RESEARCH PROGRAM ON Forests, Trees and Agroforestry

CGIAR

Plan of work and budget (POWB) for 2021

CGIAR Research Program on Forests, Trees and Agroforestry (FTA)

Approved by the Independent Steering Committee of FTA

Revision 1 (31 March 2021) with updated (final) 2020 carry-forward numbers in Table 3a

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1 Adjustments/ Changes to your Theories of Change (ToC), if relevant

In 2020, FTA was the subject of an independent review conducted by the CGIAR Advisory Services Shared Secretariat on behalf of the CGIAR System. The purpose of the review was to assess the extent to which FTA is delivering quality of science and demonstrating effectiveness in relation to its theory of change (ToC). The scope of the review focused on FTA activities and results that were reported from 2017, when the program started its second phase, until end of 2019.
The evaluation found that FTA's Program level and Flagship level ToCs were improved vis-à-vis phase I and that progress along these was mostly in line with expectations, noting that this was remarkable considering that the program received only about half of its expected W1/W2 funding and is expected to finish a year earlier than originally planned.
While there were no significant changes to FTA's theory of change in 2020, the program has embarked in an end-of-program impact estimation work, the results of which are expected to be available before the end of the program in 2021 (see section on Monitoring, Evaluation, Learning and Impact Assessment below for additional information).

2 Plans and Expected Progress Towards Outcomes

FP1 Tree genetic resources (TGR) to bridge production gaps and promote resilience

FP 1 through its mantra *'The Right Tree for the Right Place for the Right Purpose'* continues to support quality tree planting (of trees for food & nutrition, timber, wood fuel, fodder, medicinal etc.). In 2021, the program will continue participating in international initiatives and fora that influence global agendas and policies e.g. development of The Second State of World's Forest Genetic Resources (SoW-FGR). This report will build on the previous narrative and define the framework and associated programs supporting global, regional and national action plans on tree biodiversity's conservation and use.

Work plans in 2021 are based around:

1. Safeguarding and conservation aligning to the global plan of action for the 1st SoW FGR and **FP1 Priority-Biodiversity.**
2. Domestication/ improvement aligning to workplans of **FP1 Priority- Orphan Crops** as by the activities of the African Orphan Crops Consortium (AOCC) and as proposed in the 'Diversity Breeding strategy' currently being finalized.
3. Seed Delivery Systems aligning to workplans of **FP1 Priority-Seeds and Seedlings Delivery Systems** in collaboration with **Priority-Restoration** (led by FP 4) is aligned to the work programs of various bilateral projects being delivered e.g. the Provision of Adequate Tree Seed Portfolio in Ethiopia (PATSPO), Vision for Change,[1] etc. Along with the workplans provided in the POWB for 2021, a TPP- Transforming the quality of tree planting (TQTP)- is being developed- building on the work from CoA 1,2 &3 generated over the last 4 years in FP1. In 2021 we will focus on developing this integrated platform for ensuring restoration and agroforestry success through partnerships with pantropical planters.

[1] The Vision for Change partnership of Mars Inc., ICRAF, CNRA, Agence Nationale d'Appui au Developpement Rural (ANADER) works to improve the livelihoods of farmers through research on developing improved cocoa varieties, securing markets for agroforestry products and quantifying the potential for trees on farms for climate change mitigation and adaptation.

4. Focus on '**FP1 Priority- Nutrition** will be aligned to the workplans of Food Trees' in the Putting Research into Use for Nutrition, Sustainable Agriculture and Resilience (PRUNSAR) TPP- Nutriscapes (via 1,2,3 above).

FP1's ambition for 2021 is that national governments (policy-makers), private partners and actors:

- Are supported in the adoption of site- and species-specific Climate Appropriate Portfolios of Tree Diversity (CAPTD) tailored for different agroecological zones; develop and deploy CAPTDs from on-going case studies (e.g. PATSPO, Fruit Africa, etc.).
- Are supported in adoption of cost-effective and equitable quality tree-planting approaches, with attention to policies governing genetic material transfer and use.
- Are encouraged to invest in productive and ecological landscape restoration based on assessment and monitoring of the composite values of applying quality tree planting in forest and agricultural landscapes based on FP 1 impact evaluations.
- Utilize effective monitoring methods, tools, and practices to mitigate threats to valuable TGR, biodiversity and to support food and nutritional security.
- Will adopt cost-effective tree improvement approaches (upstream and downstream technological approaches) in agroforestry/forestry research and development
- Use the evidence-based data and effective implementation plans developed to adopt and promote healthier diets from the consumption, production, sustainable management and marketing of tree-based foods from forests and mosaic-landscapes.

FP2 Enhancing how trees and forests contribute to smallholder livelihoods

FP2 leads six of FTA's operational priorities.

In the agroecology priority the focus in 2021 is on the implementation of a common protocol for assessing the socio-economic viability of agroecological practices across 12 contrasting case studies in Africa, providing new evidence on what motivates farmers to adopt agroecological practices and the impact that their adoption has on production, labour, economic returns and overall wellbeing of farm households. The Transformative Partnership Platform on agroecological transitions established with CIRAD, FAO, UNEP and Biovision in 2020 will be strengthened through new work on the development of holistic performance measures for agricultural and food systems, and a global trial of agroecological control measures for fall army worm, developed on the basis of ongoing experiments in Malawi and Zambia.

In the **priority on diversification of tree-crop commodity production systems**: a major synthesis of the performance of oil palm diversification options in Brazil will be completed, based on data derived from a public-private partnership with Natura; the evidence base for an agroforestry approach to greening the coffee value chain in Vietnam will be assembled with government and private sector actors and implemented in the Central Highlands and new guidelines for pruning strategies for coffee agroforestry produced; while new tools for deciding on rejuvenation strategies in cocoa to maintain productivity without further encroaching forest areas will be released with global relevance and immediate application in West Africa and Latin America.

The silvopastoral systems priority will focus on producing a synthesis of the climate mitigation potential of silvopastoral options, compilation of and access to data on fodder value of a diversity of tree species and novel use of drone photography to parameterize models of tree impacts on pastures for NAMA livestock projects in Central America. Evaluation of using an options by context approach to implement agroforestry concessions

in Peru and policies conducive for agroecological transitions will, together with analysis of policy implementation gaps across seven African countries represent the key focus of the priority on policies at the forest-farm interface. **The market- based agroforestry priority** will focus on documenting the scaling up of options for sustainable production on sloping land in North-west Vietnam, using a novel network of exemplar landscapes across three provinces; on the uptake of innovative non-timber forest products to increase rural incomes in Indonesia; and value chain upgrading and payment for ecosystem service schemes to finance ecosystem-based adaptation to climate change in Sri Lanka. Advances **in livelihood trajectory modelling** will focus on i) the use of hybrid models that embed globally calibrated crop models (APSIM – developed with CSIRO) providing productivity estimates for livelihood dynamics models (developed in SIMILE) to explore the extent to which climate adaptation options confer livelihood resilience in dryland Africa and ii) the importance of intrahousehold dynamics, and specifically gender relations, for uptake and outcomes of land restoration options.

