become a knowledge house for mobilizing policy and enhanced capacities for gender action in forests and agroforests.

In addition to supporting the integration of gender dimensions across Flagships (see Annex 3.4), the Gender Integration Team will build on the substantive experience and knowledge generated since the implementation of the FTA gender strategy in FTA I in order to substantially increase the focus on transformative gender research, which is fundamental to the achievement of equitable and sustainable development outcomes, including human well-being and environmental conservation.

The focus will be two-pronged: strategic research and gender mainstreaming. See Section 1.0.4 for further details.

In addition to gender, FTA Phase II will also start a research area on youth. Overall, the strategy develops two strands of research. One strand will generate evidence and propose options to address the structural and institutional factors that constrain youth participation in tree and forest product value chains and non-farm entrepreneurial activities. It will also look at limits to youth access to productive resources, including land, financial services and information. The other strand will focus on aspects related to the aspirations, interests, skills and knowledge of young men and women in tree-based livelihood activities. This includes addressing the most appropriate tools and approaches to motivate youth and develop their capacities to participate in decision-making processes in natural resources management, agribusiness models, forest product value-chains and business opportunities in delivery systems.

See Section 1.0.5 and Annex 3.5 for further details.

CoA SP.5 Knowledge management, communication and outreach for impact

Cluster lead: Imogen Badgery-Parker (CIFOR)

Budget 2017: USD 300,000 (W1/W2); USD 883,000 (Bilateral)

For knowledge to be translated into outcomes and eventual impacts, it must be easy to find and access, and it must be appropriately packaged, shared and disseminated according to the needs of target audiences.

Knowledge management, communications and outreach therefore play a critical intermediary and interpretive role in supplying and communicating results to change agents and other targeted groups.
The goal of this CoA, therefore, is to amplify the reach and hone the effectiveness of research outputs from all FTA Flagships by:

- ensuring that data and information are readily available and accessible to a wide audience
- sharing knowledge on FTA research and activities through appropriately selected and tailored formats and channels, including across Centers and Flagships
- interpreting, synthesizing and repackaging research to generate FTA-focused knowledge products and toolkits designed to support evidence-based engagement
- leveraging and strengthening existing networks within FTA and externally, for knowledge exchange, learning about audience's information needs, and to reach change agents and other target audiences
- building a global knowledge-sharing community across FTA researchers, partners, donors and beyond to promote dialogue and interaction
- building the capacity of researchers and partners in sharing knowledge
- regularly monitoring and evaluating outreach tools and channels for continuous improvement

Data and feedback on the performance of all communications tools will be gathered regularly, analyzed and applied to the communications plan to continuously hone targeting and the effectiveness of tools and channels. Data will include online and social media statistics, downloads, contact lists, anecdotal feedback, surveys and independent event evaluations, among others. This CoA will work with CoA SP.1 on these analyses.

All Centers in FTA have an established knowledge management and knowledge-sharing infrastructure and processes. This CoA will connect these systems and data, forming a strong network for knowledge management and exchange. Individual Centers will feed information about research, knowledge-management systems and stakeholder needs to the central point, the FTA Communications and Knowledge Management (CKM) Officer. Based on that information, the FTA CKM Officer will: (i) leverage FTA platforms to direct interested audiences to relevant libraries, repositories, databases and platforms; (ii) share knowledge through FTA-focused channels; (iii) generate and disseminate additional, tailored knowledge products that cut across Centers and Flagships; (iv) feed repackaged knowledge back to Centers' communications officers and researchers to share with their networks and support engagement; (v) facilitate or promote relevant initiatives for dialogue, engagement and communications capacity-building, including events, workshops and training.

This model serves to build a worldwide web of knowledge and engagement around FTA:

- Open-access knowledge generated under FTA and stored by Centers in virtual libraries, databases and repositories is managed and accessible through a single, central portal
- Cross-Center research findings in all Flagships are synthesized as new, tailored knowledge products, which all Centers can share and disseminate
- The CoA casts a wide net for audiences through the networks of all Centers, building a knowledge-sharing community to support dialogue and interaction
- Knowledge products generated by individual Centers and Flagships receive an additional channel to amplify their reach, potentially spreading to new audiences coming from other Centers
- The CoA creates and strengthens links between Flagships and Centers, so that all FTA scientists learn about each other's work; this can inform their own work, create opportunities for partnerships and synergies, and make all feel part of the bigger project and shared mission

The CoA will use information supplied by all Centers and Flagships to generate a variety of communications tools and materials, designed with consideration of target audience needs, key policy processes and contribution to sub-IDOs, IDOs and SLOs. This includes an FTA-dedicated website, blogs, video and audio, social media, e-newsletter, media and events. The CoA will also continue to develop the contact list for FTA, in collaboration with all Flagships, to identify and reach out to boundary partners, intermediaries and others; this list will be used to create a knowledge-sharing community of staff, partners, donors and stakeholders.

See Section 1.0.14 and Annex 3.11 for more information.

Partnerships

The platform partners with other CRPs in collaborative research, as well as sharing and learning from successes and failures. CoA SP.1 collaborates with PIM on foresight analyses and research on policy processes. There will be a CapDev sharing mechanism between FTA, WLE and DCL, providing opportunities for sharing and learning across these three CRPs. The Gender Integration Team coordinates with CCAFS Flagships 3 and 4 to strengthen efforts to influence policymaking on gender and mitigation/REDD+. Some collaborations around the youth questions are currently discussed with WLE.

Non-CGIAR research partners include Royal Roads University, IIASA, Virginia Tech, Overseas Development Institute, University of Sydney and Australian National University, as well as various government agencies. Knowledge-sharing and development partners include the World Bank, FAO, IUCN and PROFOR.

See Section 1.0.7 and Annex 3.7 for more information.

Potential to leverage co-funding

This platform receives funding from the Management Support Unit and the other Flagships to operate its support function. On the research function, FTA I CoA SP.1 attracted bilateral funding from the Bill & Melinda Gates Foundation, channeled through the CGIAR Standing Panel on Impact Assessment and IFPRI Global Futures and Strategic Foresight Program, to complement its W1/W2 budget. In addition, DFID is funding our work on knowledge uptake. Other donors that have expressed interest in providing bilateral funding include USAID and the European Commission. CoAs SP.2, SP.4, and SP.5 will also have ongoing bilateral projects in 2017. Based on this experience, we are confident that bilateral funders will support a substantial proportion of the SP's research function.

[iii] There were a number of different views expressed during working group deliberations on this topic. Whilst there was no fundamental opposition to separate platforms, there was a call for making a much stronger case as to why they should be separate.

[iv] Evaluation of the CRP FTA, volume I, p. 28, July 2014

[v] ISPC Commentary on the Forests, Trees and Agroforestry Phase-II – Pre-proposal (2017-2022), p. 7, 25 Sep 2015

Annex 3.16 Abbreviations

20X20	Initiative 20x20 to restore 20 million hectares of land in Latin America and the Caribbean by 2020
3E	effective, cost-efficient and equitable
A4NH	CGIAR Research Program on Agriculture for Nutrition and Health
ABS	access and benefit-sharing
ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
AFD	Agence Française de Développement
AfDB	African Development Bank
AFS-CRP	Agri-food System CGIAR Research Program
APAARI	Asia-Pacific Association of Agricultural Research Institutions
APFORGEN	Asia Pacific Forest Genetic Resources Program
APSIM	Agricultural Production Systems sIMulator
AWARD	African Women in Agricultural Research and Development
BAU	business as usual
BECA	Biosciences Eastern and Central Africa
BEI	Banking Environment Initiative
BoT	Board of Trustees
BRIC	Brazil, China, India and China
CAADP	Comprehensive Africa Agriculture Development Program
CacaoNet	Global Network for Cacao Genetic Resources
CATIE	Tropical Agriculture Research and Higher Education Center
CBD	Convention on Biological Diversity
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CCER	Center Commissioned External Review
CD	capacity development
CGF	Consumer Goods Forum
CGIAR	CGIAR is a global research partnership for a food-secure future
CIAT	International Center for Tropical Agriculture
CIDA	Canadian International Development Agency
CIFOR	Center for International Forestry Research
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement
CKM	FTA Communications and Knowledge Management
CO	CGIAR Consortium Office
CoA	cluster of activities
COMESA	Common Market for Eastern and Southern Africa
COMIFAC	Central African Forest Commission
CRP	CGIAR Research Program
CSA	climate-smart agriculture
CSIRO	Commonwealth Scientific and Industrial Research Organisation (Australia)
CSO	civil society organization
CTCN	Climate Technology Centre and Network
DCLAS	CGIAR Research Program on Dryland Cereals, Legumes and (Dryland) Systems

DDG	Deputy Director General
DFAT	Department of Foreign Affairs and Trade (Australia)
DFID	UK Department for International Development
DG	Director General
DGIS	Directorate-General for International Cooperation of the Ministry of Foreign Affairs of the Dutch Government
DRC	Democratic Republic of the Congo
EAC	East African Community
EbA	ecosystem-based adaptation
ECOWAS	Economic Community of West African States
EIB	European Investment Bank
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária
ERS	Emission Reduction Strategies
ES	ecosystem service
ESG	environmental and social governance
ESP	Ecosystem Services Partnership
ESPA	Ecosystems Services for Poverty Alleviation
EU	European Union
EU FLEGT	European Union Forest Law Enforcement, Governance and Trade
FAO	Food and Agriculture Organization of the United Nations
FAST	Finance Alliance for Sustainable Trade
FLR	forest landscape restoration
FLRM	Forest and Landscape Restoration Mechanism
FORDA	Forestry Research and Development Agency (Indonesia)
FP	Flagship Project
FPFN	Landscapes for People, Food and Nature
FSC	Forest Stewardship Council
FSIC	Forest Spatial Information Catalog
FT&A	forests, trees and agroforestry
FTA	CGIAR Research Program on Forest, Trees and Agroforestry
FTA I	CGIAR Research Program on Forest, Trees and Agroforestry Phase one
FTA II	CGIAR Research Program on Forest, Trees and Agroforestry Phase two
FTE	full-time equivalent
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GEIRS	Gender Equality in Research Scale
GHG	greenhouse gas
GIS	geographic information system
GIT	Gender Integration Team
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GOFC-GOLD	Global Observation of Forest and Land Cover Dynamics
GTPS	Grupo de Trabalho da Pecuária Sustentável
H2020	Horizon 2020
HT	CGIAR Research Program on Integrated Systems for the Humid Tropics
I-CRP	Integrative CGIAR Research Program
ICRAF	World Agroforestry Centre
ICT	information and communication technology

IDB	Inter-American Development Bank
IDH	Sustainable Trade Initiative
IDO	intermediate development outcome
IDRC	International Development Research Centre (Canada)
IEA	Independent Evaluation Arrangement
IF	Investment Forum
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFPRI	International Food Policy Research Institute
IIASA	International Institute for Applied Systems Analysis
INBAR	International Network for Bamboo and Rattan
INCAS	Indonesian National Carbon Accounting System
INDC	Intended Nationally Determined Contribution
INGENIC	International Group for Genetic Improvement of Cocoa
IPLC	indigenous people and local communities
IPOP	Indonesian Palm Oil Pledge
IRAD	Institute of Agricultural Research for Development (Cameroon)
ISC	Independent Steering Committee
ISPC	CGIAR Independent Science and Partnership Council
ISPO	Indonesian Sustainable Palm Oil Foundation
ITTO	International Tropical Timber Organization
IUCN	International Union for Conservation of Nature
JHI	The James Hutton Institute
JKUAT	Jomo Kenyatta University of Agriculture and Technology
JMA	Joint Mitigation and Adaptation
KARI	Kenya Agricultural Research Institute
KEFRI	Kenya Forestry Research Institute
L&F	CGIAR Research Program on Livestock and Fish
LAFORGEN	Latin American Forest Genetic Resources Network
LEDS	Low Emission Development Strategies
M&E	monitoring and evaluation
MAIZE	CGIAR Research Program on Maize
MEIA	monitoring, evaluation and impact assessment
MMRV	measurement, monitoring, reporting and verification
MoU	memorandum of understanding
MRV	measurement, reporting and verification
MT	Management Team
NAMA	Nationally Appropriate Mitigation Actions
NARES	national agricultural research and extension systems
NARS	national agricultural research systems
NGO	non-governmental organization
Norad	Norwegian Agency for Development Cooperation
NRM	natural resource management
NTFP	non-timber forest products
OECD	Organisation for Economic Co-operation and Development
PEN	Poverty and Environment Network
PES	payment for environmental services

PIM	CGIAR Research Program on Policies, Institutions and Markets
POWB	Program of Work and Budget
PRESA	Pro-poor Rewards for Environmental Services in Africa
PROFOR	Program on Forests
R&D	research and development
RBM	results-based management
REDD+	Reducing Emissions from Deforestation and Forest Degradation
RRI	Rights and Resources Initiative
RSPO	Roundtable on Sustainable Palm Oil
RTB	CGIAR Research Program on Roots, Tubers and Bananas
RUPES	Rewarding the Upland Poor of Asia for the Environmental Services they provide
SADC	Southern African Development Community
SAFORGEN	Sub-Saharan African Forest Genetic Resources
SAI	Sustainable Agriculture Initiative
SBSTA	Subsidiary Body for Scientific and Technological Advice
SDG	Sustainable Development Goals
SLO	CGIAR system level outcome
SME	small- and medium-sized enterprise
SOW-FGR	State of the World's Forest Genetic Resources
SP	Support Platform
SRF	Strategy and Results Framework
SSA	sub-Saharan Africa
sub-IDO	sub-intermediate development outcome
SWAMP	Sustainable Wetlands Adaptation and Mitigation Program
TFA	Tropical Forest Alliance
TGR	tree genetic resources
TmFO	Tropical managed Forest Observatory
TNC	The Nature Conservancy
ToC	theory of change
ToR	terms of reference
UC Davis	University of California, Davis
UKAID	UK Department for International Development
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
USAID	United States Agency for International Development
W1/W2	funds disbursed from Window 1 and Window 2 of the CGIAR Fund
WFP	World Food Program
WHEAT	CGIAR Research Program on Wheat
WLE	CGIAR Research Program on Water, Land and Ecosystems
WLSE	Water, Land and Ecosystems (incl. soils) Integrating CGIAR Research Program
WRI	World Resources Institute
WWF	World Wildlife Fund

Annex 3.17 Sources cited

Part 1. The CRP Narrative

1.0.1 Rationale and scope

1. [FAO] Food and Agriculture Organization. 2015. *The state of food insecurity in the world*. Rome: FAO. http://www.fao.org/3/a-i4646e/index.html
2. Ferreira FHG, Chen S, Dabalen AL, Dikhanov YM, da Hamadeh N, Jolliffe DM, Narayan A, Prydz EB, Revenga AL, Sangraula P, Serajuddin U and Yoshida N. 2015. *A global count of the extreme poor in 2012: data issues, methodology and initial results.* Policy Research working paper; no. WPS 7432. Washington, DC: World Bank Group.
3. Schramski et al. 2015. Human domination of the biosphere: Rapid discharge of the earth-space battery foretells the future of humankind. *PNAS* doi: 10.1073/pnas.1508353112.
4. Steffen et al. 2015. Planetary boundaries: Guiding human development on a changing planet. *Science* 347(6223).
5. Gibbs HK et al. 2010. Tropical forests were the primary sources of new agricultural land in the 1980s and 1990s. *PNAS* 107(38):16732–7.
6. Laurance WF et al. 2014. Agricultural expansion and its impacts on tropical nature. *Trends in Ecology and Evolution* 29(2):107–16.
7. Vira B et al. (eds). 2015. *Forests, Trees and Landscapes for Food Security and Nutrition. A Global Assessment Report.* IUFRO World Series Vol. 33. Vienna: International Union of Forest Research Organizations (IUFRO).
8. Isbell F et al. 2015. The biodiversity-dependent ecosystem service debt. *Ecology Letters* 18(2):119–34.
9. Seppala R et al. 2009. *Adaptation of forests and people to climate change. A global assessment report*. IUFRO World Series Vol. 22. Vienna: IUFRO.
10. Chao S. 2012. *Forest Peoples: Numbers Across the World*. Moreton-in-Marsh, UK: Forest Peoples Programme.
11. Zomer RJ et al. 2009. *Trees on farm: analysis of global extent and geographical patterns of agroforestry.* ICRAF Working Paper No 89. Nairobi: World Agroforestry Centre.
12. Chao 2012. Op. cit.
13. Costanza et al. 2014. Changes in the global value of ecosystem services. *Global Environmental Change* 26:152–8.
14. CGIAR Consortium Office. 2014. *CO Comments to CRPs regarding 2015–2016 CRP Extension Proposals. CRP Name: Forests, Trees & Agroforestry (FTA).* Montpellier, France: CGIAR Consortium Office.
15. [ISPC] Independent Science and Partnership Council. 2015. *ISPC Commentary on the Forests, Trees and Agroforestry Phase-II – Pre-proposal (2017-2022).* 25 September 2015. Rome: ISPC Seretariat.
16. [ISPC] Independent Science and Partnership Council. 2014. *ISPC Commentary on the extension proposal for CRP No. 6 Forests, Trees, and Agroforestry (FTA) for 2015–2016*. 28 June 2014. Rome: ISPC Secretariat.
17. Angelsen A, Jagger P, Babigumira R, Belcher B, Hogarth N, Bauch S, Borner J, Smith-Hall C and Wunder S. Environmental income and rural livelihoods: A global-comparative analysis. *World Development* 64(S1):S12–S28. http://www.sciencedirect.com/science/article/pii/S0305750X14000722
18. [FAO] Food and Agriculture Organization. 2015. Global forest resources assessment 2010. Rome: FAO.
19. [FAO] Food and Agriculture Organization. 2008. Are grasslands under threat? Brief analysis of FAO statistical data on pasture and fodder crops. Rome: FAO. http://www.fao.org/ag/agp/agpc/doc/grass_stats/grass-stats.htm

1.0.3 Impact pathway and theory of change

1. Batie SS. 2008. Wicked problems and applied economics. *American Journal of Agricultural Economics* 90(5):1176–91.
2. Coe R, Sinclair F and Barrios E. 2014. Scaling up agroforestry requires research 'in' rather than 'for'. *Current Opinion in Environmental Sustainability* 6:73–77.
3. Jones H and Hearn S. 2009. *Outcome Mapping: A realistic alternative for planning, monitoring and evaluation*.
4. Patton M. 2003. Utilization-focused evaluation. *In* Kellaghan T and Stufflebeam D, eds. *International Handbook of Educational Evaluation SE – 15*. Dordrecht, The Netherlands: Springer. 223–242.