FP3 Sustainable value chains and investments for supporting forest conservation and equitable development

FP3 leads or co-leads five of FTA's operational priorities with the following objectives in 2021.

The priority on **public and private commitments to zero deforestation**, FP3/CoA1, will upscale and adapt the arrangements and initiatives to other jurisdictions of the six selected countries it has been working in. The team will participate in international seminars to diffuse the results and approaches, as well as hold a workshop to prepare a brief on the merits of different approaches to jurisdictional performance monitoring systems and certification. The expected outcome is that private sustainability initiatives, in conjunction with supportive public policy, will foster improved management and business practices with enhanced socio-environmental performance.

The priority on **Effectiveness of approaches to sustainable supplies** will complete its work on public and private sustainability standards in Cameroon for timber and for cocoa in Cameroon, Côte d'Ivoire and Burkina Faso. In Cameroon, an article will be completed on the governance of cocoa certification schemes. The impact of the FLEGT process on the domestic demands for legal timber will be assessed. Two media campaigns at national scale are planned to promote timber and chocolate with sustainable origin. For the work in Côte d'Ivoire a report will be completed on the governance of the legality of cocoa production by comparing the "private certification" approach and the creation of gazetted agroforests. A scientific article will be published on the production of legal and sustainable cocoa around the Bossematie forest. For the work in Burkina Faso two briefs are planned to promote the continuity and change in governance of shea value chains and developing local action plans to sustainably manage shea parklands as an integral part of state-approved forest management units (*chantiers d'aménagement*). The expected outcome is that supplies of the commodities are produced under internationally recognized sustainability and legality standards, frameworks or commitments in producing countries.

The priority on **Plantations and tree-crop commodities,** undertaken in collaboration with FP4, is addressing productivity, environmental and social challenges faced by timber and high-value tree-crop plantations. Building on the assessment of the synthesis papers drafted in 2019 on timber, oil palm and rubber plantations, the priority will complete the analysis of approaches to manage synergies and trade-offs between plantation productivity, socio-economic and environmental outcomes in selected "hotspots" and landscapes. For timber plantations in Southeast Asia, Africa and Latin America, the landscape impact assessment reports will be completed as well as a synthesis working paper. For oil palm plantations in

Indonesia, Malaysia, Brazil, and Ghana, 7 MSc internships will be completed related to how companies face labour shortages and the synergies and impacts of combined oil palm plantations and other land uses. For rubber plantations the global comparative analysis of rubber smallholder supply chains will be completed and presented to the newly established Global Platform on Sustainable Natural Rubber (GPSNR). As well, an evaluation will be completed on the Rubberway system to map sustainability practices in the supply chain of natural rubber in Ivory Coast. A synthesis brief of the three plantation types will be prepared for guiding public and private investments and will incorporate the analytical results of the plantation ecosystem services studies from FP4. The synthesis will be presented at GLF. The expected outcome is that the commodities are produced under internationally recognized sustainability and legality standards, frameworks or commitments in producing countries.

The priority on **Inclusive business models** will build on the knowledge base created from previous primary data collection of more than 50 businesses in the oil palm, cocoa, tea, coffee, sugarcane, avocado, and timber sectors, and surveys of 1,450 inclusive business ventures with 12 case studies selected in Peru, Ghana and Tanzania. 2021 will be devoted to delivering on outcome targets by further disseminating and repackaging results, as well as broadening engagement with business, civil and state actors. This will involve establishing an inclusive/sustainable business online platform that will serve as a vehicle for (future) dissemination, engagement and give visibility to major inclusive business (knowledge) innovations and national and international champions. The expected outcome is that business platforms, major bilateral and multilateral donors, businesses and service providers in selected global commodity value chains develop and implement business models that are more inclusive, gender-responsive, economically viable and environmentally sustainable.

The priority on **Innovating finance for sustainable landscapes** will build on 2020 results to deepen its influence on financial institutions to adopt environmental, social and governance (ESG) criteria when lending to timber, trees and select agricultural crops. Work in 2021 will continue improving the understanding of financing landscape initiatives, approaches and modes of operations, and key organizations and networks engaging on inclusive landscape financing. Plans include additional case studies on risk management and barriers to innovative finance. Outreach on results will involve participation in international forums and sponsoring an international workshop on risk management and innovative finance strategies. The expected outcome is that financial service providers lending to timber, tree and agricultural crops in the targeted jurisdictional landscapes adopt ESG criteria.

FP4 Landscape dynamics, productivity and resilience

In 2021, FP4 will lead three priorities and actively participate in five, focusing largely on closing out work, synthesizing and communicating lessons learnt and achievements.

In the priority on **Restoration** work will be finalized in a number of areas including developing decision support tools for diversity in restoration, land use planning and restoration finance. Specific work around restoration of secondary forests will be finalized, including modeling and studies on diversity, impact of landscape matrices and plot structure on regeneration, socio-economic factors in restoration and secondary forest restoration scenarios. Validation will also be done for a multi-scale collaborative monitoring framework developed in 2020. In terms of synthesis, a collection of papers is envisaged around the social ecology of restoration as well as papers on wood and woodfuel and restoration.

Leading the **governance** priority, FP4 work will complete the development of theories of change for land management, landscape approaches and pastoral conflicts, multi-stakeholder forums, customary power dynamics, and rights, equity and tenure - with several papers planned. A special issue on the political ecology/economy of forests landscapes with a collection of papers is envisaged. Some collaborative work on multi-stakeholder forums and landscape approaches will also be carried out in collaboration with PIM.

In co-leading the priority on **enhanced nutrition and food security**, FP4/CoA3 will advance work on nutritional diversity in rice landscapes, drivers of food and dietary changes, nutritional values of under-utilized foods and an analysis on the role of bushmeat in cross-over diseases. Collaborative work on Ethiopian food systems will be done in collaboration with A4NH.

FP4 will contribute to priority on **plantations and tree-crop commodities** by publishing a book on Tree Commodities and Resilient Green Economies in Africa in early 2021. Thereafter work will focus on communicating the key messages of the book in multiple forums. Some synthesis work is planned on the economics of ecosystem services from tree commodity landscapes with two papers targeted.