1.0.4 Gender

1. Mai, YH, Mwangi E and Wan M. 2011. Gender analysis in forestry: Looking back and thinking ahead. *International Forestry Review* 13(2):205–19.
2. Agarwal B. 2010. *Gender and Green Governance: The Political Economy of Women's Presence Within and Beyond Community Forestry.* New Delhi: Oxford University Press; Coleman and Mwangi E. 2013. Women's participation in forest management: A cross-country analysis. *Global Environmental Change* 23(1):193–205.
3. Manfre, C. Rubin D, Allen A, Summerfield G, Colverson K and Akeredolu M. 2013. *Reducing the gender gap in agricultural extension and advisory services.* Discussion Paper No. 2. Modernizing Extension and Advisory Services Project, Washington, DC: USAID; Meinzen-Dick R, Quisimb A, Behrman J, Biermayr-Jenzano P, Wilde V, Noordeloos M, Ragasa C and Beintema N. 2011. *Engendering agricultural research, development, and extension.* IFPRI Rural Mongraph, Washington, DC: IFPRI.
4. Jost C. et al. 2016. Understanding gender dimensions of agriculture and climate change in smallholder farming communities. *Climate and Development* 8(2):133–44.

1.0.6 Program structure and flagship projects

1. CGIAR ‐ IEA. 2014. *Evaluation of CGIAR Research Program on Forests, Trees, and Agroforestry (FTA)* – Volume 1. Rome, Italy: Independent Evaluation Arrangement (IEA) of the CGIAR. http://iea.cgiar.org/
2. [ISPC] Independent Science and Partnership Council. 2015. *ISPC Commentary on the Forests, Trees and Agroforestry Phase-II – Pre-proposal (2017–2022).* 25 September 2015. Rome: ISPC Secretariat.

1.0.8 Partnerships and comparative advantage

1. [IEA] Independent Evaluation Arrangement. 2014. Evaluation of the CGIAR Research Program "Forests, Trees and Agroforestry" (FTA), Volume I – Evaluation Report, July 2014. Montpellier, France: CGIAR Consortium Office.
2. IEA. 2014. Op. Cit.

1.0.11 Program Management and Governance

1. See the full job description at *http://www.cifor.org/career/96/director-cgiar-research-program-on-forests-trees-and-agroforestry-fta-2/*.

Part 2. Flagship Project Narratives

2.1. Tree genetic resources to bridge production gaps and promote resilience

1. *The Global Action Plan for Agricultural Diversification*, http://gapad.org/
2. Special edition of *Forest Ecology and Management*, 333: Global forest genetic resources: taking stock, www.sciencedirect.com/science/journal/03781127/333/supp/C
3. FAO 2014. http://www.fao.org/forestry/fgr/64582/en/
4. FAO 2015. *Global Plan of Action for the conservation, sustainable use and development of forest genetic resources*, http://www.fao.org/3/a-i3849e.pdf
5. Whitham, Bailey, Schweitzer et al. 2006. A framework for community and ecosystem genetics: from genes to ecosystems. *Nature Reviews Genetics* 7: 510-523.
6. Litrico and Violle. 2015. Diversity in plant breeding: a new conceptual framework. *Trends in Plant Science* 20: 604-613.
7. Asaah, Tchoundjeu, Leakey et al. 2011. Trees, agroforestry and multifunctional agriculture in Cameroon. *International Journal of Agricultural Sustainability* 9: 110-119.
8. Jamnadass, McMullin, Iiyama et al. 2015. Understanding the roles of forests and tree-based systems in food provision. In: *Forests, Trees and Landscapes for Food Security and Nutrition.* IUFRO, pp. 25-49.
9. Khoury and Jarvis. 2014. *The changing composition of the global diet: implications for CGIAR research.* CIAT Policy Brief No. 18. CIAT, Cali.
10. *The Bonn Challenge*, www.bonnchallenge.org/
11. Bozzano, Jalonen, Thomas et al. 2014. *Genetic considerations in ecosystem restoration using native tree species.* Thematic Study to the SOW-FGR. FAO and Bioversity International, Rome.
12. Nambiar and Harwood. 2014. Productivity of acacia and eucalypt plantations in Southeast Asia. 1. Bio-physical determinants of production: opportunities and challenges. *International Forestry Review* 16: 225-248.
13. Stewart, Allison and Simons (eds.). 1996. *Gliricidia sepium: genetic resources for farmers*. Tropical Forestry Paper No. 33. OFI, Oxford.
14. Jamnadass, Dawson, Anegbeh et al. 2010. *Allanblackia*, a new tree crop in Africa for the global food industry: market development, smallholder cultivation and biodiversity management. *Forests, Trees and Livelihoods* 19: 251-268.
15. Fisher and Gordon. 2007. *Improved Australian tree species for Vietnam*. Impact Assessment Report No. 47. ACIAR, Canberra.
16. Pye-Smith, Kouamé and Toledano. 2016. *A brighter future for cocoa farmers: how Côte d'Ivoire's Vision for Change program is raising productivity and improving rural livelihoods***.** Trees for Change No. 13. ICRAF, Nairobi**.**
17. Roshetko, Purwanto, Moeliono et al. 2016. *Agroforestry and forestry in Sulawesi: linking knowledge with action*. Annual Progress Report Year 5. ICRAF and others. Bogor, Indonesia.
18. Hein and Gatzweiler. 2006. The economic value of coffee (*Coffea arabica*) genetic resources. *Ecological Economics* 60: 176-185.
19. African Orphan Crop Consortium (AOCC), www.worldagroforestry.org/aocc. This is applying genomic and other breeding methods to > 50 important food trees. Hosted by ICRAF, AOCC involves a wide range of public and private partners, e.g. Mars Inc., NEPAD, Thermo Fisher and UC Davis. It also supports African plant breeders through the African Plant Breeding Academy (http://pba.ucdavis.edu/PBA_in_Africa/). Reference genome sequencing and assembly is currently underway or completed for 30 species.
20. MAPFORGEN, www.mapforgen.org/
21. vegetationmap4africa, www.vegetationmap4africa.org/

22. Duminil, Daïnou, Kaviriri et al. 2016. Relationships between population density, fine-scale genetic structure, mating system and pollen dispersal in a timber tree from African rainforests. *Heredity* 116: 295-303.
23. Leakey. 2014. Agroforestry: participatory domestication of trees. In: *Encyclopedia of Agriculture and Food Systems.* Elsevier, Amsterdam, pp. 253-269.
24. Degrande, Tadjo, Takoutsing et al. 2013. Getting trees into farmers' fields: success of rural nurseries in distributing high quality planting material in Cameroon. *Small-Scale Forestry* 12: 403-420.
25. Lillesø, Graudal, Moestrup et al. 2011. Innovation in input supply systems in smallholder agroforestry: seed sources, supply chains and support systems. *Agroforestry Systems* 83: 347-359.
26. Dawson, Guariguata, Loo et al. 2013. What is the relevance of smallholders' agroforestry systems for conserving tropical tree species and genetic diversity in circa situm, in situ and ex situ settings? A review. *Biodiversity and Conservation* 22: 301-324.
27. e.g. https://www.youtube.com/watch?v=ZsmunU87Dgg
28. Jamnadass, Langford, Anjarwalla et al. 2014. Public–private partnerships in agroforestry. In: *Encyclopedia of Agriculture and Food Systems.* Elsevier, Amsterdam, pp. 544-564.
29. Aitken and Bemmels. 2016. Time to get moving: assisted gene flow of forest trees. *Evolutionary Applications* 9: 271-290.
30. As of July 2016. Oksanen, Blanchet, Friendly et al. [various updates] (co-authored by Flagship 1 scientist Roeland Kindt). vegan: community ecology package, https://cran.r-project.org/web/packages/vegan/vegan.pdf
31. Leakey. 2010. Agroforestry: a delivery mechanism for multi-functional agriculture. In: Hand. Agrofor. Nova Science Publishers, New York, pp. 461-471.
32. Earlier FTA research by Flagship 1-related scientists developed a detailed understanding of the role of SMEs in tree planting material delivery systems, see Lillesø et al. 2011 (referenced earlier); also: Lillesø, Harwood, Graudal et al. 2016. Why institutional environments for agroforestry seed systems matters. *Development Policy Review* (in press).

2.2 Enhancing how trees and forests contribute to smallholder livelihoods

1. Sileshi G, Akinnifesi FK, Ajayi OC and Place F. (2008). Meta-analysis of maize yield response to planted legume fallows and green manures in sub-Saharan Africa. *Plant and Soil* 307:1–19
2. O. C. Ajayi , F. Place , F. K. Akinnifesi and G. W. Sileshi (2011). Agricultural success from Africa: The case of fertilizer tree systems in southern Africa (Malawi, Tanzania, Mozambique, Zambia and Zimbabwe). *International Journal of Agricultural Sustainability* 9:129–136.
3. Franzel S., Carsan S, Lukuyu B and Wambugu C (2014). Fodder trees for improving livestock productivity and smallholder livelihoods in Africa. *Current Opinion in Environmental Sustainability*, 6: 98-103
4. Binam, J. N., Place, F., Kalinganire, A., Hamade, S., Boureima, M., Tougiani, A., Dakouo, J., Mounkoro, B., Diaminatou, S., Badji, M., Diop, M., Babou, A. B., & Haglund, E. (2015). Effects of farmer managed natural regeneration on livelihoods in semi-arid West Africa. *Environmental Economics and Policy Studies* 4, 543–575
5. Zomer, R. J. *et al*. (2016). Global Tree Cover and Biomass Carbon on Agricultural Land: The contribution of agroforestry to global and national carbon budgets. Nature - *Scientific Reports* **6**: 29987
6. Vaast P, Somarriba E (2014) Trade-offs between crop intensification and ecosystem services: the role of agroforestry in cocoa cultivation. *Agroforestry Systems* 88:947–956
7. Angelsen A, Jagger P, Babigumira R, Belcher B, Hogarth N, Bauch S, Borner J, Smith-Hall C and Wunder S. 2014. Environmental income and rural livelihoods: A global-comparative analysis. *World Development* 64(S):S12–S28

8. D.P. Garrity, F.K. Akinnifesi, O.C. Ajayi, S.G. Weldesemayat, J.G. Mowo, A. Kalinganire, M. Larwanou, J. Bayala (2010). Evergreen Agriculture: a robust approach to sustainable food security in Africa. *Food Security*, 2: 197-214
9. J.D. Glover, J.P. Reganold, C.M. Cox (2012). Plant perennials to save Africa's soils. *Nature*, 489, pp. 8-10
10. Mosquera-Losada, M. R.; Rigueiro-Rodríguez, A.; McAdam, J (2005). Silvopastoralism and sustainable land management. CABI, Wallingford.
11. Dawson IK, Place P, Torquebiau E, Malézieux E, Iiyama M, Sileshi GW, Kehlenbeck K, Masters E, McMullin S and Jamnadas R (2013). Agroforestry, food and nutritional security. Background paper for the International Conference on *Forests for Food Security and Nutrition*, FAO, Rome, 13–15 May, 2013.
12. Barrios E, Sileshi GW, Shepherd K and Sinclair F. 2012. Agroforestry and soil health: Linking trees, soil biota and ecosystem services. *In* Wall DH, Bardgett RD,, Behan-Pelletier V, Herrick JE, Jones TH, Ritz K, Six J, Strong DR and van der Putten W, eds. *Soil Ecology and Ecosystem Services*. Oxford, UK: Oxford University Press. 315–330.
13. HLPE. 2013. Investing in smallholder agriculture for food security. A report by the High Level Panel of Experts on Food Security and Nutrition of the *Committee on World Food Security*, Rome.
14. Sinclair, F. L. (2017). Systems science at the scale of impact: reconciling bottom-up participation with the production of widely applicable research outputs. In Sustainable Intensification in Smallholder Agriculture: An Integrated Systems Research Approach. (Eds I. Oborn, B. Vanlauwe, M. Phillips, R. Thomas, W. Brooijmans and K. Atta-Krah). London: Earthscan
15. Anderson, L.S. and Sinclair, F.L. (1993). Ecological interactions in agroforestry systems. *Agroforestry Abstracts* **6**(2): 57-91 and *Forestry Abstracts* **54**(6): 489-523
16. Franzel S., Carsan S, Lukuyu B and Wambugu C (2014). Fodder trees for improving livestock productivity and smallholder livelihoods in Africa. *Current Opinion in Environmental Sustainability*, 6: 98-103
17. Duguma LA, Minang PA, Freeman OE and Hagar H (2014). System wide impacts of fuel usage patterns in the Ethiopian highlands: potentials for breaking the negative reinforcing feedback cycles. *Energy for Sustainable Development* 20 (2014) 77–85
18. Schroth, G. and Sinclair, F.L. Eds (2003). *Trees crops and soil fertility: concepts and research methods*. CAB International, Wallingford, 437 pp
19. van Noordwijk, M., Cadisch, G. and Ong, C. (eds.), *Below-ground interactions in tropical agroecosystems: concepts and models with multiple plant components*. CAB International, Wallingford
20. Sileshi G.W., Mafongoya P.L., Akinnifesi F.K., Phiri E., Chirwa P., Beedy T., Makumba W., Nyamadzawo G., Njoloma J., Wuta M., Nyamugafata P., and Jiri O. (2014). In: Neal Van Alfen (Ed) Agroforestry: Fertilizer Trees. Encyclopedia of Agriculture and Food Systems, Vol. 1, Elsevier, San Diego, pp. 222-234
21. Ng SL, Cai QG, Ding SW, Chau KC and Qin J (2008). Effects of contour hedgerows on water and soil conservation, crop productivity and nutrient budget for slope farmland in the Three Gorges Region (TGR) of China *Agroforestry Systems* 74:279–291
22. Orgiazzi, A., Bardgett, R.D., Barrios, E., Behan-Pelletier, V., Briones, M.J.I., Chotte, J-L., De Deyn, G.B., Eggleton, P., Fierer, N., Fraser, T., Hedlund, K., Jeffery, S., Johnson, N.C., Jones, A., Kandeler, E., Kaneko, N., Lavelle, P., Lemanceau, P., Miko, L., Montanarella, L., Moreira, F.M.S., Ramirez, K.S., Scheu, S., Singh, B.K., Six, J., van der Putten, W.H., Wall, D.H. (Eds.), 2016, Global Soil Biodiversity Atlas. European Commission, Publications Office of the European Union, Luxembourg. 176 pp.
23. Ilstedt U et al. 2016. Intermediate tree cover can maximize groundwater recharge in the seasonally dry tropics. Nature *Scientific Reports* 6, Article number: 21930.
24. Bayala J and Wallace JW (2015). The water balance of mixed tree-crop systems. In C Black, J. Wilson, C.K Ong (Eds.), *Tree-Crop Interactions: Agroforestry in a Changing Climate*, CABI, pp. 140-190

25. Carroll Z, Bird S, Emmett B, Reynolds B and Sinclair F (2004). Can tree shelterbelts on agricultural land reduce flood risk? *Soil Use and Management*, 20 (3): 357-359.
26. Bayala, Sanou J, Teklehaimanot Z and Sinclair F (2015). Adaptation of crops to partial shade in mixed cropping systems in C. Black, J. Wilson, C.K. Ong (Eds.), Tree-Crop Interactions: Agroforestry in a Changing Climate, CABI (2015), pp. 309-325
27. Ovalle-Rivera O, Läderach P, Bunn C, Obersteiner M, Schroth G (2015) Projected Shifts in *Coffea arabica* Suitability among Major Global Producing Regions Due to Climate Change. PLoS ONE 10(4): e0124155
28. Key N, Sneeringer S, and Marquardt D (2014). Climate Change, Heat Stress, and U.S. Dairy Production, ERR-175, U.S. Department of Agriculture, Economic Research Service, September 2014.
29. Sida TS, Baudron F, Kim H and Giller KE (submitted). Climate-smart Agroforestry: *Faidherbia albida* trees modify microclimate to buffer wheat against climatic extremes in the Central Rift Valley of Ethiopia. *Agricultural and Forest Meteorology*
30. Mishra S and Pathak P (2015). Fodder production and Conservation: A Potential Source of Livelihood for Women. In P. Vasudevan, S. Sharma, V. P. Sharma and M. Verma: Women, Technology and Development, Narosa Publishing House, New Delhi, pp.136-150
31. Place F, Roothaert R, Maina L, Franzel S, Sinja J and Wanjiku J. (2009). The impact of fodder trees on milk production and income among smallholder dairy farmers in East Africa and the role of research. ICRAF Occasional Paper No. 12. Nairobi: World Agroforestry Centre.
32. Duguma LA, Minang PA, Freeman OE and Hagar H (2014). System wide impacts of fuel usage patterns in the Ethiopian highlands: potentials for breaking the negative reinforcing feedback cycles. *Energy for Sustainable Development* 20 (2014) 77–85
33. Mosa A, Siddig K and Grethe H (2016). Time use for Home Activities, Market Activities and Leisure in Ethiopia: Economy-wide effects of improved efficiency. Paper prepared for the 19th Annual Conference on Global Economic Analysis, June 15-17, 2016, Washington DC, USA.
34. Coe R, Njoloma J and Sinclair FL. 2016. Loading the dice in favour of the farmer: Reducing the risk of adopting agronomic innovations. *Experimental Agriculture (online)*
35. Bai ZG, Dent DL, Olsson L, Schaepman ME. 2008. Proxy global assessment of land degradation. Soil Use and Management 24: 223–234.
36. Lal R, Safriel U, Boer B. 2012. Zero Net Land Degradation: A New Sustainable Development Goal for Rio+ 20. A report prepared for the Secretariat of the United Nations Convention to combat Desertification: Bonn
37. Stavi I, Lal R. 2015. Achieving Zero Net Land Degradation: Challenges and opportunities. Journal of Arid Environments 112: 44–51.
38. Kehlenbeck K and McMullin S. 2015. Fruit tree portfolios for improved diets and nutrition. How to use the diversity of different fruit tree species available in Machakos county to provide better nutrition for smallholder farming families. Nairobi: World Agroforestry Centre.
39. Icowitz A, Powell B, Salim M and Sunderland, T (2014). Dietary quality and tree cover in Africa. *Global Environmental Change* 24: 287-294
40. Sunderland, T., Powell, B., Ickowitz, A., Foli, S., Pinedo-Vasquez, M., Nasi, R. and Padoch, C. (2013). Food security and nutrition: The role of forests. Discussion Paper. CIFOR, Bogor, Indonesia
41. Van Noordwijk M, Brussaard L. 2014. Minimizing the ecological footprint of food: closing yield and efficiency gaps simultaneously? *Current Opinion in Environmental Sustainability* 8: 62-70.
42. Anderson, L.S. and Sinclair, F.L. (1993). Ecological interactions in agroforestry systems. *Agroforestry Abstracts* **6**(2): 57-91 and *Forestry Abstracts* **54**(6): 489-523
43. Zomer, R. J. *et al*. (2016). Global Tree Cover and Biomass Carbon on Agricultural Land: The contribution of agroforestry to global and national carbon budgets. Nature - *Scientific Reports* **6**: 29987

44. Lorenz, K and Lal, R (2014). Soil organic carbon sequestration in agroforestry systems. A review. *Agronomy for Sustainable Development* 34: 443–454.
45. Lun F, Liu M, Zhang D, Li W and Liu, J (2016). Life Cycle Analysis of Carbon Flow and Carbon Footprint of Harvested Wood Products of *Larix principis-rupprechtii* in China. *Sustainability*, 8, 247
46. Bayala J, Sanou J, Teklehaimanot Z and Sinclair F (2015). Adaptation of crops to partial shade in mixed cropping systems in C. Black, J. Wilson, C.K. Ong (Eds.) *Tree-Crop Interactions: Agroforestry in a Changing Climate*, CABI, pp. 309-325.
47. Ian Scoones, 1998, 'Sustainable Rural Livelihoods: A Framework for Analysis', IDS Working Paper 72
48. MA (2005) Millennium Ecosystem Assessment Synthesis Report, 1st edn, Island Press, Washington,DC.
49. Sinclair, F. L. (2017). Systems science at the scale of impact: reconciling bottom-up participation with the production of widely applicable research outputs. In Sustainable Intensification in Smallholder Agriculture: An Integrated Systems Research Approach. (Eds I. Oborn, B. Vanlauwe, M. Phillips, R. Thomas, W. Brooijmans and K. Atta-Krah). London: Earthscan
50. Foundjem-Tita et al (2014). Would strictly enforced forestry regulations affect farmers' stated intentions to plant indigenous fruits trees? Insights from Cameroon. *Food Policy* 49: 95-106.
51. Robinson BE, Holland MB and Naughton-Treves L (2014). Does secure land tenure save forests? A meta-analysis of the relationship between land tenure and tropical deforestation. *Global Environmental Change* 29: 281-293.
52. Jamnadass R, Langford K, Anjarwalla P and Mithöfer D (2014). Public–Private Partnerships in Agroforestry. In: Elsevier Encyclopedia of Agriculture and Food Systems pp. 544–564
53. FAO. 2013. Advancing Agroforestry on the Policy Agenda: A guide for decision-makers, by G. Buttoud, in collaboration with O. Ajayi, G. Detlefsen, F. Place & E. Torquebiau. Agroforestry Working Paper no. 1. Food and Agriculture Organization of the United Nations. FAO, Rome. 37 pp
54. Hughes K, Oduol J, Coe R, Sinclair F and Peralta A. 2016. Guidelines for identifying and designing planned comparisons. ICRAF Nairobi, Kenya.
55. Antle, J.M. and Capalbo, S.M. (1988) 'An Introduction to Recent Developments in Production Theory and Productivity Measurement', in Capalbo, S.M. and Antle, J.M. (Eds), Agricultural Productivity, Measurement and Explanation, Resources for the Future, Washington, DC, pp. 17–95.
56. Sinclair, F. L. (2017). Systems science at the scale of impact: reconciling bottom-up participation with the production of widely applicable research outputs. In Sustainable Intensification in Smallholder Agriculture: An Integrated Systems Research Approach. (Eds I. Oborn, B. Vanlauwe, M. Phillips, R. Thomas, W. Brooijmans and K. Atta-Krah). London: Earthscan
57. Belcher B, Suryadarma D and Halimanjaya A (2017) Evaluating policy-relevant research: lessons from a series of theory-based outcomes assessments. *Palgrave Communications* 3:17017
58. Hughes K, Oduol J, Coe R, Sinclair F and Peralta A. 2016. Guidelines for identifying and designing planned comparisons. ICRAF Nairobi, Kenya.
59. Coe R, Sinclair F and Barrios E. 2014. Scaling up agroforestry requires research 'in' rather than 'for' development. *Current Opinion in Environmental Sustainability* 6:73–7. http://dx.doi.org/10.1016/j.cosust.2013.10.013
60. Coe R, Njoloma J and Sinclair FL. 2016. Loading the dice in favour of the farmer: Reducing the risk of adopting agronomic innovations. *Experimental Agriculture.* doi: http://dx.doi.org/10.1017/S0014479716000181
61. Pagella TF and Sinclair FL. 2014. Development and use of a new typology of mapping tools to assess their fitness for supporting management of ecosystem service provision. *Landscape Ecology* 29(3):383–99
62. Coe R, Sinclair F and Barrios E. 2014. Scaling up agroforestry requires research 'in' rather than 'for' development. *Current Opinion in Environmental Sustainability* 6:73–7.

63. Jackson B, Pagella T, Sinclair F, Orellana B, Henshaw A, Reynolds B, McIntyre N, Wheater H and Eycott A. 2013. Polyscape: A GIS mapping toolbox providing efficient and spatially explicit landscape-scale evaluation of multiple ecosystem services. *Landscape and Urban Planning* 112: 74–8.
64. Coe, R., Njoloma, J. and Sinclair, F. (2017). To control or not to control: how do we learn more about how agronomic innovations perform on farms? *Experimental Agriculture* (online).
65. Chomba, S, Kariuki J, Lund, JF and Sinclair, F (2017). Of mice and men: why the unintended consequences of carbon markets matter. *Land Use Policy* 61, 99-102
66. Sinclair, F. L. (2017). Systems science at the scale of impact: reconciling bottom-up participation with the production of widely applicable research outputs. In Sustainable Intensification in Smallholder Agriculture: An Integrated Systems Research Approach. (Eds I. Oborn, B. Vanlauwe, M. Phillips, R. Thomas, W. Brooijmans and K. Atta-Krah). London: Earthscan
67. Fierer N et al. (2016). Cross-biome metagenomic analyses of soil microbial communities and their functional attributes. Proceedings of the National Academy of Sciences USA 109:21390–5
68. Luedeling E, Smethurst P J., Baudron F, Bayala J, Huth N I., van Noordwijk M, Ong C K., Mulia R, Lusiana B, Muthuri CL and Sinclair F.2016. Field-scale modeling of tree–crop interactions: Challenges and development needs *Agricultural Systems* 142: 51–69.
69. Smethurst PJ, Huth NI, Masikati P, Sileshi GW, Akinnifesi FK, Wilson J, Sinclair F (2017) Accurate crop yield predictions from modelling tree-crop interactions in gliricidia-maize agroforestry. Agricultural Systems 155:70–7.
70. Pagella TF and Sinclair FL. 2014. Development and use of a new typology of mapping tools to assess their fitness for supporting management of ecosystem service provision. *Landscape Ecology* 29(3):383–99
71. Jackson B, Pagella T, Sinclair F, Orellana B, Henshaw A, Reynolds B, McIntyre N, Wheater H and Eycott A. 2013. Polyscape: a GIS mapping toolbox providing efficient and spatially explicit landscape-scale evaluation of multiple ecosystem services. *Landscape and Urban Planning* 112: 74–8.
72. http://landscapeportal.org:3838/sharedApp/
73. Lamond G, Sandbrook L, Gassner A and Sinclair FL. 2016. Local knowledge of tree attributes underpins species selection on coffee farms. *Experimental Agriculture*
74. Smith DE, Bonhomme S, Pagella T and Sinclair FL. In press. Increasing the resilience of the Virunga landscape through matching agroforestry options to fine scale variation in socio-ecological context. *Experimental Agriculture*
75. http://blog.worldagroforestry.org/index.php/2015/11/06/beyond-eucalyptus-woodlots-whats-on-the-agroforestry-menu-for-communities-around-virunga/
76. Africa Tree Finder app on Google Play. https://play.google.com/store/apps/details?id=org.icraf.gsl.iucn.treespecieslocator&hl=en
77. Chomba SW, Nathan I, Minang PA and Sinclair F. 2015. Illusions of empowerment? Questioning policy and practice of community forestry in Kenya. *Ecology and Society* **20**(3):2
78. Chomba SW, Treue T and Sinclair FL. 2015. The political economy of forest entitlements: can community based forest management reduce vulnerability at the forest margin? *Forest Policy and Economics* 58:37–46.
79. Chomba, S, Kariuki, J, Lund, JF and Sinclair, FL (2016). Roots of inequity: How the implementation of REDD+ reinforces past injustices. *Land Use Policy* 50:202–13
80. Ingram V, Levang P, Cronkleton P, Degrande A, Leakey R and van Damme P. 2014. Forest and tree product value chains. *Special issue of Forests, Trees and Livelihoods* 23(1–2):1–5
81. http://www.worldagroforestry.org/shared
82. Muetzelfeldt R and Massheder J. 2003. The Simile visual modelling environment. European Journal of Agronomy 18:345–58.

83. Putzel L, Kelly A, Cerutti P and Artati Y. 2015. Formalization as development in land and natural resource policy. *Society and Natural Resources* 28(5):453–72.; Kelly A and Peluso N. 2015. Frontiers of commodification: state lands and their formalization. *Society and Natural Resources* 28(5):473–95
84. Sears R, Padoch C and Pinedo-Vasquez M. 2007. Amazon forestry transformed: integrating knowledge for smallholder timber management in eastern Brazil. *Human Ecology* 35:697–707
85. Putzel L, Padoch C and Ricse A. 2012. Putting back the trees: smallholder silvicultural enrichment of post-logged concession forest in Peruvian Amazonia. *Small-scale Forestry* 12(3):421–36
86. Smith DE, Gnahou GM, Ohouo L, Sinclair FL and Vaast P. 2014. Farmers in Côte d'Ivoire value integrating tree diversity in cocoa for the provision of ecosystem services. *Agroforestry Systems* 88(6):1047–66
87. Schroth G et al. 2016. Vulnerability to climate change of cocoa in West Africa: Patterns, opportunities and limits to adaptation. *Science of The Total Environment* 556:231–41
88. Schroth G, Läderach P, Blackburn Cuero DS, Neilson J, Bunn C. 2015. Winner or loser of climate change? A modelling study of current and future climatic suitability of Arabica coffee in Indonesia. *Regional Environmental Change* 15:1473–82
89. Nyaga J, Barrios E, Muthuri CW, Oborn I, Matiru V and Sinclair FL. 2015. Evaluating factors influencing heterogeneity in agroforestry adoption and practices within smallholder farms in Rift Valley, Kenya. *Agriculture, Ecosystems and Environment* 212:106-18
90. Iiyama M, Derero A, Kelemu K, Muthuri C, Kinuthia R, Ayenkulu E, Kiptot E, Hadgu K, Mowo J. and Sinclair FL. In press. Understanding patterns of tree adoption on farms: a case study of semi-arid and sub-humid agroecosystems of Ethiopia. *Agroforestry Systems*
91. [FAO] Food and Agriculture Organization. 2008. Are grasslands under threat? Rome: FAO. http://www.fao.org/ag/agp/agpc/doc/grass_stats/grass-stats.htm
92. Harvey CA, Villanueva C, Esquivel H, Gómez R, Ibrahim M, Lopez M, Martinez J, Muñoz D, Restrepo C, Saénz JC, Villacís J and Sinclair FL. 2011. Conservation value of dispersed tree cover threatened by pasture management. *Forest Ecology and Management* 261:1664–74
93. Ospina S, Rusch GM, Pezo D, Casanoves F and Sinclair FL. 2012. More stable productivity of semi natural grasslands than sown pastures in a seasonally dry climate. *PLoS One* 7(5): e35555. doi:10.1371/journal.pone.0035555
94. http://www.simulistics.com/
95. http://blog.worldagroforestry.org/index.php/2015/07/01/son-tra-the-hmong-apple/
96. Mwangi E, Meinzen-Dick R and Sun Y. 2011. Gender and sustainable forest management in East Africa and Latin America. *Ecology and Society* 16(1):17.
97. For example, WWF adopting new ways to promote tree diversity rather than a few exotic species in DRC; IFAD, DGIS, Action Aid and the Ethiopian, Ugandan, Rwandan, Peruvian and Brazilian governments actively embracing an options-by-context approach.

2.3 Sustainable global value chains and investments for supporting forest conservation and equitable development

1. Henders S, Persson UM and Kastner T. 2015. Trading forests: Land-use change and carbon emissions embodied in production and exports of forest-risk commodities. *Environmental Research Letters* 10(12). doi: 10.1088/1748-9326/10/12/125012;
   Lawson S. 2014. *Consumer Goods and Deforestation: An Analysis of the Extent and Nature of Illegality in Forest Conversation for Agriculture and Timber Plantations.* Washington, DC: Forest Trends.
2. Zarin, DJ et al. 2015. Can carbon emissions from tropical deforestation drop by 50% in five years? *Global Change Biology*. doi: 10.1111/gcb.13153. [Epub ahead of print].
3. Henders S et al. 2015. Op cit.

4. Schmitz-Hoffmann C et al. 2014. *Voluntary Standard Systems: A Contribution to Sustainable Development.* Berlin: Springer-Verlag.
5. Climate Focus. 2015. *Progress on the New York Declaration on Forests: An assessment framework and initial report.* Amsterdam: Climate Focus, in collaboration with Environmental Defense Fund, Forest Trends, The Global Alliance for Clean Cookstoves, and The Global Canopy Program.
6. For EU Timber Regulation and FLEGT-VPA, see http://www.euflegt.efi.int/about-flegt; for EU-RED, see https://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive
7. Voorges M and Hoque F. 2015. *Unlocking ESG Integration.* Washington, DC: US SIF Foundation
8. Stampe J. 2015. *Sustainable finance in Singapore, Indonesia and Malaysia: A review of financiers' ESG practices, disclosure standards and regulation*. Singapore: WWF.
9. Angelsen A and Rudel TK. Designing and implementing effective REDD + policies: A forest transition approach. *Review of Environmental Economics and Policy*. 7(1):91–113.
10. Potts J et al. 2014. *The state of sustainability initiatives review 2014: Standards and the green economy.* Winipeg, Canada: ENTWINED, IDH, IIED, FAST, IISD.
11. Cerutti P, Putzel L, Pacheco P and Baxter J. 2015. Tackling illegal logging in the tropics: From good intentions to smart policies. *BIORES* 9(4):8–11.
12. Dunaway WA (ed). 2014. *Gendered Commodity Chains: Seeing Women's Work and Households in Global Production*. Stanford, CA: Stanford University Press.
13. Vermeulen S and Cotula L. *Making the most of agricultural investment: A survey of business models that provide opportunities for smallholders*. London: IIED; Rome: FAO and IFAD; Bern: SDC.
14. Pirard R, Fishman A, Gnych S, Obidzinski K and Pacheco P. 2015. *Deforestation-free commitments: The challenge of implementation. An application to Indonesia.* Working Paper 181. Bogor, Indonesia: CIFOR.
15. http://blog.cifor.org/27214/finance-for-sustainable-landscapes-momentum-is-building?fnl=en
16. Munasinghe M. 1999. *Environmental Impacts of Macroeconomic and Sectoral Policies*. Washington, DC: International Society for Ecological Economies, The World Bank, The United Nations Environment Programme.
17. Ostrom E. 2005. *Understanding Institutional Diversity.* Princeton, NJ: Princeton University Press.
18. Cashore B. 2002. Legitimacy and the privatization of environmental governance: how non-state-market-driven (NSMD) governance systems gain rule-making authority. *Governance* 15(4):503–29.
19. Boström M et al. 2015. Sustainable and responsible supply chain governance: challenges and opportunities. *Journal of Cleaner Production* 107:1–7.
20. Lambin EF et al. 2014. Effectiveness and synergies of policy instruments for land use governance in tropical regions. *Global Environmental Change* 28:129–40.
21. Bijman J. 2008. *Contract farming in developing countries: An overview of the literature.* Working paper. Wageningen, The Netherlands: Wageningen University, Department of Business Administration.
22. UNDP. 2008. *Creating Value for All: Strategies for Doing Business with the Poor*. New York: UNDP.
23. Schoneveld et al. In press. Systematic review of the social and environmental impacts of agricultural business models in tropical development countries. *Environmental Evidence Journal*.
24. Gelder, JW van and Kouwenhoven D. 2011. *Enhancing financiers' accountability for the social and environmental performance of biofuels*. Working Paper 60. Bogor, Indonesia: CIFOR.
25. Burrows M. 2014. Financing sustainable forest landscapes. *Conservation Letters* 7 (6):499-500
26. Harris NL et al. 2012. Baseline map of carbon emissions from deforestation in tropical regions. *Science* 336: 1573–6; Smith P et al. 2014. Agriculture, forestry and other land use (AFOLU). *In* Edenhofer O et al., ed. Climate *Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge, UK: Cambridge University Press. 811–922.
27. Gibbs HK et al. 2015. Did ranchers and slaughterhouses respond to zero-deforestation agreements in the Brazilian Amazon? *Conservation Letters*, online DOI: 10.1111/conl.12175.