Time and effort will be invested in communicating FP4 achievements and lessons learnt from the second phase of FTA, with events planned at the World Forestry Congress (on community forestry and governance of restoration), at the UNFCCC COP in Glasgow on Ecosystem-Based Adaptation and NDCs (together with FP5), at the UN Food Summit on nutrition (together with FP1) and potentially a digital conference on tree commodities in Africa (together with FP3). Some digital communication will also be done on portfolio approaches and stocktake synthesis from the sentinel landscapes work. In terms of focus countries, most of the FP4 work will focus on Brazil, Cameroon, Costa Rica, DRC, Ethiopia, India, Indonesia, Kenya, Mexico, Nicaragua and Uganda.

FP5 Forests, trees and agroforestry for climate change adaptation and mitigation

Priorities 5 (NDCs) and 7 Blue carbon/Peatlands

Priorities 5 and 7 relate to mitigation objectives under FP5 and hence work towards the same outcomes and milestones (Table 2A).

Priority 5: Our work on REDD+ (globally) and payments for environmental services (PFES - Vietnam) will continue. We will prepare guidance on REDD+ in the form of forest diagnostic tools to help countries identifying drivers of deforestation and degradation more effectively, work on developing emission factors and research on stakeholder collaboration. We will finalize a standard bamboo carbon measurement framework, expected to be adopted by UNFCCC and other global standards institutions. Further, the ID-RECCO database (of REDD+ projects globally) will be updated as a reference tool. We are implementing work started in 2019 on delivering the circular bioeconomy in the Global South, through a new Transformative Partnership Platform (TPP). We will develop a report on the second round of NDCs and on the alignment between NDCs and national adaptation plans (NAPs) for implementation at landscape level in Central America, and work on global jurisdictional approaches. Gender features prominently in some of our work on mitigation and NDCs. All these activities strongly support and advance the outcome.

Priority 7: SWAMP work on tropical peatlands will continue, with support to the TSBF and the Peruvian policy making on peatlands and climate change in particular. FP5 will finalize an expert system for peatland carbon distribution analysis in the flooded llanos of Colombia. We will finalize a paper and one InfoBrief, we will produce an InfoBrief on methodological

issues for stock difference and gain loss methods for determining peatland GHG emissions. We plan to disseminate this with presentations at AGU and at least one policy-relevant meeting in 2021. All these activities strongly support and advance the outcome.

This work will provide options for enabling policy architecture and public-private partnership mechanisms to be used to shape corporate zero-deforestation commitments (for example NDCs or other national and international climate policy strategies such as on REDD+).

Priority 6 (Bioenergy and biomaterials)

Work will focus on developing approaches to producing bioenergy from degraded land, related to assessing biodiversity effects, land restoration, paludiculture, and data on survival and growth performance of Pongamia, a high-value forestry tree. We will synthesize research on charcoal carbon footprint comparing improved and circular economy versus traditional systems and provide theoretical framing on system thinking for sustainable woodfuel in SSA. FP5 scientists will write, and disseminate, a concise review and synthesis on bioenergy sustainability with focus on wood-based bioenergy potentials and constrains in developing countries, also with a focus on gendered solutions. FP5 will hold a panel discussion on bioenergy and land restoration. We are also analyzing the nexus between restoration and bioenergy supply in Africa, with the aim in 2021 to package and communicate the findings to wider audiences at policy and strategy development levels.

We expect to make available case studies on producing biofuels on marginal land, as well as analysis of demand and supply, costs, social and environmental impacts, carbon footprints and synergies/trade-offs with food production and variation by world region, feedstock types, and scale of bioenergy production for use in more informed national policy making.

Priority 8 (Climate change adaptation)

We are piloting sustainable land use and forestry in Serbia, FTA venturing into a new geographic area (Balkans) and developing financial mechanisms supporting short-rotation plantations for bioenergy together with permanent reafforestation for ecological and biodiversity purposes across in total over 50.000 hectares. Serbia is not within the FTA target area, but the activities are clear spin-off from FTA as we were approached by partner E3 International to join their project based on our expertise. At the same time, this demonstrates taking up a new line of work to involve private sector funding, which we are developing with Resilient Landscapes (the CIFOR-ICRAF spin-off) and which will later be employed in the tropics.

We are piloting adaptation monitoring frameworks in agroforestry in either Kenya, Indonesia or Ethiopia. We are working on tools for nature-based solutions (NBS) implemented by NAMAS in Latin America in relation to NDCs, including a negotiation tool for the livestock sector in Latin America, including a new Catalog of Fodder Trees for Central America. We are publishing analysis on various aspects of ecosystem-based adaptation (EbA). A practical information package will allow governments and households to invest in bamboo plantations for climate change mitigation and energy provision. We will be concluding an innovative data set on six years of water monitoring under different land uses in Kenya. FP 5 work on adaption involves strong Gender engagement. This will provide science-based support available to risk-assessed EbA policy and practice.

MELIA - Monitoring, Evaluation, Learning and Impact Assessment

In 2021, FTA's work on Monitoring, Evaluation, Learning and Impact Assessment (MELIA) will continue the work started in 2020 of documenting progress of FTA contribution in addressing five key global challenges where FTA is expected to deliver results and to assess

the program's contribution to SRF relevant targets associated with these challenges. Studies to address progress made on two challenges (*Protection of forests and reduction of deforestation, and the Rising demand and need for nutritious food*) started in 2020 and the studies addressing the three remaining challenges (*High prevalence of degraded land and ecosystem services, Unsustainable land use practices widespread, Persistent rural poverty with increasing levels of vulnerability*) will be launched in 2021. All studies will be concluded before the program ends in December 2021.
The MELIA cluster will also continue to support Flagships in demonstrating and documenting their outcomes and impacts through the development of a series of Outcome/Impact Cases that are representative of the full spectrum of research of the program and that will be used for documenting FTA's legacy and outcomes as well as in the context of the Annual Reporting 2020 and 2021.

Gender

In 2021, FTA's operational priority on **gender equality and social inclusion** will continue to focus on achieving equitable outcomes, including gender equality and social inclusion in their own right, through work on tenure, governance, restoration, climate change, and value chains. As outlined in FTA's Gender Strategy (2013) and FTA's 'Gender Equality and Social Inclusion: A Revised Research Agenda and Action Plan 2020-2021', FTA will provide guidance and support to scientists, practitioners, and policy makers on gender integration in the forestry and agroforestry sectors and produce strategic gender research and innovations to transform discriminatory structures and norms. As 2021 marks the final year of the CRP, FTA will focus on the creation and sharing of legacy gender products. These will include a curated resource hub with the gender and/or gender-responsive methodologies it has developed since the program's inception, and a training guide to promote inclusion through multi-stakeholder forums (MSFs), building on years of work on the topic. This hub will contribute to the Resource Hub being created by the new CGIAR Gender Platform.

To synthesize work completed in Phases I and II of the CRP and to guide the gender-responsive implementation of the post-2020 Global Biodiversity Framework (GBF), FTA will produce strategic guidance to policymakers and practitioners on approaches that generate synergies between gender equality and biodiversity conservation. The multi-actor process of preparing this guidance, which will be based on empirical evidence gathered across regional contexts by FTA and several partners with whom FTA has collaborated in the post-2020 GBF process, will further serve to strengthen the networks FTA has developed over the years. A similar process will result in strategic, empirically informed guidance to policymakers and practitioners on gender and value chains, leveraging significant previous and current FTA investments and offering a bridge between research and policy. In 2021, FTA will additionally launch its gender and restoration learning module at a side-event at the World Forestry Congress and strategically disseminate it among and beyond members of the Global Landscapes Forum's (GLF) Gender Constituency, which FTA initiated and leads as part of this Priority. To ensure that FTA gender research is informed by state-of-the-art theoretical frameworks and methodological approaches, the Program invests strategically in partnerships with academia and in the production of tools and gender integration guidance products. A key output in 2021 will be the publication of a special issue on gender and restoration, in collaboration with WLE, PIM, and several academic and non-academic partners. Finally, as a basis for a new IFAD-funded project, FTA will develop gender-transformative methodologies to strengthen women's land rights in 7 countries, thereby contributing to cutting-edge initiatives to bring gender-transformative approaches to the fields of agriculture and natural resource management.

3 Financial Plan for the coming year, including use of W1/2

The FTA POWB is both priority-based and activity-based. FTA's POWB is priority-based, as it is prepared taking as entry point the operational priorities (Annex 1). The POWB is activity-based in the sense that for each operational priority an itemized list of W1-2 funded activities and deliverables (each one with its dedicated amount of resources) is agreed to as part of the POWB.

The financial plan for FTA is USD 10,490,000 of W1-2 in 2021 (Table 3), including the 10% stretch target above the 90% target disbursement from the FINPLAN 2021 approved by the CGIAR System Board at its 18th meeting on 23 November 2020.

At 31-12-2020, there is an amount of USD 5.57m of previously committed research inscribed in previous POWBs (from end-of-year final actual W1-2 allocations to FTA) but remaining to be spent and fully delivered. This covers research additional to this POWB and 2021 FINPLAN, that was previously planned, with W1-2 funds previously allocated and already distributed by the lead center to FTA partners according to the previous POWBs (2017 to 2020), for specified activities. Therefore, under this carry-over are found hard commitments (e.g. LoAs with third parties) or soft commitments (e.g. internal commitments such as staff time covered in 2021 to finalize the work), the case being. This carry-over covers all flagships, cross cutting activities (see Table 3a) and all FTA partners, with a preponderance of FP2 the reason for this being that the plan of work on agroecology is only starting and expenditures will ramp-up in 2021 (it is funded by France under W2 and appears under FP2). A list of the related carried-over activities is available on request. The full 2021 workplan of FTA partners and teams include the final delivery of these carried over activities, as well as the new, additional activities under the present 2021 POWB funded by the (additional) 2021 FINPLAN.

TABLES

Table 2A Planned Milestones

FP	Mapped to Sub-IDO	2022 FP outcomes	2021 Milestone	Indicate of the following: 1) Identical to proposal 2)Reworded/ rephrased from proposal 3) new/ changed*)	Means of verification	CGIAR Cross-Cutting Markers for the milestone 0=not targeted; 1=significant; 2=principal N/A = not applicable				Assessment of risk to achieve that milestone (L/M/H)	For medium/high please select the main risk from the list
						for gender	for youth	for CapDev	for CC		
1	Increased conservation and use of genetic resources. Enhanced conservation of habitats and resources. Increased capacity of beneficiaries to adopt research outputs.	Managers and policy makers adopt effective monitoring methods, tools and practices to mitigate threats to valuable tree genetic resources, and implement suitable safeguarding strategies in line with international initiatives, such as the Global Plan of Action for Forest Genetic Resources	Effective, efficient and equitable approaches and policy recommendations for TGR conservation developed for 5-10 priority species in target countries in each of three continents. Training materials, characterization methods, policies and indicators of status and threats	Reworded/ rephrased from proposal	Papers on diversity for restoration methods, capacity development, improved data resolution, conservation priority setting tools, valuation of TGR, and links to nutrition and food insecurity in multiple countries, covering several species, including cacao, dalbergia, brazil nut, bamboo, rattan, mangrove across a total of 16 deliverables (linked to 4 priorities: biodiversity, nutrition, restoration, and delivery).	1	0	1	1	Low	

		and the Global Strategy on Conservation and Use of Cacao Genetic Resources	adopted in 5 countries.								
1	Enhanced genetic gain. Enhanced adaptive capacity to climate risks. Conducive agricultural policy environment.	Agricultural and horticultural research partners adopt cost-effective domestication approaches for priority tree species, based on impacts and maximizing efficiency, and considering trade-offs involved in intensification	Stakeholders testing at least 5 more potential 'varieties' of trees across agro-ecological zones; public and private partners engaged in tree domestication activities to reach identified needs with incipient cultivars for at least three more tree species In at least 3 countries: Policies and/or strategies recommended based on FTA work are promoted for implementation to support improvement of diets of low-income rural and urban consumers by using a variety of nutrient-rich wild and cultivated nutrient-rich food.	Reworded/ rephrased from proposal	Papers on characterization of genotypes and phenotypes, cultivar development (orchards), socioeconomic impact and genomes of orphan and other underutilized crops in multiple countries across 7 major deliverables composed of some 25 outputs (linked to 3 priorities: orphan crops, nutrition, and delivery).	**1**	**0**	**1**	**1**	**Low**	