28. Peters GP, Minx JC, Weber CI and Edenhofer O. 2011. Growth in emissions transfers via international trade from 1990 to 2008. *Proceedings of the National Academy of Sciences* May 24 2011. Vol. 108, no. 21 10.1073/pnas.10063880; See also Minang P A, van Noordwijk M, Meyfroidt P et al. 2010. *Emissions embodied in trade and land use in tropical forest margins.* ASB Policy Brief 17. www.asn.cigar.org/PDFwebdocs/PB17_final.pdf
29. Carlson KM and Curran LM. 2013. Refined carbon accounting for oil palm agriculture: Disentangling potential contributions of indirect emissions and smallholder farmers. *Carbon Management* 4:347–9.
30. Page SE et al. 2011. Global and regional importance of the tropical peatland carbon pool. *Global Change Biology* 17(2):798–818.
31. Finegan B. 2015. A 21st century viewpoint on tropical silviculture. *In* Pancel L and Köhl M, eds. *Tropical Forestry Handbook*, 2nd edition. Berlin: Springer-Verlag. 1–28.
32. Putz FE and Romero C. 2015. *Futures of tropical production forests.* Occasional Paper 143. Bogor, Indonesia: CIFOR.

2.4 Landscape dynamics, productivity and resilience

1. Minang PA et al., eds. 2014. *Climate-Smart Landscapes: Multifunctionality In Practice.* Nairobi: World Agroforestry Centre.
2. Sayer J et al. 2013. Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses. *Proceedings of the National Academy of Sciences* 110(21):8349–56.
3. van Noordwijk M et al., eds. 2013. *Negotiation-support Toolkit for Learning Landscapes.* Bogor, Indonesia. World Agroforestry Centre (ICRAF) Southeast Asia Regional Program.
4. van Noordwijk M and Villamor GB. 2014. Tree cover transitions in tropical landscapes: hypotheses and cross-continental synthesis. *GLPnews* 10:33–7.
5. Ordonez JC et al. 2014. Tree diversity along the forest transition curve: drivers, consequences and entry points for multifunctional agriculture. *Current Opinion in Environmental Sustainability* 6:54–60.
6. Ma X et al. 2014. Attribution of climate change, vegetation restoration, and engineering measures to the reduction of suspended sediment in the Kejie catchment, southwest China. *Hydrology and Earth System Sciences* 18:1979–94.
7. van Noordwijk M et al. 2014. Pricing rainbow, green, blue and grey water: tree cover and geopolitics of climatic teleconnections. *Current Opinion in Environmental Sustainability* 6:41–7.
8. Ickowitz A et al. 2014. Dietary quality and tree cover in Africa. *Global Environmental Change* 24:287–94.
9. Colfer CJ et al. 2015. The Balance of Power in Household Decision-Making: Encouraging News on Gender in Southern Sulawesi. *World Development* 76:147–64.
10. Villamor GB et al. 2015. Land-use change and shifts in gender roles in central Sumatra, Indonesia. International Forestry Review 17(1) 1–15.
11. Sunderland TCH et al. 2014 Challenging perceptions about men, women, and forest product use: a global comparative study . *World Development* doi: http://dx.doi.org/10.1016/j.worlddev.2014.03.003 .
12. Finegan B et al. 2015. Does functional trait diversity predict above-ground biomass and productivity of tropical forests? Testing three alternative hypotheses. *Journal of Ecology* 103:191–201.
13. Carrasco LR et al. 2014. Economic valuation of ecosystem services fails to capture biodiversity value of tropical forests. *Biological Conservation* 178: 163–170.
14. Foli S et al. 2014. To what extent does the presence of forests and trees contribute to food production in humid and dry forest landscapes?: a systematic review protocol. *Environmental Evidence* 3:15
15. Jamnadass R et al. 2013. Agroforestry for food and nutritional security. *Unasylva* 241(64):2.
16. van Noordwijk M et al. 2014. Tree cover transitions and food security in Southeast Asia. Global Food Security 3:200–8.

17. Leimona B et al. 2015. Boundary work: knowledge co-production for negotiating payment for watershed services in Indonesia. *Ecosystem Services* 15:45–62.
18. Wunder S. 2015. Revisiting the concept of payments for environmental services. *Ecological Economics* doi: 10.1016/j.ecolecon.2014.08.016
19. Leimona B et al. 2015. Fairly efficient, efficiently fair: Lessons from designing and testing payment schemes for ecosystem services in Asia. *Ecosystem Services* 12:16–28
20. Vira et al., eds. 2015. *Forests, Trees and Landscapes for Food Security and Nutrition.* IUFRO World Series Volume 33. Vienna: IUFRO.
21. de Royer S et al. 2015. Self-identification of indigenous people in post-independence Indonesia: a historical analysis in the context of REDD+. *International Forestry Review* 17: 1-16.
22. Padoch C and Sunderland TCH 2014. Managing landscapes for greater food security and improved livelihoods. *Unasylva* 64(241):3–13.
23. See forthcoming paper in Bioscience: A pedagogical model for team-based interdisciplinary, problem-solving doctoral education.

2.5 Forests and climate change: mitigation and adaptation opportunities

1. Intended Nationally Determined Contributions (INDCs) were submitted by 188 countries up to October 2015. Countries are required to submit updated Nationally Determined Contributions (NDCs) before 2018 and then again every 5 years.

2. Le Queré C, Moriarty R, Andrew RM, Peters GP, Ciais P, Friedlingstein P, Jones SD, Sitch S, Tans P, Arneth A, et al. 2014. Global carbon budget 2014. *Earth System Science Data* 7:47–85. doi:10.5194/essdd-7-521-2014; Le Quéré C, Moriarty R, Andrew RM, Canadell JG, Sitch S, Korsbakken JI, Friedlingstein P, Peters GP, Andres RJ, Boden TA, et al. 2015. Global carbon budget 2015. *Earth System Science Data* 7:349–96. doi:10.5194/essd-7-349-2015

3. [IPCC] Intergovernmental Panel on Climate Change. 2014. *Climate Change 2014: Mitigation of climate change. Working group III contribution to the fifth assessment report of the Intergovernmental Panel on Climate Change.* Edenhofer O, Pichs-Madruga R, Sokona Y, Farahani E, Kadner S, Seyboth K, Adler A, Baum I, Brunner S, Eickemeier P et al., eds. Cambridge, UK: Cambridge University Press.

4. Smith P. Davis SJ, Creutzig F, Fuss S, Minx J, Gabrielle B, Kato E, Jackson RB, Cowie A, Kriegler E, et al. 2015. Biophysical and economic limits to negative CO_2 emissions. *Nature Climate Change* 6:42–50. doi:10.1038/nclimate2870

5. For example, forests provide climate regulation and water provision through climate tele-connections to remote regions.

6. The 3E+ criteria refer to effectiveness, efficiency and equity of mitigation options and their outcomes, including non-carbon benefits. Angelsen A, Brockhaus M, Kanninen M, Sills E, Sunderlin WD and Wetz-Kanounnikoff S, eds. 2009. *Realising REDD+: National strategy and policy options.* Bogor, Indonesia: Center for International Forestry Research. http://www.cifor.org/online-library/browse/view-publication/publication/2871.html

7. The CGIAR Strategy and Results Framework 2016–2030 defines Intermediate Development Outcomes (IDOs) and research outcomes (sub-IDOs).

8. Country data from http://www.globalforestwatch.org/countries; emissions data from globalcarbonproject.org; costs of avoided deforestation from Kindermann G, Obersteiner M, Sohngen B, Sathaye J, Andrasko K, Rametsteiner E, Schlamadinger B, Wunder S and Beach R. 2008. Global cost estimates of reducing carbon emissions through avoided deforestation. *Proceedings of the National Academy of Sciences* 105(30):10302–7. doi:10.1073/pnas.0710616105

9. Schindler DE and Hilborn R. 2015. Prediction, precaution and policy under global change. *Science* 347:953–4.
10. http://www.odi.org/publications/9932-informing-redd-policy-assessment-cifors-global-comparative-study
11. http://foreststreesagroforestry.org/evaluation-of-the-cgiar-research-program-forests-trees-and-agroforestry-fta/
12. www.cifor.org/gcs
13. www.cifor.org/gcs
14. Article 5 of the Paris Agreement; see also COP Decision paragraph 54
15. Articles 4 and 7 of the Paris Agreement
16. Article 4.7 of the Paris Agreement
17. NAMAs = nationally appropriate mitigation actions; SFM = sustainable forest management; JMA = joint mitigation and adaptation
18. The complete UNFCCC methodological framework for REDD+ consists of the Warsaw REDD+ Framework adopted in 2013 together with draft decisions at the UNFCCC's 42nd SBSTA meeting in Bonn, June 2015.
19. Lähtinen K, Myllyviita T, Leskinen P and Pitkänen S. 2014. A systematic literature review on indicators to assess local sustainability of forest energy production. *Renewable and Sustainable Energy Reviews* 40:1202–16. doi: 10.1016/j.rser.2014.07.060
20. http://www.se4all.org/
21. In 2013, the International Energy Agency (IEA) estimated that consumer subsidies for fossil fuels amounted to USD 548 billion, while subsidies for renewable energy amounted to USD 121 billion. https://www.iisd.org/gsi/fossil-fuel-subsidies.
22. [GIZ] Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH et al. 2015. How are INDCs and NAMAs linked? http://mitigationpartnership.net/giz-unep-dtu-2015-how-are-indcs-and-namas-linked
23. e.g. from an impact assessment of our comparative REDD+ research program http://www.odi.org/publications/9932-informing-redd-policy-assessment-cifors-global-comparative-study
24. Sustainable Wetlands Adaptation and Mitigation Program: http://www.cifor.org/swamp/
25. http://www.globalforestwatch.org/about/the-gfw-partnership
26. Djoudi H, Brockhaus M and Locatelli B. 2011. Once there was a lake: Vulnerability to environmental changes in northern Mali. *Regional Environmental Change* 13:493–508. doi:10.1007/s10113-011-0262-5
27. Brockhaus M, Djoudi H and Locatelli B, 2013. Envisioning the future and learning from the past: Adapting to a changing environment in northern Mali. *Environmental Science & Policy* 25:94–106.

Part 3. Annexes

Annex 3.1 Capacity development strategy

1. [ISPC] Independent Science and Partnership Council. 2014. *ISPC Commentary on the extension proposal for CRP No. 6 Forests, Trees, and Agroforestry (FTA) for 2015–2016*. 28 June 2014. Rome: ISPC Secretariat.

Annex 3.4 Gender strategy

1. Ingram V, Schure J, Tieguhong J, Ndoye O, Awono A and Iponga DM. In press. Gender implications of forest product value chains in the Congo Basin. *Forest, Trees and Livelihoods*.
2. Larson AM, Dokken T, Atmadja S, Resosudarmo IA, Cronkleton P, Sunderlin W, Brockhaus M, Selaya G, Awono A and Duchelle A. In review. Gender and REDD+: Analyzing women's roles in sub-national initiatives. *International Forestry Review*.
3. Coleman E and Mwangi E. 2013. Women's participation in forest management: A cross-country analysis. *Global Environmental Change* 23(1):193. http://www.sciencedirect.com/science/article/pii/S0959378012001185
4. Sunderland T, Achdiawan R, Angelsen A, Babigumira R, Ickowitz A, Paumgarten F, Reyes-García V and Shively G. 2014. Challenging perceptions about men, women and forest product use: A global comparative study. *World Development* 64(1):S56–S66.
5. Li TM. 2015. *Social impacts of oil palm in Indonesia: A gendered perspective from West Kalimantan.* CIFOR Occasional Paper no. 124. Bogor, Indonesia: CIFOR.
6. Sijapati Basnett B. In press. Gender, migration and forestry: Rethinking community forestry policies in Nepal. *In* Colfer C, Sijapati Basnett B and Elias M, eds. *Gender and Forests: Climate Change, Tenure, Value Chains and Emerging Issues.* Bogor, Indonesia: Earthscan and CIFOR.
7. https://gender.cgiar.org/collaborative-research/gennovate/
8. Evans K, Larson AM, Mwangi E, Cronkleton P, Maravanyika T, Hernandez X, Müller P, Pikitle A, Marchea R, Mukasa C, Tibazalika A and Banana AY. 2014. *Field Guide to Adaptive Collaborative Management and Improving Women's Participation.* Bogor, Indonesia: CIFOR.

Annex 3.5 Youth strategy

1. Thaxton M et al. 2015. *Landscape Partnerships for Sustainable Development: Achieving the SDGs through Integrated Landscape Management.* LPFN.
2. Levy and Smith, 2010
3. World Bank. 2011. *Child youth development notes*. Vol 4(1) Washington. DC.
4. [ILO] International Labour Organization. 2012. *The youth employment crisis: A call for action. Conclusions from the 101st session of the International Labour Organization.* Geneva: ILO.
5. Marfo SO, Anyidoho NA and Muilerman S. 2015. *Inter-and intra-generational cocoa farming arrangements in Ghana: Challenges and prospects.* Ibadan, Nigeria: International Institute of Tropical Agriculture.
6. Gibbs HK et al. 2010. Tropical forests were the primary sources of new agricultural land in the 1980s and 1990s. *PNAS* 107(38):16732–7.

Annex 3.7 Linkages with other CRPs and site integration

1. http://drp.dfcentre.com/project/climate-smart-cocoa-systems-ghana-climcocoa
2. Van der Wolf J, Jassogne L, Gram G and Vaast P. 2016. Turning local knowledge on agroforestry into an online decision-support tool for tree selection in smallholders' farms. *Experimental Agriculture*, in press.

Annex 3.12. Assumptions and evidence used to develop aspirational targets

1. Zomer RJ, Trabucco A, Coe R, Place F, van Noordwijk M, Xu JC. 2014. Trees on farms: an update and reanalysis of agroforestry's global extent and socioecological characteristics. Working Paper 179. Nairobi: World Agroforestry Centre (ICRAF). doi: 10.5716/WP14064.PDF

2. Angelsen A, Jagger P, Babigumira R, Belcher B, Hogarth N, Bauch S, Borner J, Smith-Hall C and Wunder S. 2014. Environmental income and rural livelihoods: A global-comparative analysis. *World Development* 64 (S1): S12–S28. http://www.sciencedirect.com/science/article/pii/S0305750X14000722
3. [FAO]. 2008. Are grasslands under threat? Brief analysis of FAO statistical data on pasture and fodder crops. Rome: Food and Agriculture Organization of the United Nations. http://www.fao.org/ag/agp/agpc/doc/grass_stats/grass-stats.htm
4. [FAO]. 2010. *Global forest resources assessment 2010.* Key findings. Rome: Food and Agriculture Organization of the United Nations.
5. Auld G et al. 2008. Certification schemes and the impacts on forests and forestry. *Annual Review of Environment and Resources* 33:187–211.
6. Ickowitz A et al. 2013. Dietary quality and tree cover in Africa. *Global Environmental Change.* 24: 287–294.
7. Powell B et al. 2015. Improving diets with wild and cultivated biodiversity from across the landscape. *Food Security* 7(3):535–554.
8. Fa JE et al. 2015. Disentangling the relative effects of bushmeat availability on human nutrition in central Africa. *Scientific Reports 5*, Article number: 8168. doi:10.1038/srep08168
9. Ilstedt U et al. 2016. Intermediate tree cover can maximize groundwater recharge in the seasonally dry tropics. Scientific Reports 6, Article number: 21930. doi:10.1038/srep21930
10. Cui Z et al. 2014. Closing the N-use Efficiency Gap to Achieve Food and Environmental Security. *Environ. Sci. Technol* 48(10): 5780–5787.
11. Putz FE et al. 2008. Improved tropical forest management for carbon retention. *Public Library of Science Biology* 6(7):e166.
12. http://www.bonnchallenge.org/
13. Costanza et al. 2014. Changes in the global value of ecosystem services. *Global Environmental Change* 26:152–8.
14. [FAO]. 2010. *Global forest resources assessment 2010. Key findings*. Rome: FAO.
15. For details, see Kindermann G. et al. 2008. Global cost estimates of reducing carbon emissions through avoided deforestation. *PNAS* 105(30): 10302–7.