1	More efficient use of inputs. Improved forecasting of impacts of climate change and targeted technology development Enhanced institutional capacity of partner research organizations	National governments, extension services and private partners adopt cost-effective and equitable tree planting material delivery pipelines, with appropriate decision-support tools, to supply high quality site-appropriate tree planting material to smallholders and other growers	Policy-makers have incorporated appropriate certification standards into delivery systems in two countries. Changes in policies and strategies by national governments and implemented by national extensions services have resulted in entrepreneurial suppliers becoming more engaged in delivery in three countries. The role tree nursery operators within efficient tree seed and seedling systems will be understood and demonstrated. Tools will be available to account for the potential effects of climate change when planning for national and regional tree seed	Reworded/ rephrased from proposal	Review of flagship outcomes, started in 2020, part II in 2021. Papers on breeding, use (delivery), climate suitability, guidelines, monitoring, impact and regulation of TGR for different functional purposes in multiple countries on different species across 12 deliverables (linked to 5 priorities: restoration, nutrition, biodiversity, orphan crops and delivery).	**1**	**1**	**2**	**2**	**Low**	

			production and distribution.								
2	• Increased livelihood opportunities •Increased access to diverse nutrient-rich foods • {primary} More productive and equitable management of natural resources	Improved food security and livelihood opportunities for 20 million smallholder households (100 million people) and more productive and equitable management of natural resources over an area of at least 50 million ha. This outcome integrates some outputs from other research clusters through their scaling.	Generalized understanding of how contextual variables affect suitability of tree-based options to improve smallholder livelihoods across large scaling domains in Africa, Asia and Latin America	Identical to proposal	Journal papers on suitability of agroforestry options across contexts in Africa, Asia and Latin America, documentation of the socio-economic viability of agroecological options across Africa available in the Agroecology TPP GLFx internet platform and the use of understanding about how contextual variables condition suitability of options instantiated in livelihood trajectory modelling tools.	**1**	**1**	**1**	**2**	**Low**	
2	• {primary} Increased livelihood opportunities •More productive and equitable management of natural resources	Improved livelihood opportunities involving timber, fruit and NTFPs contributing a 25% increase in income for over 5 million people and more equitable management of natural resources, including a 25% increase in women's participation in	Analysis of institutional arrangements for financing sustainable intensification and marketing products with specific reference to opportunities for women and young people	Identical to proposal	Journal papers on market-based agroforestry options in Vietnam and Indonesia including analysis of institutional roles in scaling up and documentation of networks of exemplar landscapes linked to national and provincial policy and institutional processes.	**2**	**2**	**1**	**1**	**Low**	

		decisions involving tree and forest management and utilization and improvement in substantive representation of women in community forest management institutions.									
2	• Increased livelihood opportunities • {primary} Agricultural systems diversified and intensified in ways that protect soils and water	Diversified tree-crop production systems covering 5 million ha and improving diets and livelihood opportunities for 20 million people in smallholder producer households.	Diversified coffee production practices that confer adaptability to climate change in key coffee growing regions (Africa, Asia and Latin America)	Identical to proposal	Journal papers on coffee diversification practices in Africa, Asia and Latin America and a synthesis pointing to them on the internet.	**1**	**0**	**1**	**2**	**Low**	
2	• {primary} Increased livelihood opportunities •Increased access to diverse nutrient-rich foods •Land, water and forest degradation (Including deforestation) minimized and reversed	Increased access to diverse, nutrient-rich food for 20 million people by closing yield gaps by trees in agricultural systems, improving and maintaining soil health, intensifying system interactions (fodder and fuelwood), directly contributing to production, reducing and	A system for determining threshold levels of tree density and diversity required to maintain long term soil health.	Identical to proposal	Journal papers on the mechanism of tree impacts on soil health in different agroforestry contexts, metanalysis of rice agroforestry practices and results from long-term trials of tree density and diversity on soil and crop yield from the Trees4FoodSecurity project (Ethiopia and Rwanda with satellite sites in Kenya and Uganda).	**0**	**0**	**1**	**1**	**Low**	

		reversing land degradation, and increasing the resilience of smallholder livelihoods.									
2	• {primary} Land, water and forest degradation (Including deforestation) minimized and reversed	Reducing yield gaps through improved pasture management and animal husbandry on over 15 million ha and 1 million animals and contributing to reducing and reversing land degradation on over 5 million ha.	Governance models required to enable sustainable silvopastoral management evaluated in relation to context	Identical to proposal	Policy analysis across seven African countries including measures to control free grazing and transhumance.	**1**	**1**	**0**	**1**	**Low**	
3	Diversified enterprise opportunities Gender equitable control of productive assets and resources	Public and private actors adopt effective governance arrangements, mechanisms and tools for ensuring sustainable, inclusive, equitable commodity supply in at least three countries.	Available a decision support tool based on a comparative analysis of select cases of costs, benefits and trade-offs of improved natural forest management practices vis-Ã -vis planted forests and tree crops, and strengthened capacities for co-developing the most appropriate	Identical to proposal	A series of 7 case studies on implemented interventions in 7 jurisdictions and 6 target countries. Published policy briefs. Jurisdictional survey of private sector information and analysis (which resulted in two publications). Media monitoring reports. Workshops and Conference reports. Focus group discussions reports.	**1**	**0**	**1**	**1**	**Low**	

			practices and models								
3		Five business platforms and 20 businesses and service providers develop and implement business models that are more inclusive, economically viable and environmentally sustainable.	Finalization of a typology of business models for timber and tree crop commodities, based on their economic, environmental, social performance and related trade-offs, looking across situations in four high-value tree crops	Reworded/ rephrased from proposal	Case studies and other publications looking at global value chains and related issues. Primary and secondary data collection and analysis. Oral and written testimonies. Corporate and donor strategy documents. Targeted evaluation activities that will compare the 2018 BM design baseline with a 2021 BM design endline. Policy and strategy documents, sourcing standards.	**1**	**0**	**1**	**1**	**Low**	
3		At least 30% of financial service providers lending to timber, tree and agricultural crops adopt ESG criteria, and increase in 25% the lending to models that integrate smallholders and SMEs.	Assessment of financial mechanisms providing improved access of finance to smallhodlers and SMEs with evaluation of their livelihoods and land use impacts	Identical to proposal	Report on engaged FSPs adopting ESG criteria into their business practices and benefiting from an improved enabling environment. Assessment report on the chosen landscapes, using a Landscape Analysis of Financial Flows (LAFF) methodology	**1**	**0**	**1**	**1**	**Low**	
4	Land, water and forest degradation	(Sub)national governance systems in at least	Scenario studies and participatory development	New/ changed	1) Website availability of spatially explicit open-access data sets on	**1**	**1**	**1**	**1**	**Low**	

	minimized and reversed Conducive agricultural policy environment	10 countries use contextualized theories of change to guide transitions to integral achievement of sustainable development goals through restoration, conservation and management of landscape multi-functionality, using similarity domains based on patterns and intensities of forest and tree cover change in space and time in sentinel landscapes understood on the basis of 'drivers' that operate at larger scales.	planning results for at least 6 sentinel landscapes that make use of rounds 1 + 2 results, aligned with national goals and international commitments (incl. Aichi targets of CBD, UNCCD and UNFCCC modalitues)		conditions and trends of forest and tree cover change linked to livelihood opportunities 2) Development plans of local governments and supporting agencies that utilize FTA results 3) Process studies documenting and critically analyzing degrees of participation (incl. gender and youth representatives) in planning processes						
4	Land, water and forest degradation minimized and reversed	(Sub)national governance systems in landscapes covering 100 M ha and inhabited by 70 M people use quantified and valued functions of FT&A for biodiversity, full hydrological cycle and ecosystem services analyzed	Impact study of shifts in gender-equitable control of productive FTA assets and resources. Policy options to favor sustainable restoration of tree-based ecosystems adopted by at least 3 countries that have made	Identical to proposal	1) Website availability of studies, process-level and spatially calibrated heuristic models on FT&A ecosystem services at multiple scales 2) Reference to FTA results in global synthesis documents such as IPBES and IPCC	**1**	**1**	**1**	**0**	**Low**	

		across knowledge domains and available for policy-level synthesis and planning.	pledges to meet international agreements								
4	Increased availability of diverse nutrient-rich foods Increased access to diverse nutrient-rich foods Gender equitable control of productive assets and resources	Diverse diets from tree cover in mosaic landscapes recognized and enhanced as contributions to balanced diets through Increase of availability, and access to, nutrient-rich wild and cultivated food products from these landscapes (10 sentinel landscapes 10 M people).	In at least 5 countries: Increased dietary diversity of low-income rural and urban consumers using a variety of nutrient-rich wild and cultivated nutrient-rich food available during economic, social and/or environmental shocks	Identical to proposal	1) National SDG statistics at subnational scale for countries targeted by FTA, with explicit comparators/counterfactuals 2) Website availability of reports, typologies, databases and diagnostic tools, and documented evidence of their use 3) Recognition in high-level policy documents of the relevance of landscape diversity for balanced nutrition (against a baseline of virtual zero before 2015)	**1**	**1**	**1**	**0**	**Low**	
4	Gender equitable control of productive assets and resources Improved capacity of women and young people to participate in decision-making	Adaptive landscape institutions empowered and supported on 6 M ha inhabited by 4 M people to manage changing landscape mosaics towards more balanced and adaptive multifunctionality and successful 'forest landscape restoration' through	Documented investment action of development support partners on the basis of the shared learning that links issues to places and action perspectives	Identical to proposal	1) Website availability of objectives, context and evolving lessons in the various learning landscape networks 2) Publicly available synthesis documents and impact studies 3) Documented use of the typologies that emerge from the learning landscape networks	**2**	**0**	**1**	**0**	**Low**	

	Increased resilience of agro-ecosystems and communities, especially those including smallholders	'action research' and inclusive, participatory learning. This is aligned with efforts in PIM.5.2 -oe6 million hectares of shared landscapes under more productive and equitable management.									
5	Reduced net GHG emissions from agriculture, forests and other forms of land use	Efficient, effective and equitable climate national and international mitigation policies and funding, aligned with development objectives (3E+ goals).	Options for enabling policy architecture and public-private partnership mechanisms defined and used to shape corporate zero-deforestation commitments	Identical to proposal	Scientific publications and policy briefs (FTA and CG center websites), corporate annual reports and similar documents, workshop reports, governments'and watchdog organization reports on the role of the private sector	**1**	**1**	**1**	**2**	**Medium**	**3. Partnership**
5	Enhanced capacity to deal with climate extremes	Risk-assessed ecosystem-based adaptation (EbA) policy and practice in place including joint mitigation and adaptation approaches.	Approaches to develop, measure and monitor effectiveness, efficiency and equitability of EbA actions are developed (for example, NAMAs and NAPs) and are available for testing	New/ changed	Scientific publications and policy briefs (FTA and CG center websites), toolboxes available (websites), workshop reports, national adaptation reports that show usage of these tools	**1**	**1**	**1**	**2**	**Medium**	**4. Internal resources**
5	Reduced net GHG	Food and bioenergy	Case studies on producing	Reworded/ rephrased	Scientific publications (case studies) and policy briefs	**1**	**1**	**1**	**2**	**Low**	

	emissions from agriculture, forests and other forms of land use	production policy and practice integrated more visibly in the intervention areas.	biofuels on marginal land are available.	from proposal	(FTA and CG center websites), national reports, workshop reports, international comparative report						
5	Reduced net GHG emissions from agriculture, forests and other forms of land use	Performance assessment of mitigation and adaptation policy and practice widely implemented following good evaluation practice.	REDD+ project performance has been re-assessed. Global capacity for national forest monitoring capacity has been assessed	New/ changed	Scientific publications and policy briefs (FTA and CG center websites)	**1**	**1**	**1**	**2**	**Low**	

Table 2B Planned Evaluations/Reviews, Impact Assessments and Learning Exercises

CRP	FP (if not overall CRP)	Status (drop down menu: ongoing, new)	Planned studies/learning exercises in the coming year through Dropdown: ePIA, Adoption survey. Effectiveness study, Quali Outcome study, Program evaluation, Synthesis, Other MELIA activity _____ *(examples below)*	Geographic scope (specify country or region if relevant)	Who is commissioning this study
FTA	FP1	On Going	Ex-Ante Impact Assessment of the project Provision of Adequate Tree Seed Portfolios in Ethiopia (PATSPO)	National, Ethiopia	ICRAF
FTA	FP1	On Going	A Review of Flagship 1 outcomes 2017-2019	Global	ICRAF
FTA	FP1	Ongoing	Assessment of the socioeconomic impact of applying appropriate diversity of selected species for relevant land restoration options in Ethiopia and other areas of Africa	3 and 4. Ethiopia and Africa	FTA/FP1 and PATSPO
FTA	FP2	Ongoing	Assessing the uptake of natural farming practices in Andhra Pradesh, India	India	ICRAF
FTA	FP2	Ongoing	Assessing the uptake of agroforestry innovations	Niger, Ghana, Mali & Senegal	ICRAF
FTA	FP2	Ongoing	Planned comparison of the impact of using an options by context approach to implement the agroforestry concessions policy in Peru	Peru	BMZ
FTA	FP2	Ongoing	Socio-economic assessment of adoption of agroecological practices across 12 sites in Africa	Africa	French Government
FTA/PIM	FP1/2	Ongoing	Are behavioral-informed interventions cost-effective in inducing more impactful agroforestry adaption	Malawi	ICRAF
FTA	FP2	Ongoing	Trees for Food Security Programe (T4FS) Impact assessment	Rwanda	ICRAF
FTA	FP2	Ongoing	Assessing the impacts of improved fruit trees on food security, nutrition and incomes of smallholder farmers in Malawi	Malawi	ICRAF