Annex 3.18 FTA's niche and priority setting

1. CGIAR ‐ IEA. 2014. *Evaluation of CGIAR Research Program on Forests, Trees, and Agroforestry (FTA)* – Volume 1. Rome, Italy: Independent Evaluation Arrangement (IEA) of the CGIAR. http://iea.cgiar.org/

Annex 3.19 Sentinel Landscapes: Creating a data-driven network of socio-ecological indicators across the global tropics

1. CIFOR, ICRAF, Bioversity International, CIAT. 2011. CGIAR Research Program 6. **Forests, Trees and Agroforestry:** Livelihoods, Landscapes and Governance Proposal. Bogor, Indonesia: CIFOR http://www.cifor.org/fileadmin/fileupload/crp6/CRP6_7feb_lowres.pdf

2. Barrett CB. 2003. *The CGIAR at 31: An independent meta-evaluation of the Consultative Group on International Agricultural Research - natural resources management research in CGIAR - a meta-evaluation*. Operations Evaluation Department (OED) working paper series. Washington DC: World Bank. http://documents.worldbank.org/curated/en/2003/01/2893362/thematic-working-paper-natural-resources-management-research-cgiar-meta-evaluation

Annex 3.18 FTA's niche and priority setting

FTA is unique among the CGIAR Research Programs, occupying a particular niche with respect to research and partnerships. Phase II priorities have been chosen based on a clear understanding of existing and new entry points, and of the comparative advantage FTA brings to the evolving global development arena.

FTA's niche

FTA is a global partnership committed to enhancing the benefits of forests and forestry for people in the tropics. Created in 2011 as part of the CGIAR reform, it seeks responses to global concerns about the social, environmental and economic consequences of loss and degradation of forest and tree resources in natural and human-made systems. The core partnership gathers some of the most influential players in the sustainable use, governance and management of forests, trees and agroforestry systems, both from within (CIFOR, ICRAF, Bioversity International, CIAT) and outside (CIRAD, CATIE, INBAR, Tropenbos International) the CGIAR. Beyond this core group, FTA operates through more than 200 decentralized partnerships with key policy makers and decision makers, nationally and internationally throughout the developing and industrialized worlds.

FTA is the only CRP that works on forests and the link between sustainably managed agricultural areas and sustainably managed forest areas. We are the only program within the CGIAR portfolio that has both the expertise and the experience to address e.g. Aichi Targets 7 and 14 and their inherent trade-off issues. We work explicitly on other (non-agricultural) terrestrial ecosystems to support agricultural productivity. Emphasizing the role of trees in agricultural systems contributes uniquely to agrifood systems by underpinning the sustainable aspect of 'sustainable intensification'. The ability to analyze and foster the positive linkages between agriculture and forestry – while many others focus on their points of conflict and assume a mutual exclusivity – and to work along the whole continuum, from natural forests via managed forests and agroforestry to monocrop fields, is unique to FTA. This landscape continuum is what policy makers, farmers and land managers have to manage, so our integrative perspective leads to a much more realistic approach to relevant policy research.

Other factors that make the FTA partnership different from other large forestry research institutions or programs are: our global and holistic vision of forests, trees and agroforestry systems and their changing relations to society; our focus on inter- and transdisciplinary approaches and international public goods, rather than locality-specific or product-specific research; our commitment to working in collaborative partnerships that facilitate the integration of key stakeholders' inputs and, in the process, enhance the capacity of national institutions and researchers to address their own research needs, set their own agendas, and effectively pursue their own scientific programs; and our focus on creating a feedback loop that uses actual research impacts to inform further research. FTA core partners are recognized scientific research organizations with complementary areas of expertise. This view is shared among virtually all key stakeholders at global, regional and national levels[1]. FTA, as a program, is therefore strategically located to work among governments, NGOs and the private sector.

We are working within a particularly controversial domain of renewable natural resources, in which research and development actors are generally polarized, advocating one type of position or approach based on their constituencies (nature conservation, indigenous groups, local development, etc.). FTA, by contrast, maintains an open perspective informed by evidence and offers policy-relevant work and advice grounded in a solid base of social, biophysical and genetic sciences. FTA partners act as conduits for transferring new ideas and technology, and help link global initiatives to ground-level needs and actions. This is a role that national research organizations often cannot do as part of their 'sectoral' mandate, and because they have relatively limited familiarity and access to international processes.

Another comparative advantage vis-à-vis other research actors internationally is our dense network of decentralized locations, where we work closely with local partners; these offer very good platforms for site integration. The **Sentinel Landscapes** (http://foreststreesagroforestry.org/cross-regional-sentinel-landscapes) are unique places where extensive baseline data on all relevant dimensions of forests and tree-based systems are collected and monitored rigorously and regularly. They offer an opportunity for local and international partners to implement transdisciplinary research together, as part of a global comparative network that seeks to compare and contrast – and thus to understand and address – the complexities of natural resource management issues at the landscape level. They provide platforms for colocation of research for interested CRPs and allow for evaluation of changes. For example, in FTA I, CATIE used the Nicaraguan–Honduran Sentinel Landscape to develop new intersectoral and systems R&D ('climate-smart territories') with CCAFS, HumidTropics and Livestock &Fish.

We offer: a holistic perspective on commodities with a landscape and social-ecological system basis, rather than a commodity basis; the capability to engage all stakeholders in constructive dialogue about forest research needs and possibilities; the access to, and involvement in, multiple scales of analysis, and with multiple stakeholders (global comparative studies, Sentinel Landscapes); an innovative communication/outreach strategy blending traditional media (newspapers, radio, TV) with new media (Facebook, Twitter, YouTube, etc.) and the capacity to convene large international events (Forest Days, Global Landscape Forum); and finally a commitment to south–south co-operation and to fostering research capacity in developing countries.

Priority setting for FTA

We consider three levels of priority setting: 1) development and adjustment of the overall R4D portfolio at the program level; 2) development of the theories of changes and result-based management framework; and 3) processes for selection of bilateral project supporting the implementation of the program and the achievement of objectives and targets contributing to the SRF.

Setting priorities for FTA as a program

FTA priority setting does not start from a blank slate but is integral to our portfolio management. It follows the logic of the independent evaluation: having a clear results framework centered on a results-based management approach and linked to the expected outcomes detailed in the performance implementation matrix, while allowing for innovative/high-risk research – e.g. a new thematic area still in its pioneering phase that we expect will become crucial – that cannot be rationalized within a narrowly defined results-based management system. Our program is composed of three categories:

1. A core portfolio of research in development supported by bilateral projects with significant funding to work within accepted 'theories of change' (this work is often of a fine-tuning/mainstreaming character and will be a major contributor to delivering the SRF targets)
2. Topics/locations where we expect to "change the theory" (adding new insights, challenging, and potentially modifying our thinking and that of our funders)
3. Early stages of new 'issue cycles' that can lay the foundation for further FTA science, or fade back into the background.

To refine our overall agenda and priorities at CRP level for categories 2 and 3, in 2014 we launched the "Top 20 Questions for Forestry and Landscapes (T20Q)" initiative (http://forestryevidence.com/t20q). This was a large international consultation of key stakeholders in forestry and landscape research expanded from an earlier exercise, the "Top 10 key forestry research questions in the United Kingdom and Ireland" (http://forestryevidence.com/t10q). T20Q used an iterative internet survey approach, coupled with workshops and Delphi groups, to determine priority questions in forestry and its associated fields as a means of identifying

the highest priority areas for further research and policy development. The T20Q survey concluded in January 2015. We indexed and sorted over 2,500 submitted questions and arranged them into the most commonly-occurring themes. Following a public assessment and rating of these questions, a final set of Top Twenty Questions was selected. These questions guided us in the preparation of the FTA II pre-proposal, and we refined our portfolio during the consultations within the FP teams to determine the overall research-for-development (R4D) agenda.

During the 2015–2016 extension and while preparing the FTA 2 proposal, we also made considerable effort to refine our ToC, both at programmatic and FP levels. With the exception of the CRP target issue addressed in the revised Annex 3.12, the ISPC considers that the overall theory of change is clear and well-presented. We used the T20Q results and other internal FP consultations in designing our improved ToC and impact pathways to ensure alignment with societal demand and relevant SRF priorities.

Setting priorities within FP and clusters of activities

We are setting out explicit theories of change at the activity, Flagship and program scales to ensure ongoing monitoring for real-time assessment, learning from experience and adaptive management. In addition, we use theory-based evaluation to test and improve our theories of change and assumptions. We have a nested set of ToCs and associated analytical tools, from the CRP to the FP and the CoA levels, to frame all of our work. Our Result Based Management (RBM) approach supported by our Monitoring Evaluation Learning and Impact Assessment (MELIA) framework is fully presented in Annex 3.6 and is compliant with the evaluation recommendation. The MELIA team has been reinforced and supported both by strategic allocation of W1/W2 funding, by some W3 funding from DFID, and by a minimum 1% levy on bilateral projects. We have developed realistic end-of-program outcomes mapped to the relevant SRF sub-IDOs (Tables 1a and 1b of Section 1.0.3).

Within Flagships, we operate an active portfolio management focusing research on priority issues and geographic areas to ensure a sufficient critical mass of activity in which we work to make a difference. Top priorities are represented by the choice of our CoAs focusing on key ways in which FT&A systems contribute to our overarching objectives and hypotheses, based on their potential for impact on SLOs, as set out in the description of each CoA. The topics embraced by each FP are prioritized through an interactive process drawing on: 1) insights from our research distilled in annual team meetings and recommendation from impact assessments or outcome evaluations; 2) our reading of the shifting priorities in major national and global policy debates; and 3) emerging topics from discussions in horizon scanning exercises or expert forums organized by ourselves or in which we participated.

For “place-based” research, within each cluster, specific focal geographies are selected through application of the following criteria:

- Demand from national and regional organizations evidenced by willingness to engage in policy reform and/or significant expenditure on development action (e.g. > USD 100 million over the duration of Phase II)
- Potential for impact on SLOs and contribution to targets evidenced (e.g. by *ex-ante* impact assessments) by the importance of FT&A systems to livelihoods and landscapes and prospects for improved management of tree cover, resulting in a focus on forest margins where tree-crops are expanding and agricultural land with >10% cover and locally high population density
- Prospects for site integration by co-locating research among partners within the Flagship, with other Flagships in the CRP (focusing on the FTA sentinel site network) and with other CRPs (collaborating on key food crops such as rice, maize, wheat, legumes and dryland cereals, as well as tree crops).

For policy research (as opposed to place-based), our R4D priorities are mostly derived from our interpretation of the changes in major international policy contexts, e.g. contribution to the SDGs (all FPs), the advancement of

climate goals with the Paris Climate Agreement (FP5), the eco-certification/environmental services question (FP4, FP2, FP3) or the "zero-deforestation" agenda (FP3).

Proactive fundraising and bilateral projects

FTA II, through the FPs and CoAs, has set a series of end-of-program outcomes to be achieved in 2022 in order to contribute to the CGIAR SRF targets. When joining FTA, core partners take the commitment to adhere to our priorities as defined in the program document and refined through our operational plan, and to actively look for bilateral funds (either Window 3 or bilateral projects with an emphasis on collaborative projects) to leverage Windows 1 and 2 and achieve our priorities.

FTA began in mid-2011 with several existing bilateral projects; in 2016 there are significantly fewer aligned projects selected to achieve FTA objectives, outcomes and targets. Our objective for FTA II is to continue sharpen the overall program focus on agreed priorities, ensuring an adequate delivery of outputs and outcomes through well-aligned bilateral projects.

In 2016, as part of the development of the Phase II proposal, we are carrying out a thorough and systematic revision of the portfolio of existing bilateral projects for confirmed inclusion (or not) in FTA II. We have also developed an interactive SharePoint site that is the cornerstone of our RBM system and contains the operational plans, bilateral project details, outputs, outcomes, contributions to IDOs and sub-IDOs of these bilateral projects, geographical zones, etc.

The current process for deciding whether a specific bilateral project should become part of FTA was approved by the Independent Steering Committee in February 2016 as follows:

- At the beginning of the year "n", the FTA database must contain all the active bilateral projects as of 31/12 of the previous year "n-1". This constitutes the baseline for bilateral support in year "n".
- During the year, Flagship leaders or focal points will enter newly submitted bilateral proposals into the database. However, these proposals will not be shown as assigned to FTA until they have been analyzed and formally approved by the FTA management team based on: the relevance of the objectives of the proposal to FTA's objectives and priorities; on the full-cost recovery or explicit co-financing by w1-2; and on overall CRP considerations (balance of geographies, avoidance of redundancy, consistency and alignment with the expected end of program outcome, opportunity to generate short term outcomes/impacts…).
- An automated email notification informs the FTA Director when a new project is entered in the database.
- If the proposal is not funded, it is removed from the database.
- If the proposal is funded, there are two possibilities:
    - FTA management team decides that the bilateral project is not sufficiently aligned with FTA's priorities. Consequently, the proposal is not assigned to FTA. , it is marked as invalid and disabled but remains in the database.
    - FTA management team approves the integration of the bilateral project into FTA. The assigned bilateral project is then flagged "active" in the FTA database, and is included in the FTA POWB of year "n".

This process allows us to ensure the portfolio of bilateral project is fully aligned with our program priorities and the decisions to include or not a given project are properly documented.

Annex 3.19 Sentinel Landscapes: Creating a data-driven network of socio-ecological indicators across the global tropics

The Sentinel Landscape (SL) initiative has built a dynamic and ambitious data-driven network across the global tropics through dedicated engagement with more than 30 partner institutions in 15 countries. One of the overarching goals of the SL initiative is to create publicly available and systematically collected interdisciplinary datasets, which can be used to solve the many problems facing socio-ecological systems in the global tropics. By taking a data-driven approach, the SL network is generating big data for systematic surveillance of ecosystem health. The SL platform for collaboration is allowing researchers, policy makers and stakeholders to sharpen hypotheses around cutting-edge research around both social processes and sustainability outcomes in landscapes. Early results of data analysis from the SLs show deep causes for concern over the effects of land management on land degradation, soil health and the overall sustainability of agroecosystems in these landscapes. Land degradation processes such as soil erosion are limiting soil carbon storage and increasing nutrient losses, which has implications both for climate change mitigation and productivity. Meta-analysis linking socio-ecological indicators of land health, human well-being and food security are being conducted to address serious concerns and challenges facing smallholder farming systems, looking specifically at the role of trees in improving ecosystem health and increasing sustainability across diverse landscapes.

Objectives of the Sentinel Landscapes

The objectives of the Sentinel Landscape network were specified in the FTA Phase I proposal[1] as follows:

1. Cross-regional comparison
2. Integrating biophysical and social data
3. Long-term presence (~ 10 years)
4. Co-locating research activities (share resources)
    - between Flagships
    - with partners
    - with other CRPs

During the Phase I of FTA (2012–2014) a network of seven Sentinel Landscapes (Figure 1) were successfully established by:

- selecting priority landscapes for FTA
- forming interdisciplinary implementation teams
- developing a standardized methodology following a “most different system design” to answer the overarching research question: “Does a variation in tree cover/tree quality affect any of the four system level outcomes (SLOs)”
- implementing the methodology across the network of seven landscapes
- a high-level FTA science event in December 2014 in Rome to share the results with the wider FTA scientific team and to jointly plan for activities in Phase II.

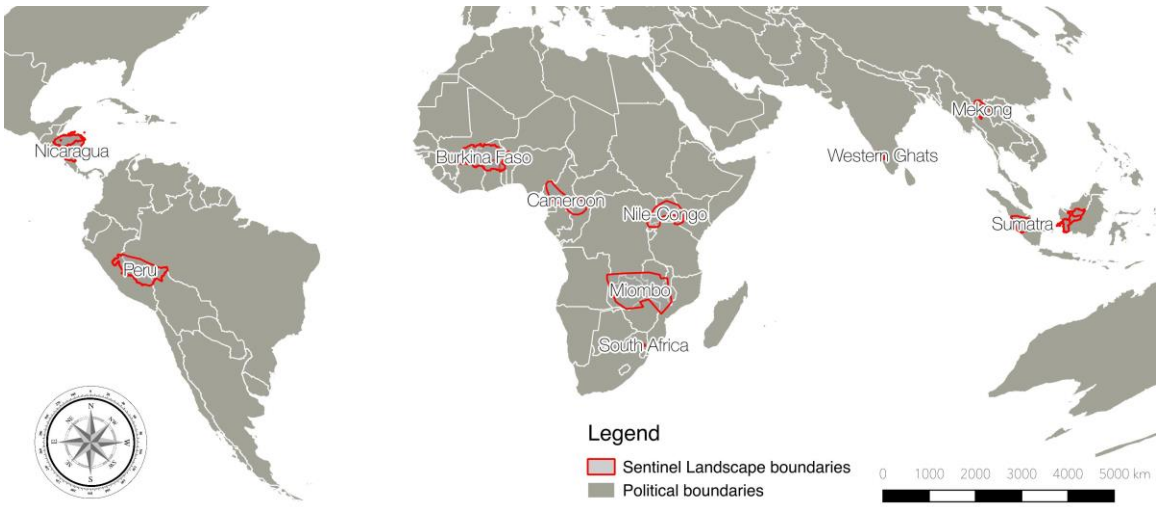


Figure 2. Locations of the current Sentinel Landscapes and their boundaries.
A downloadable version of the SL boundaries can be found on the ICRAF Landscape Portal: http://landscapeportal.org/layers/geonode:sl_2013_2015.

Phase II of FTA (2015–2016) was severely affected by the funding cuts in W1/W2. Prior to the funding cuts there were plans to use a substantial amount of the W1/W2 allocation for the Sentinel Landscape network, specifically to facilitate place-based research activities contributing to the Flagship-level IDOs within the Sentinel Landscapes. With the announced budget cuts in October 2014, in December of the same year it was anticipated that to complete the data collection, conduct a meta-analysis across landscapes, and publish the datasets in the open domain would require approximately 80% of the anticipated allocation for 2015. Further funding cuts through 2015 resulted in shrinkage of scientific cadres in several of the regional Sentinel Landscape teams and in funding shortages for processing the Sentinel Landscape data. To ensure that regional teams were able to complete their data collection activities and complete the Sentinel Landscape dataset, funding cuts were absorbed by cutting allocations to the method team that is responsible for developing the indicators from the collected data. The budget constraints also resulted in the Oil Palm thematic landscape being phased out earlier than anticipated, and have lowered the overall ambitions of SL network.

Achievements to date

Despite the unexpected financial constraints, the Sentinel Landscapes network has grown to nine landscapes, with plans for an additional landscape in the Miombo systems of Southern Africa (**Figure 2**). Biophysical data collection using the Land Degradation Surveillance Framework (LDSF) has been completed in 27 LDSF sentinel sites in these nine landscapes, the majority of the sites having completed soil analysis by June 2016. While some sites are still pending analysis due to export restrictions (e.g. India, where alternative arrangements for analysis are being made) as well as complications with customs clearance in some cases, the development of models for soil and land health mapping has been initiated, and maps are being posted to the Landscape Portal for sharing after being validated against field measurements. A comprehensive list of the data collection progress and links to online datasets is included in Table 1.

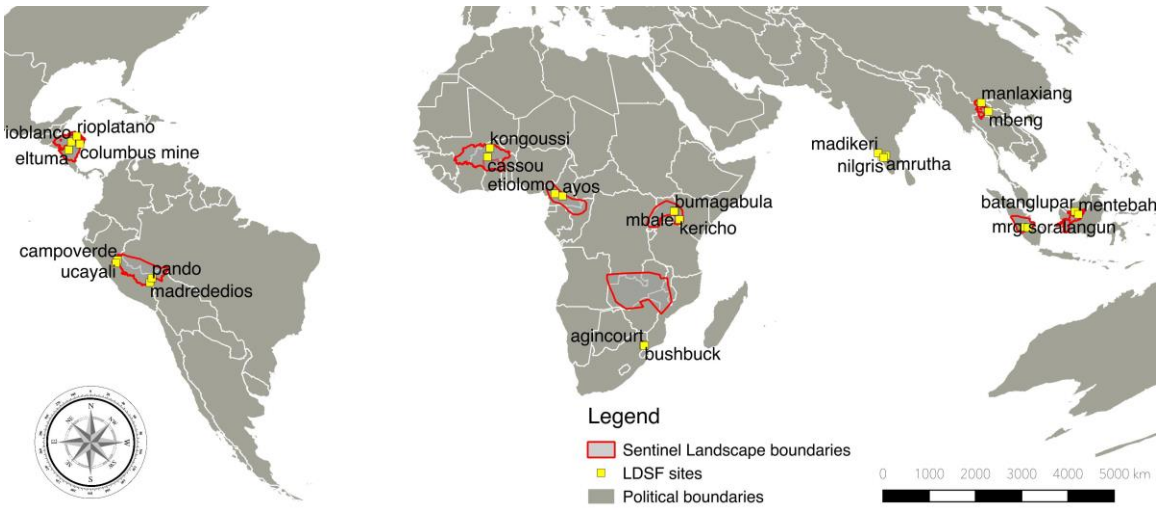


Figure 3. Locations of the current Sentinel Landscapes and their boundaries.
Completed LDSF sites are overlaid (N=27) as yellow boxes. A downloadable version of the LDSF site centroids can be accessed through the ICRAF Landscape Portal:
http://landscapeportal.org/layers/geonode:slldsf_status_062016.

Table 1. Sentinel Landscape progress 2016 is avaible here.

Land health assessments in the Sentinel Landscapes

Biophysical surveys were initiated during Phase I of FTA using the Land Degradation Surveillance Framework (LDSF) methodology in order to provide baselines for land health in the Sentinel Landscapes. These surveys and the associated soil analysis, as well as data analysis and modeling, have continued into Phase II. In the following sections we present some highlights from the ongoing analysis.

The LDSF sites sampled represent a wide range of conditions in terms of land use, land cover change, soil properties and land degradation status. Forests, woodlands and croplands are the most dominant land cover classes in the sentinel sites surveyed (**Figure 4**). As shown in **Figure 5**, some sites are very intensively cultivated, while others such as Pando in Bolivia represent intact forest with no cultivation. However, virtually all land cover classes in the FAO Land Cover Classification System (LCCS) are represented. As is evident in **Figure 6**, soil erosion prevalence is generally higher in cultivated areas (i.e. croplands) than in semi-natural areas in the Sentinel Landscapes, although there are some exceptions (e.g. degraded grasslands).

Land degradation status has been mapped using predictive models for all of the Sentinel Landscapes sampled to date, with moderate resolution maps complete (based on moderate-resolution imaging spectroradiometer [MODIS]) and high-resolution mapping ongoing (based on RapidEye and Landsat). Erosion prevalence has been mapped for all of the sites that have RapidEye imagery available, with the results being shared through the ICRAF Landscape Portal. Moderate resolution maps are being produced over the period 2000 to 2015 at present, allowing for assessments of changes (i.e. monitoring) in land degradation status, soil properties and land cover.

High-resolution maps of soil erosion are also being produced where satellite imagery is available (See http://landscapeportal.org/maps/1725/view for an example from the El Tuma sentinel site in Nicaragua. Signing up to the Landscape Portal takes one easy step: http://landscapeportal.org/account/signup).

Also, the LDSF data and baseline analysis results can be explored interactively online through the Sentinel Landscape Explorer (http://landscapeportal.org:3838/slExplorer/) (see also screenshot in **Figure 11**). The Sentinel Landscape Explorer is a work in progress, with analytical results being added continuously. We anticipate to be able to make socioeconomic variables available through this dashboard in the coming five months, and the aim is for this platform to allow users to interact with and explore interactions in the SL data collected to date, as well predictive model outputs.

SL: FAO Land Cover Classification System (LCCS), which was used also in the FAO-AFRICOVER project (http://www.africover.org).
These data show the variation in land cover captured using the LDSF field sampling methodology. The highest numbers of plots were sampled in forest (n =1057) followed by cropland (n=586).

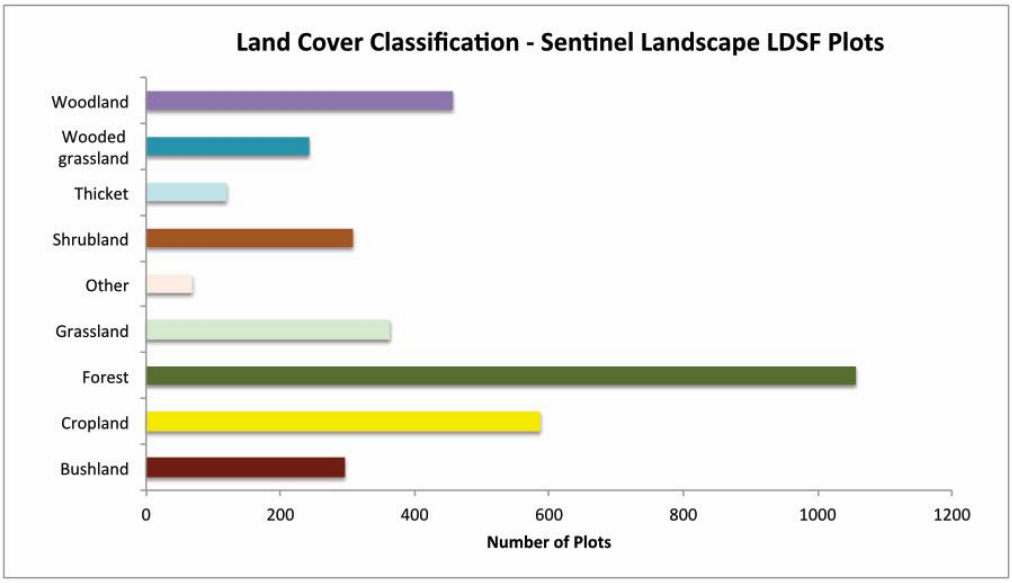


Figure 4. The distribution of SL LDSF sites in terms of land cover classes following the FAO Land Cover Classification System (LCCS).

Note the wide variability of land cover classes captured in the SL datasets. The various SLs hence represent a range of conditions in terms of land cover conversion or transition areas.

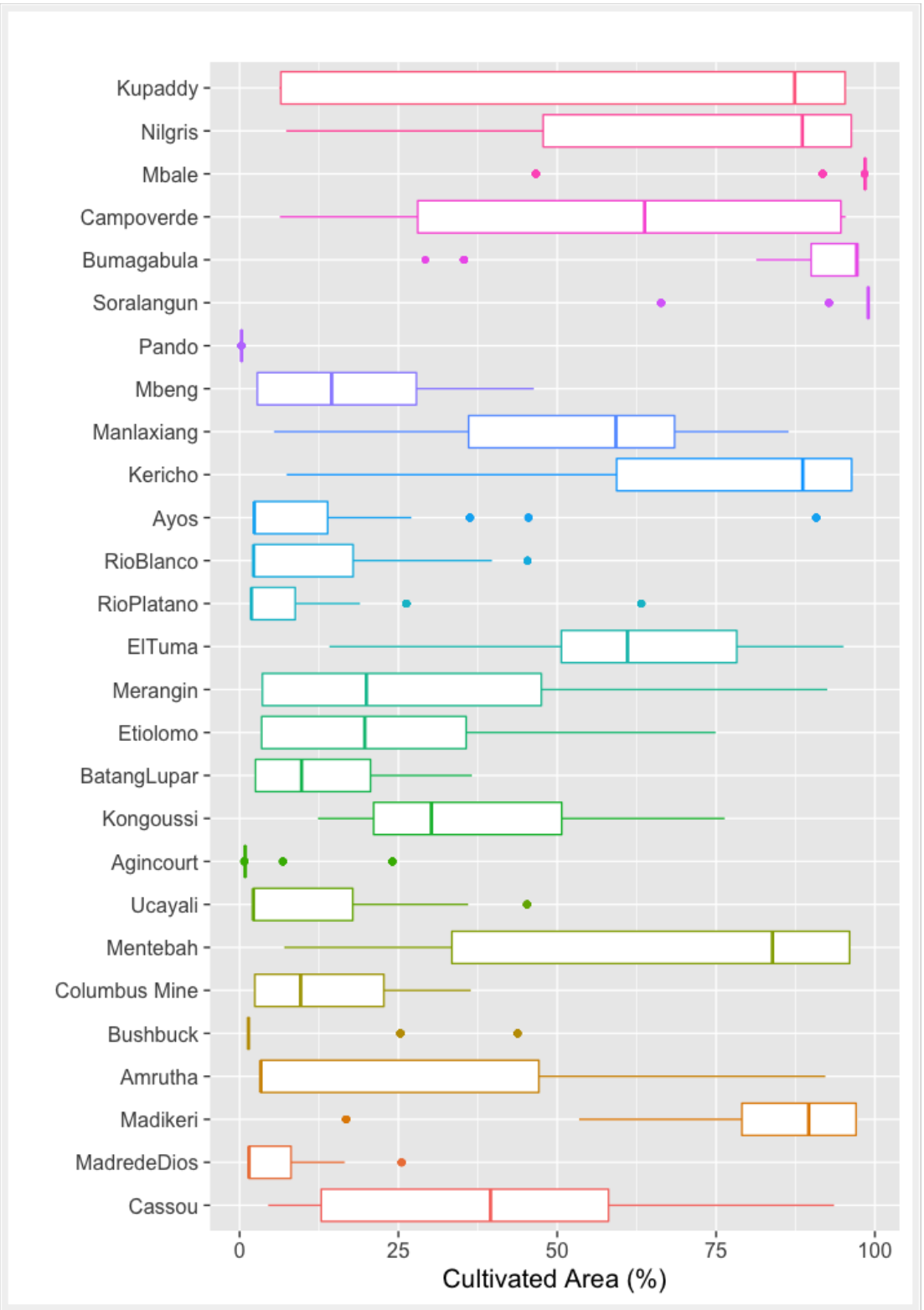


Figure 5. Cultivated area (%) in each of the 27 sampled LDSF sites as part of the SL initiative. Note the variability across the sites in terms of cultivation, with some sites such as Pando in Bolivia being natural forest and other sites such as Mbale in Uganda being intensively cultivated.

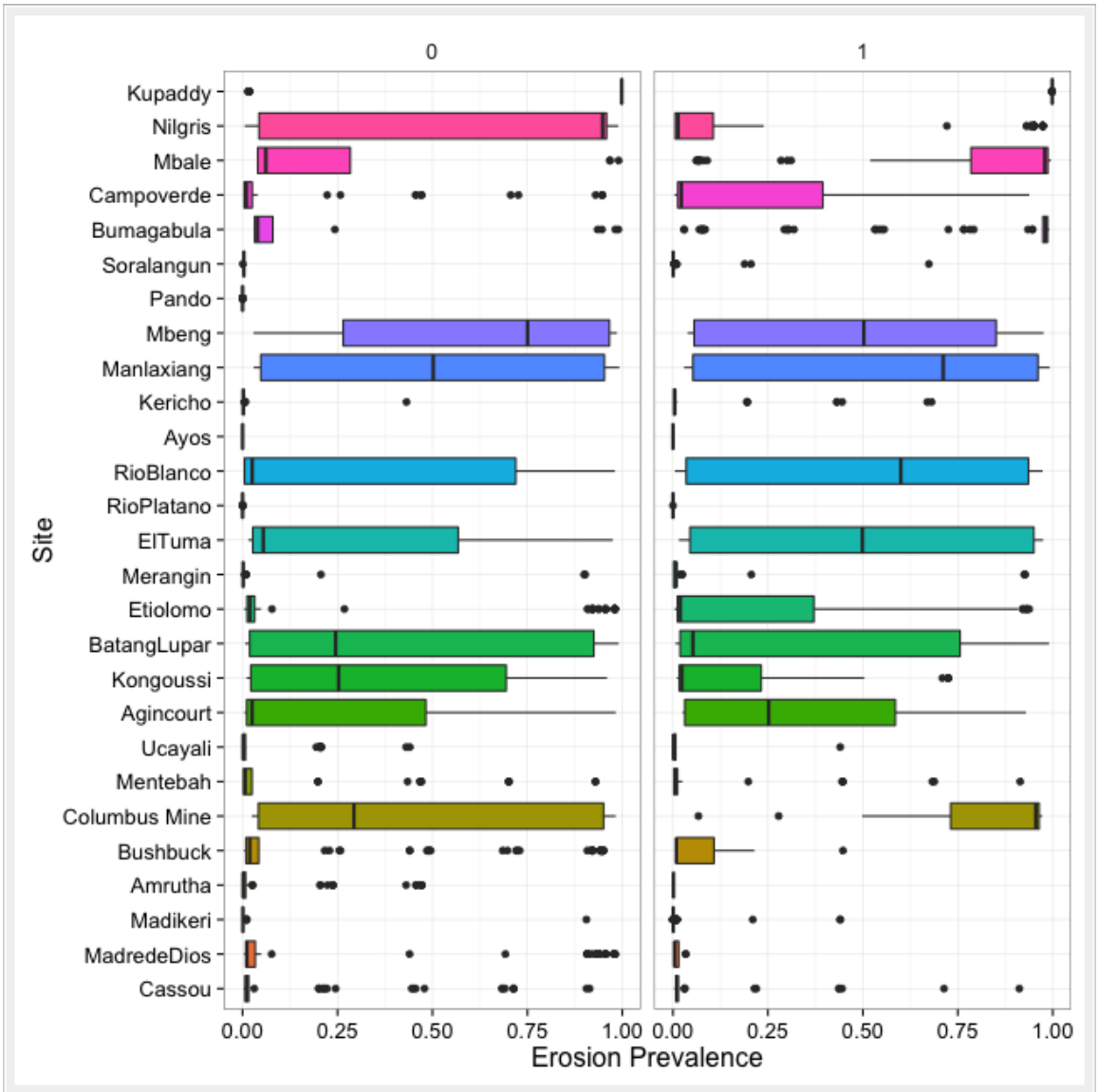


Figure 6. Erosion prevalence in the 27 sampled LDSF sites, showing results of analysis for cultivated (1; right) and non-cultivated (0; left) areas, respectively.

Note the higher prevalence of erosion in cultivated plots in Columbus Mine, Mbale, among others.