FTA	FP2/3	New	Evaluating engagement and innovative uptake in the Yangambi Engagement Landscape and estimating longer-run impacts	DRC	CIFOR-ICRAF
FTA	FP3	ongoing	Forest Law Enforcement, Government and Trade – Voluntary Partnership Agreement (FLEGT – VPA) Impact Studies: Global and Country-Level results to date	Guyana, Honduras, Congo-Brazzaville, Cote d'Ivoire	EU
FTA	FP3/5	ongoing	Story of Change evidencing outcome level results of a Bioenergy project in Indonesia	Indonesia	CIFOR
FTA	FP4	New	Impact of COVID on Community forest enterprises	4- 4 Regions in Southern Cameroon (Centre, South, Littoral and South West)	FTA Lead and FP Leader
FTA	FP4	New	Performance Assessment for 15 Community Forest Enterprises in Cameroon. Including factors that explained performance (Review of an innovative performance-based approach experiment)	4- 4 Regions in Southern Cameroon (Centre, South, Littoral and South West)	FP Leader and Project PI
FTA	FP5	Ongoing	Final evaluation of the Global Comparative Study (GCS) of REDD+, phase 3	global	CIFOR
FTA	FP5	ongoing	Series of Stories of Change demonstrating the Global Comparative Study (GCS) REDD+ (phase 3) results at national level	Vietnam (1 SoC), Indonesia (2), Peru (2), Guyana (1)	CIFOR
FTA	FP5	Planned/ funded	Story of Change evidencing outcome level result for the CIFOR Forest Reference Emission Level (FREL) project in Indonesia	Indonesia	CIFOR
FTA	All	Ongoing	Integration Study to assess FTA Contribution to the protection of forests and reduction of deforestation	Global	FTA MELIA
FTA	All	Ongoing	Integration Study to assess FTA Contribution to the improvement of food security and nutrition through forests, trees and agroforestry	Global	FTA MELIA
FTA	All	New	Integration Study to assess FTA Contribution to the reduction of rural poverty, and improved livelihoods	Global	FTA MELIA

FTA	All	New	Integration Study to assess FTA Contribution to the restoration of degraded lands	Global	FTA MELIA
FTA	All	New	Integration Study to assess FTA Contribution to the sustainable management of land and natural resources for productive and resilient landscapes	Global	FTA MELIA
FTA/WLE/PIM	n/a	Ongoing	Evaluating the restoration of the commons in India	India	ICRAF
FTA/WLE/PIM	n/a	New	Assessing the link between commons restoration and Covid-19 resilience	India	ICRAF

Table 2C Planned major new collaborations (CGIAR internal, or with non-CGIAR collaborators)

Name of CRP or non-CGIAR collaborator	Brief description of collaboration (give and take among CRPs/PTFs/non-CGIAR collaborator) and value added (e.g. scientific or efficiency benefits)
FP1	
Botanical Gardens Conservation International and Kew Gardens	Transforming the Quality of Tree Planting (TQTP). BGCI and KG will be important partners in the development of a Transformative Partnership Platform (TPP) on TQTP. The first collaboration will be on a high-level international conference on reforestation with Prince Charles as protector in February 2021.
University of Humboldt	Food and Nutrition Security. Partner in new project: Piloting incentive-based agricultural portfolios for nutrition and resilience in Zambia
TMG Think Tank for Sustainability	Food and Nutrition Security. Strengthening rural-urban linkages for fruit and vegetable consumption in new proposal development.
Unique Forestry, Germany	Transforming the Quality of Tree Planting (TQTP). UNIQUE is also expected to be a partner in the TTP TQTP. First step is development of a proposal for a regional tree seed program under the Bonn Challenge to IKI in early March 2021.
BOKU, Austria – University of Natural Resources and Life Sciences, Vienna	Food and Nutrition Security. Analysis and generation of new data around rural-urban linkages for fruit and vegetable consumption.
Comaco – Coomunity Markets for Conservation, Zambia	Food and Nutrition Security. Partner in new project: Piloting incentive-based agricultural portfolios for nutrition and resilience in Zambia
Oxford Nanopore	Sequencing for African Orphan Crops Consortium. The collaboration will introduce new infrastructure and methods of sequencing genomes of the AOCC priority species.
AAK	Transforming the Quality of Tree Planting (TQTP). AAK is the largest purchaser of Shea nuts in the World. Expansion of ongoing collaboration on their breeding station in Satiri, Burkina Faso to cover other of their activity areas is under discussion.
FP2	
UNEP, FAO, Biovision, French Research Institutes, TMG, IFAD and others comprising the Transformative Partnership Platform on agroecological transitions.	To convene a coherent approach to addressing evidence and implementation gaps associated with agroecological transitions and promote the use of lessons learned in policy and practical implementation agroecological transitions.
CCAFS, WLE	To develop holistic metrics for agricultural and food system performance connected to digital agriculture and private sector engagement in the EU DEVCO TRANSITIONS programme.

FP4

Government of Benin	To carry out a baseline study and provide technical advice on an Ecosystem-Based Adaptation Project mainly on community forests in seven sites across the country.
University of Rhode Island, USA	To implement a project on Women shellfishes and food security in Ghana and Gambia. Our role will be to support a landscape approach to managing the coastline and the shellfish and nutrition dimensions.

FP5

Korean Forestry Research Institute (NIFoS)	NIFoS has been working with CIFOR for the last decade, sending seconded scientists to Bogor and supporting our research work on bioenergy. NIFoS has now entered an agreement to financially support CIFOR's bioenergy work on marginal lands in Indonesia for the next ten years and has thus become a very important partner.
E3 International (USA and Serbia)	New collaboration partner on bioenergy and environment working on short-rotation biomass energy and permanent tree plots in Serbia to provide sustainable energy and environmental services. E3I has 10 years of experience in Serbia. It is the main project taker from donor ADA and runs operations in Serbia.

Gender CCT

GEF	GEF asked FTA Gender CCT to be part of the committee of experts setting the terms for GEF8. Although GEF is not a new partner of FTA, this is a new type of collaboration.
CGIAR GENDER Platform	FTA Gender CCT will be contributing resources to the Resource Hub and will take part in many of the Platform's activities. FTA Gender Research Coordinator leads the Alliances Module.