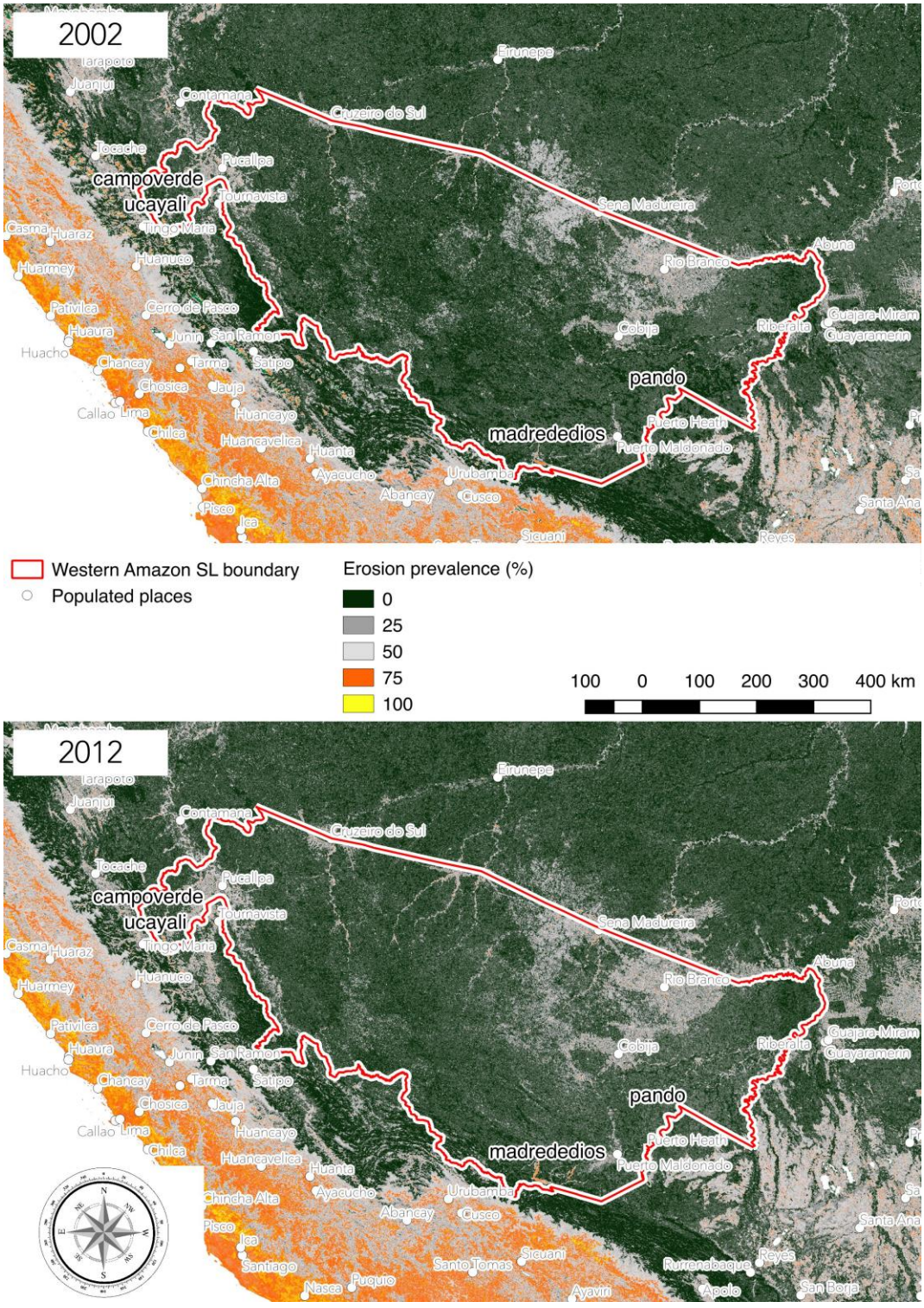


Figure 7. Maps showing erosion prevalence in the Western Amazon SL in 2002 (top) and 2012 (bottom), respectively. As is evident in these maps, significant parts of this SL have been deforested over this ten-year period, resulting in higher prevalence of soil erosion, although erosion prevalence remains relatively low overall. Also evident in these maps are the much higher rates of erosion in the Andes Mountains to the west of the SL.

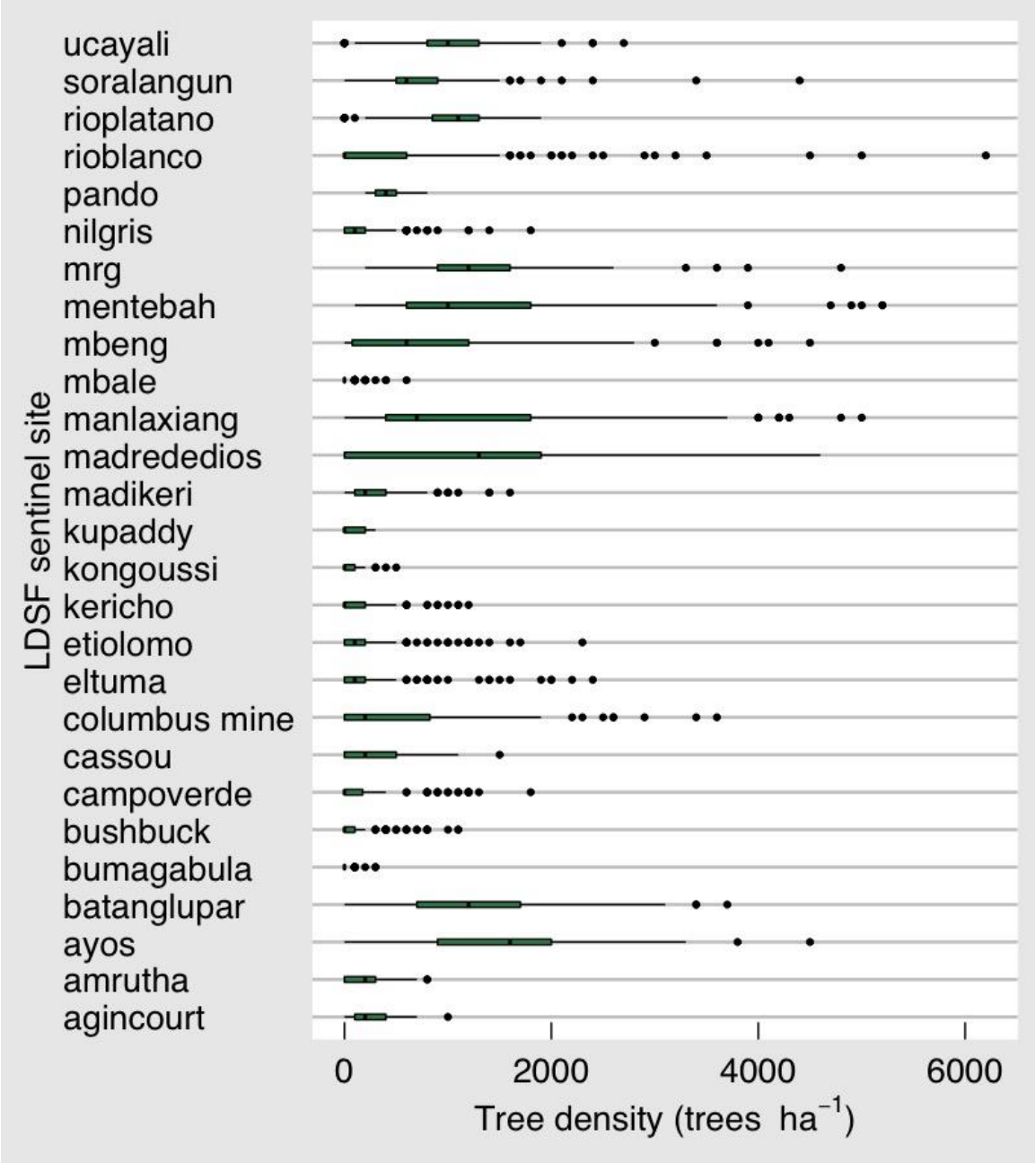


Figure 8. Distribution of tree densities (trees ha^{-1}) for each of the 27 LDSF sites surveyed.

Some of the sites, such as Ayos in Cameroon have high tree densities on average, while Pando in Bolivia has lower tree densities, but larger trees. Other sites, such as Kericho in Kenya have low tree densities overall, particularly in tea growing areas, but with significant variation and higher tree densities in forested plots.

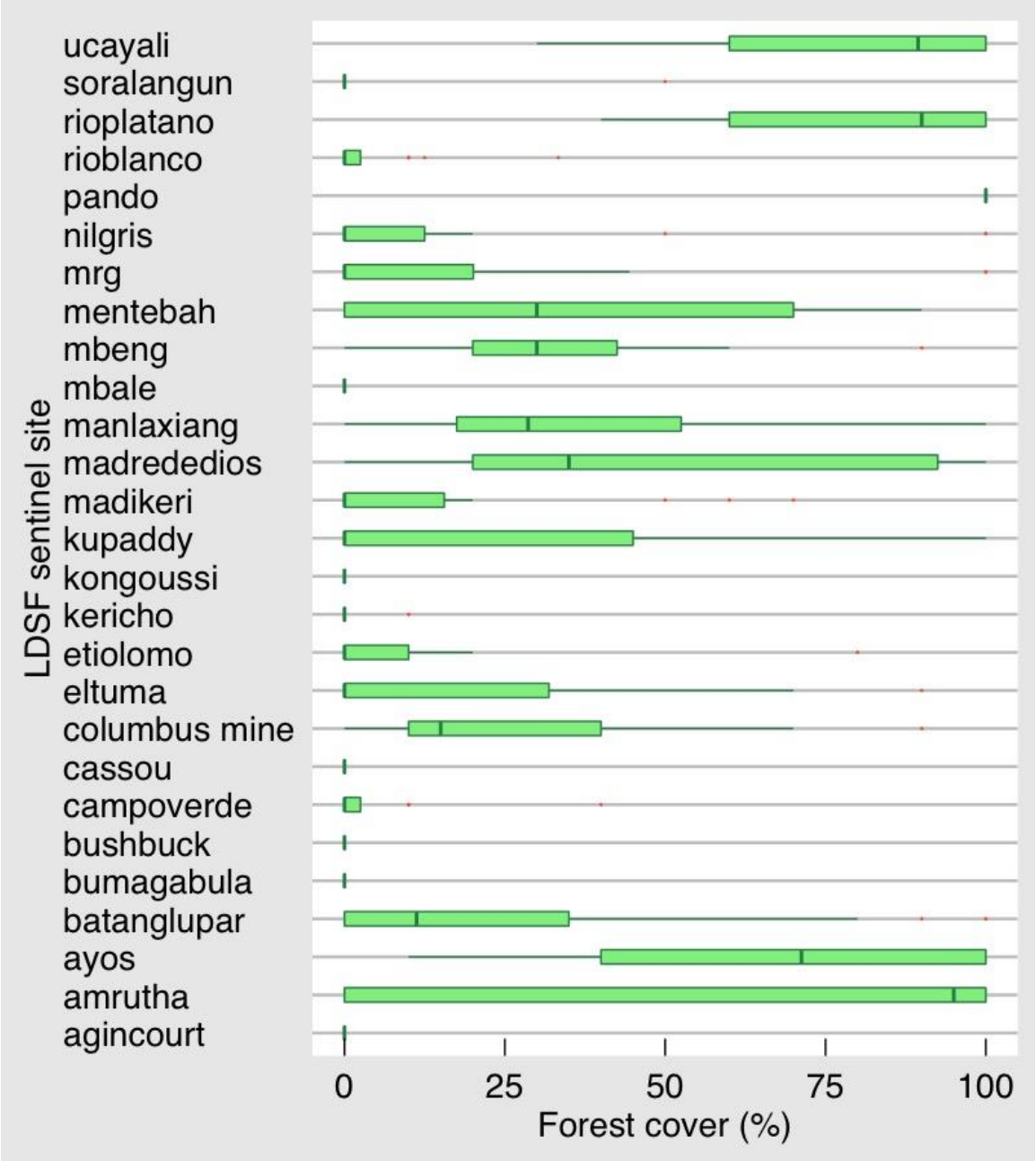


Figure 9. Boxplots showing the distribution of forest cover (%) for each LDSF site in the Sentinel Landscapes. Sites such as Madre de Dios have a wide range in terms of forest cover, from remnants of natural forest to grasslands, while Pando is natural forest and sites like Ayos represent forest mosaics.

Mapping forest cover

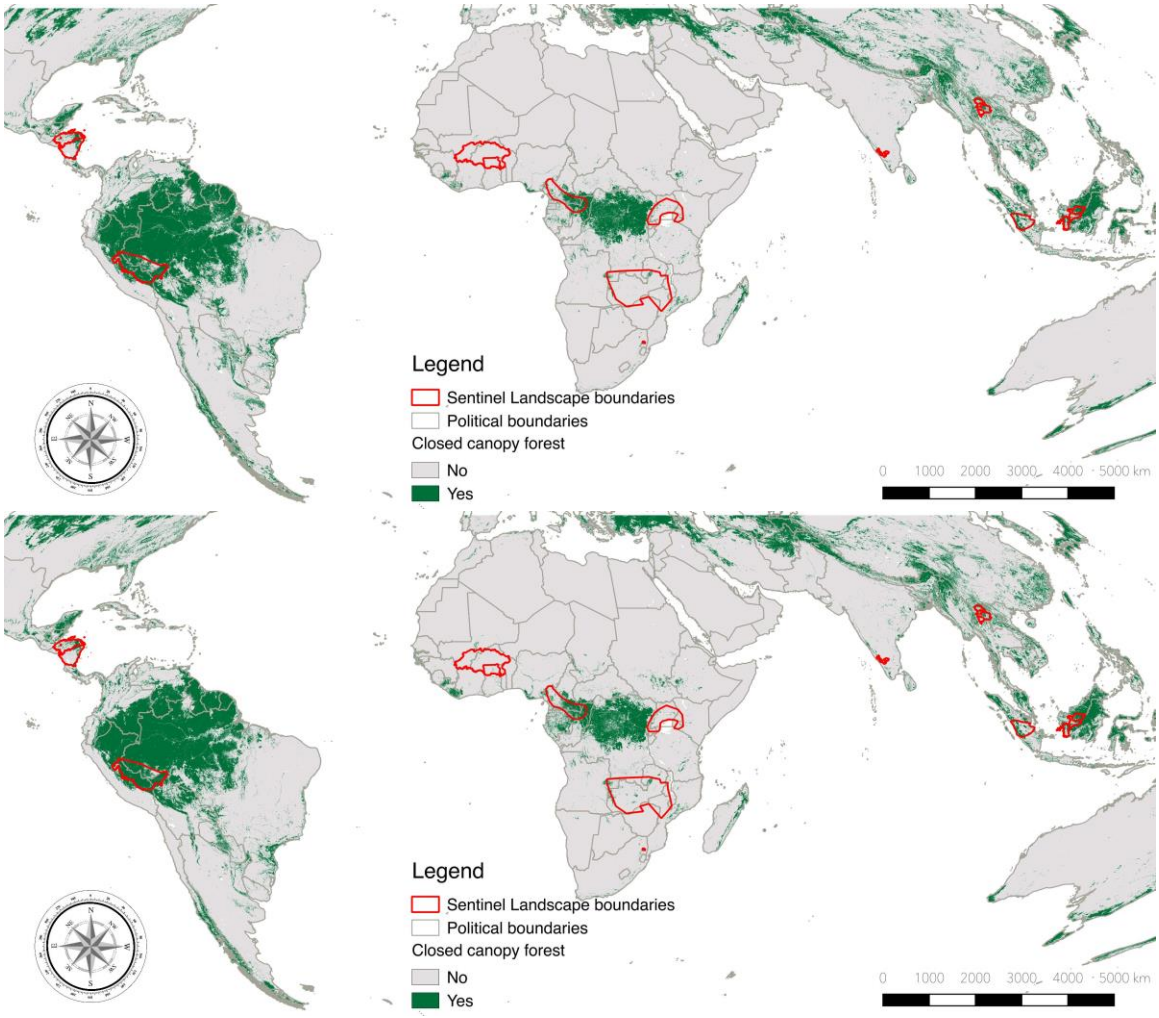


Figure 10. Forest cover map, showing closed-canopy forest in green for 2002 (top) and 2012 (bottom), respectively.

This map was developed based on LDSF field survey data and MODIS satellite imagery, using a cut-off at 75% fractional vegetation cover for each MODIS pixel.

Online indicator analysis of the land and soil health data

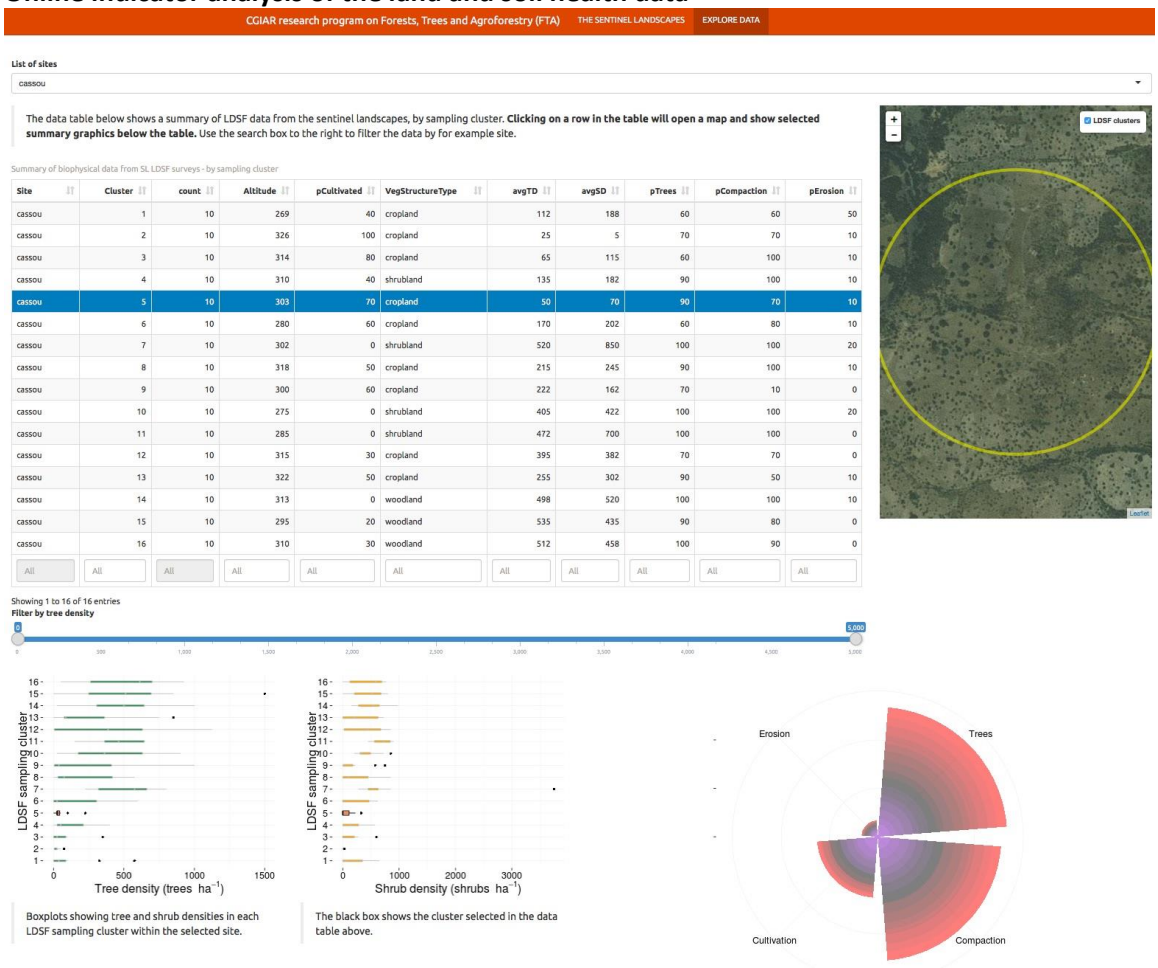


Figure 11. Screenshot of the SL Explorer (http://landscapeportal.org:3838/slExplorer/) where one can explore data and baseline analysis results for the SLs as they become available.

Predictive models and maps of important indicators of land health such as soil organic carbon (SOC), erosion and woody cover are currently being explored to assess changes in the SLs over the period 2002 to 2012. As shown in the example in **Figure 12**, croplands seem to be losing SOC, which is resulting in a decline in soil health, to a larger extent than semi-natural systems. In some of the landscapes, there are dramatic losses in SOC in croplands. The spatial distribution and drivers of these losses need to be better understood in order to target interventions for restoration of degraded areas in these landscapes.

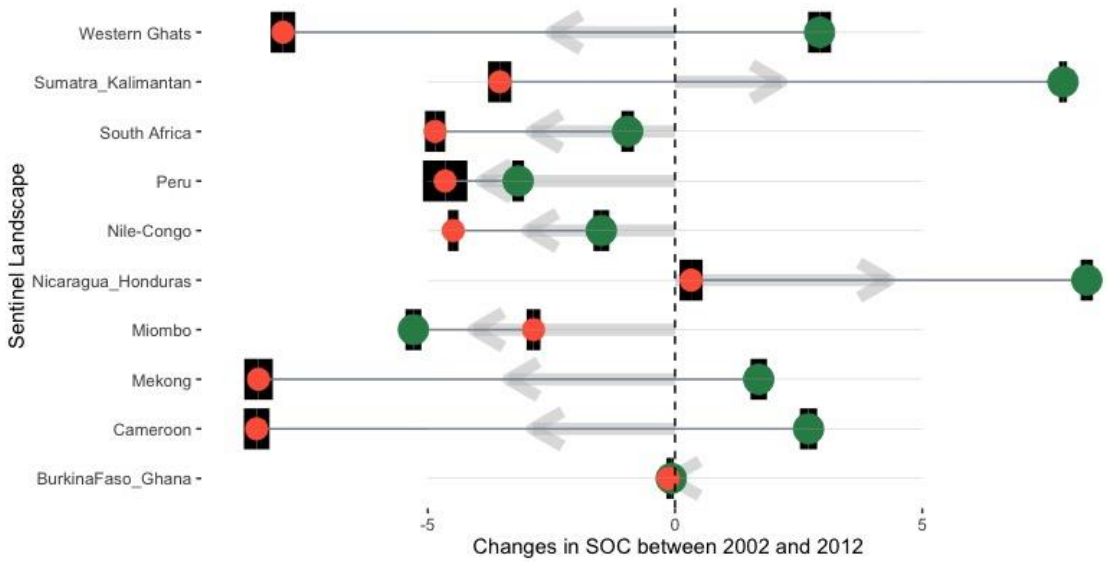


Figure 12. Preliminary results from analysis of changes in soil organic carbon (SOC) in croplands (red dots) and semi-natural (green dots) systems within each of the 10 Sentinel Landscapes. Arrows indicate direction and rate of change.

Socio-ecological analysis

Land health and socioeconomic datasets were collected using a nested, hierarchical sampling design (Hobbs, 2002), where household surveys and biophysical characterization are co-located in (or near) LDSF sentinel sites, which have a spatial extent of 100 km^2. By nesting the settlements/villages within the sentinel sites, socio-ecological processes can be studied in more detail and ongoing work is now focusing on integrating the above land health datasets and analytical results with socioeconomic indicators in order to better understand both environmental and institutional settings in the study areas, including drivers of land cover change and land degradation. Livelihood data were collected through a combination of qualitative and participatory methods and quantitative household surveys. Data are available at both household and village level.

The ongoing analysis is also looking at how rural people can benefit from tree resources and are willing and capable to invest in the sustainable management of this resource. The Sentinel Landscape network conceptualizes people as being part of different, often overlapping social organizations, that have various degrees of dependency on the land based resources within their zone of influence. People are part of a family within a household, integrated in an ethnic community that can either form or be part of a village within a larger communal territory. Each community is part of an administrative organizational unit and their norms and rules conform to the prevailing legal system. Each actor is also part of a livelihood group or typology, albeit with fuzzy boundaries, representing a specific mix of livelihood portfolio. The livelihood portfolio is both a result of the options that actors have, based on access to and the natural potential of the land based resources, as well as off-farm opportunities. The portfolio also determines in-return, household resource distribution between off- and on-farm investments. Thus the SL dataset consists of three dimensions: livelihoods, land health and institutions. Figures 12 and13 highlight site-specific sample analysis using the socioeconomic survey data.

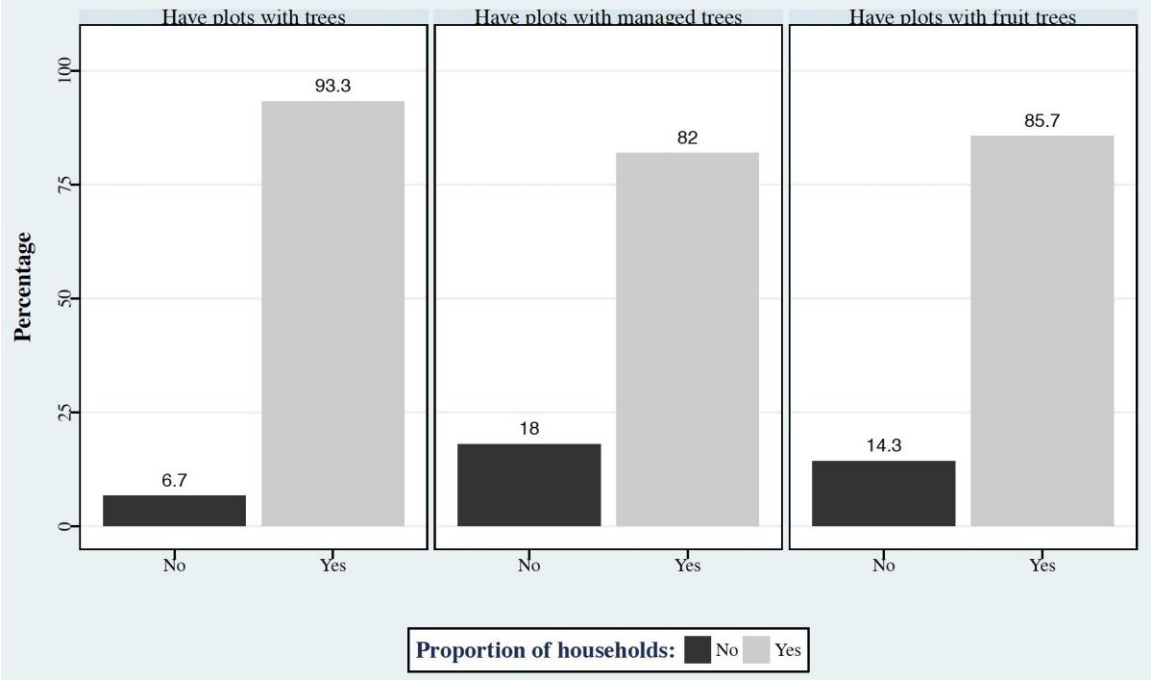


Figure 13: Percentage of households that have trees and the management of the trees for the Kericho site within the Nile-Congo SL.

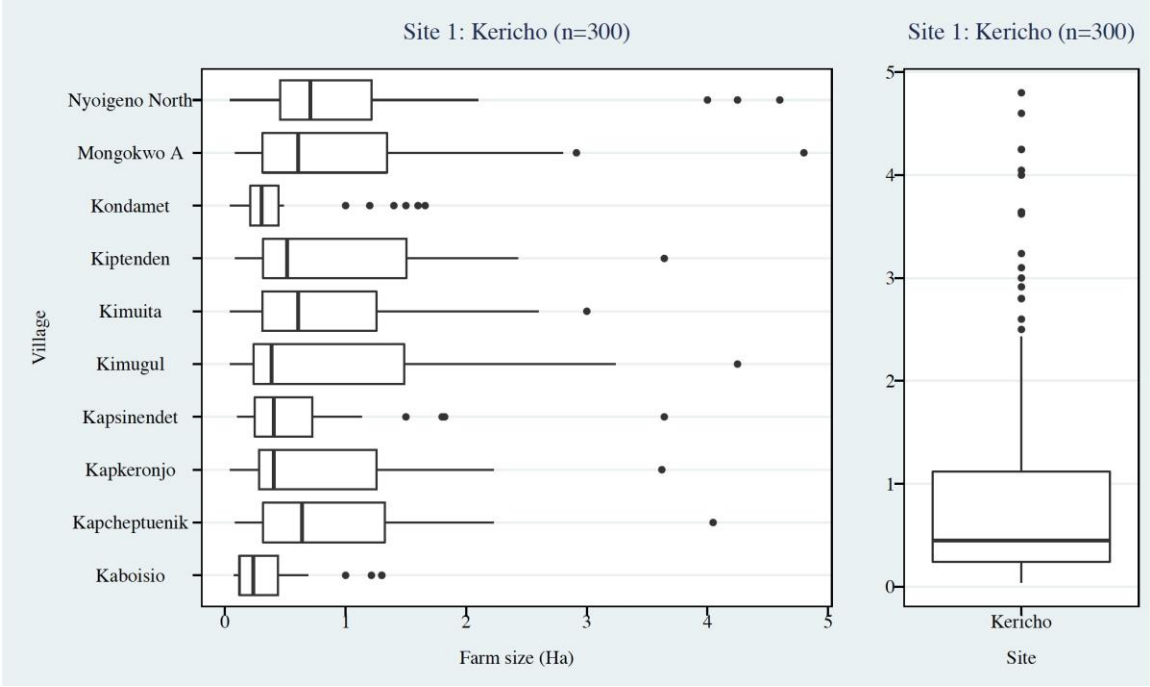


Figure 14: Distribution of farm size (in ha) for each village within the Kericho site in the Nile-Congo SL.

This integrated SL dataset currently consists of 7 Sentinel Landscapes, 10 Villages per sentinel site and 1,200 households per landscape. A total of 280 villages, 8,500 households and 4,305 biophysical ground sampling plots

across 15 countries are being explored in the above analysis. The present status of the dataset is shown in Table 1.

To ensure utility of the datasets collected beyond the scope and duration of FTA, a modular approach was chosen to develop the standardized SL methodology, whereby modules were designed to be linked with existing data-driven networks such as the World Agroforestry Centre's Land Degradation Surveillance Framework, the International Forestry Resources and Institutions (IFRI) methodology, and the Grameen Progress out of Poverty Index.

An overview of the indicators produced and their unit of observation is given in Table 2.

Table 2: The three dimensions of the SL data and their corresponding indicators and scale.

<table>
<tr><th colspan="3">Land Health</th><th colspan="2">Livelihood</th><th colspan="2">Institutions</th></tr>
<tr><td>Vegetation structure</td><td rowspan="5">At landscape level, 500 m resolution</td><td rowspan="5">At sentinel site level, 5.5 m resolution</td><td>Demographics</td><td rowspan="11">Household level</td><td>Institutional strength,</td><td rowspan="11">Village</td></tr>
<tr><td>Tree cover</td><td>Education</td><td>Local autonomy</td></tr>
<tr><td></td><td>Food diversity/Food security</td><td>Governance of natural resources</td></tr>
<tr><td>Above-ground biomass</td><td>Poverty</td><td>Market access</td></tr>
<tr><td>Soil degradation</td><td>Assets</td><td>Market pressure</td></tr>
<tr><td>Soil fertility</td><td rowspan="6">160 sampling points per sentinel site</td><td>Livelihood portfolio</td><td>Institutional strength</td></tr>
<tr><td>Land use</td><td>Dependency on natural resources and land-based activities</td><td>Distance to power</td></tr>
<tr><td>Land cover</td><td>Informal safety nets</td><td></td></tr>
<tr><td>Tree species</td><td>Remittance</td><td></td></tr>
<tr><td></td><td></td><td>Access to credit</td><td></td></tr>
<tr><td></td><td></td><td>Well-being</td><td></td></tr>
<tr><td></td><td></td><td>Happiness</td><td></td></tr>
<tr><td></td><td></td><td>Vulnerability</td><td></td></tr>
</table>

Utility of the Sentinel Landscape to the CGIAR and wider community

A particularly important impact pathway for CGIAR research is to produce international public goods (IPGs) in form of technologies and knowledge that are broadly applicable, such as the rigorous and systematic characterization of key farming systems and landscapes, to facilitate targeted scaling up and the production of baseline data from which to assess progress towards impacts. These IPGs will support the international environmental conventions (UNFCCC, UNCBD and UNCCD), as well as countries in the developing world in their efforts to develop climate mitigation and adaptation policies, and suitable technologies. Across all 15, and now 12, CRPs there is a fundamental assumption that all the technologies, knowledge and policies produced will

deliver sustainable improvements. The Sentinel Landscapes framework offers an opportunity to guard against confirmation bias by looking across entire landscapes at fundamental biophysical and social variables/factors that indicate whether change has been positive or negative, patchy or widespread. The SL network, set up as it has been, also offers an opportunity to all CRPs to use the baseline information that is being made available to sharpen their hypotheses and leverage on each other's complementarities in a manner as to support the Site Integration process currently underway.

The Sentinel Landscape initiative is a direct response to the key recommendation to leverage and strengthen the CGIAR's competitive advantage by conducting long-term, comparative research in sentinel sites (CGIAR Science Council, 2009: 63). Through national dialogues and providing evidence-based policy advice, the Sentinel Landscapes are not only long-term monitoring sites to understand coupled socio-ecological systems, but are also innovation platforms to allow for greater cohesion, interdependence and alignment of stakeholders within and across the landscapes.

Already in 2003, Barrett[2] pointed out that meta-datasets offering truly global coverage, provide not only opportunities to improve the targeting of research and technology development, but also crucial baseline information on which to found ongoing agro-ecological monitoring activities necessary to identify the dynamics of threats and to conduct reliable *ex post* impact assessment at a scale beyond that of strategically selected benchmark sites. If they are well-documented and readily accessible to prospective collaborators worldwide, such datasets can generate important knowledge spillovers globally. There seems, however, to be a significant dearth of such meta-datasets, even though this was an explicit objective of the CGIAR's eco-regional initiative.

Investing in long-term monitoring and engagement networks such as the SL network is essential for the CGIAR for strengthen its current efforts to develop a Results-Based Management System based on the ToC/IDO concept. An increasing number of funders have adopted an outcome orientation in their evaluation of R4D programs. 'Outcome-oriented' is synonymous with 'results-oriented,' 'strategic,' and 'effective.' For Center projects with the usual lifecycle of 3 years, pursuing evidence-based strategies for the type of development goals that funders are expecting will be possible only if not every project must go through all of the project steps (discovery, proof of concept, piloting and scaling). The CGIAR will be able to deliver on the IDOs only through a combination of different research approaches whereby place-based research projects that focus on piloting and scaling are nested in long-term monitoring sites, such as the SL network.

Dissemination of outputs

Outputs of the Sentinel Landscape network will be shared via a number of venues, including through online publicly available dataset (see Table 1. Sentinel Landscape progress 2016), online data exploration platforms, capacity-building data analysis workshops, peer-reviewed publications, briefs and websites, among other.

Specifically:

- published datasets, raw verified data, user-friendly synthesis datasets (indicators), interactive GIS Databases (e.g. http://landscapeportal.org:3838/slExplorer/)
- scientific publications, both meta-analysis, following the original research design of the sampling and regional analysis, integrating SL data with other datasets
    - Publications have already been published highlighting the utility of the methodology and acknowledging FTA funding
- a synthesis book
- communication materials (videos, presentations, flyers, blogs).

Integrated datasets are being made available through our open source repositories on Dataverse Sentinel landscapes (for all raw and verified datasets) and through the Landscape Portal (for all processed land health maps and GIS layers). Knowledge products are made available through our website (http://foreststreesagroforestry.org/fta-sentinel-landscapes/.) as well as presentations and side events at key events such as World Agroforestry Congress, World Forest Congress, and the Conference of the Parties of the Convention on Biological Diversity.

Integrating CRP and Center efforts to support landscape initiatives

Until now, most of the effort has focused on setting up the network of Sentinel Landscapes and the relevant baselines. FTA's logic for the development of the network into a cross-CGIAR/cross-CRP resource foresees a phased process in which, after the network has been set up with the kind of baseline and analytical information presented earlier in this document, it would be easier to attract research from other CRPs and indeed other organizations. This logic is beginning to bear fruit as the SL coordinator has now received enquiries for colocation of research or indeed expansion of the network from other initiatives. For example, Wageningen University, Forest Ecology and Forest Management Group has a new project in Mexico that would like to expand the SL network to include their action sites. The CGIAR's Site Integration process is expected to act as a catalyst in this regard, and a concerted effort to present the opportunities of doing research in Sentinel Landscapes will be made by relevant Sentinel Landscape coordinators, once the Site Integration teams have gathered sufficient momentum. In addition, several CRPs, donor communities and NGOs have contributed to the LDSF data network including: CCAFS, WLE, IFAD, BMZ, BMGF and Wajibu, among others. This is an example of the data-driven network as a platform for collaboration.