Table 3A Planned Budget

	Planned budget 2021				Additional activities committed from previous POWBs	Comments on major changes
	W1/2 (Full Finplan and POWB 2021)	W3/bilateral	Center Own fund	Total	W1-2 carried-forward at 31-12-2020	
FP1	1.084.000	13.660.971	0	14.744.971	18,259	
FP2	2.890.000	12.466.605	0	15.356.605	1,725,724	
FP3	1.020.000	17.845.600	0	18.865.600	110,058	
FP4	956.000	19.334.955	0	20.290.955	557,126	
FP5	1.045.000	18.692.636	0	19.737.636	579,048	
Gender	732.500	668.981	0	1.401.481	193,026	
MELIA	570.000	0	0	570.000	397,508	
CRP Management & Support (including foresight, capacity development, synthesis publications, COVID-19 studies, data portal and data management, open-access, communication and outreach, partnerships and programme management unit)	2.192.500	428.789	0	2.621.289	1,987,435	
CRP Total	**10.490.000**	**83.098.536**	**0**	**93.588.536**	**5,568,185**	**-**

* Planned contribution of non-CGIAR main partners: 16.230.766 USD

Table 3B By cost item

	2020 Forecast (W1/W2)	2021 Budget (W1/W2)	Comments on Major Changes
Personnel	5.003.035	4.169.704	
Consultancy	1.358.269	1.132.029	
Travel	544.617	453.903	
Operational Expenses	5.090.072	4.242.244	
Collaborators and Partnerships	590.471	492.120	
Capital and other equipment	-	-	
Closeout costs	-	-	
CRP TOTAL BUDGET	**12.586.464**	**10.490.000**	

Note: the 2020 Forecast includes 2019 carry forward

Annex 1. FTA's operational priorities

The operational priorities[2] are articulated in the following way: the ultimate **outcomes at household** level of enhanced nutrition and food security and improved livelihoods, including gender (3, 15, 10) are supported by **action in farming systems**: silvo-pastoral systems, market-based agroforestry-forestry, farm-forest policy interface, agroecology, plantations and tree crop commodities (11, 12, 13, 14, 2, 24) and by **coordinated action along value chains** : inclusive finance and business models, innovating finance for sustainable landscapes, public and private commitments to zero deforestation, effectiveness of approaches to sustainable supply like certification and FLEGT (16, 17, 18, 20). They rely on the provision of **appropriate genetic material at scale with support to tree seeds and seedlings delivery systems**, and on **sustainable management of natural resources**: land and forest restoration, biodiversity, safeguarding and conservation of genetic resources, orphan crops, landscape governance (1, 4, 19, 9, 25); They fully **address climate change** and **implementation of the NDCs** both adaptation and mitigation, including zero deforestation, bioenergy and blue carbon and peatlands (5, 6, 7, 8, 18). Three operational priorities **ensure the quality of FTA research for development** (21), monitor a set of sentinel landscapes (22), and on **foresight** (23) aim to identify emerging trends and possible futures for forests, trees and agroforestry systems, and their roles for broader sustainable development objectives.

1. **Restoration** of forests and landscapes, to carry out research on different aspects (from genetic resources, to management modes, costs and benefits, and policy and governance options) and to integrate findings and emerging lessons into the main policy platforms and governance processes.
2. **Plantations**, including timber and high-value tree crop plantations, namely tea, coffee, cocoa, oil palm and rubber, and addressing the economic, social and environmental challenges and opportunities of land-use intensification through plantations.
3. **Enhanced nutrition and food security:** how do tree-based agroecosystems and changing patterns of land use and productive activities at the landscape scale interact with market forces to cause changes in local diets in many countries, and what can be done about it?
4. **Biodiversity, safeguarding and conservation** in forests and agroforestry systems, for productivity and resilience of these systems.
5. **NDCs[3],** supporting countries in meeting their NDC objectives through an improved use of their forests and tree-based resources.
6. **Bioenergy and biomaterials** as an essential part of low-emissions development strategies and policies. How can they be developed, especially in degraded lands, and how to broaden the species basis?
7. **Blue carbon and peatlands**, providing knowledge on eco-hydrology and ecosystem services, on carbon stocks dynamics, and on productivity to devise specific restoration options
8. **Climate change adaptation**: FT&A resources are key to adaptation of forest-dependent communities and agricultural systems to climate change, and have themselves to adapt.
9. **Landscape governance** as it relates to agriculture, forestry and other land uses, and to the livelihoods they sustain
10. **Gender** equitable outcomes, aiming at integrating a gender equality and social inclusion perspective—including attention to issues of generation (youth) across the FTA portfolio.

[2] Numbers in parenthesis refer to the operational priorities in the list.
[3] Nationally Determined Contributions of the Paris Agreement on Climate Change

11. **Silvopastoral systems**, for production, fodder, shade, soil fertility and biodiversity. Retaining trees on pastures can halt and reverse degradation following deforestation.
12. **Market-based agroforestry-forestry**, to deliver evidence of the return on investment, and provide practical strategies for overcoming the time-lag between investment and returns.
13. **Farm-forest policy interface**, to better understand policy constraints, and embed FTA methods, approaches, tools and technologies into major national agroforestry scaling-up programs.
14. **Agroecology**, emphasizing integrated agro-ecological approaches that include trees in agroecosystems for improving smallholder livelihoods.
15. **Livelihood trajectory modelling and assessment** to capture the likely impact of adopting FTA innovations on smallholder livelihoods in a range of different contexts.
16. **Inclusive finance and business models**, and related institutional factors to help address barriers faced by smallholders, improve value-chain coordination and learning.
17. **Innovating finance for sustainable landscapes**, to understand the potential of responsible finance for providing incentives for the uptake and upscaling of sustainable production practices
18. **Public and private commitments to zero deforestation**, as still little is known about the actual social, economic and ecological impacts of those commitments.
19. **Orphan tree crops**, to support their genetic characterization and their domestication to improve nutrition, as well as for resilience, adaptation to climate change and environmental stresses.
20. **Effectiveness of approaches to sustainable supply**: to understand the role of supply chain arrangements to halt deforestation, and how territorial approaches can facilitate that process.
21. **Quality of FTA research for development** (R4D), to devise better research, learn from experiments, and improve overall performance of FTA as a research-for-development program.
22. **Sentinel landscapes.** FTA had devised its own set up to observe changes in landscapes, their causes and consequences. Where does this set-up stand? How to move forward?
23. **Foresight**, to identify emerging trends in land use and forests, trees and agroforestry, possible futures and drivers of change, and their potential to contribute to sustainable development.
24. **Smallholder tree-crop commodities,** to address the challenges and leverage the potential of cocoa, coffee and other smallholder tree-crop commodities for sustainable development.
25. **Tree seeds and seedlings delivery systems**, to address the considerable needs for appropriate tree planting material at scale to face the challenges of renewal and improvement of current trees, the need to adapt to climate change, to contribute to its mitigation, and to restore forests and land.