13 March 2018

Note on how FTA's 2018 POWB was crafted

This notes briefly outlines the 10 steps through which the POWB 2018 was prepared.

1. **A prioritization process was prepared by the MSU in July-September 2017, following the decision of the ISC at its meeting end June 2017.** This included a background document framing the process and identifying major development demand/challenges and knowledge gaps. Were also prepared a set of priority criteria and templates for submission of operational priorities.

2. The process, fine-tuned following discussion at the MT level, was officially launched on the 20th of October 2017. The FP leaders and CCT leaders were asked to submit for **5 December**[1] a set of proposed operational priorities, gathering W1+2 activities and bilaterally funded activities.

> NB: The following definition applies for this process. *An operational priority is a coherent and focused set of activities (funded by bilateral projects, W1+2 or, most often, both) whose outputs aim at answering one or several key knowledge gap(s), and whose outcomes are directed to respond to a major development challenge, building on the comparative advantage of FTA and its partners, and aiming at maximizing the effectiveness and impact of FTA*.

2. **The list of priorities submitted was examined during a face-to-face meeting of the management team in Bonn on 16-17 December 2018**. During the meeting, each proponent (FP leader and CCT leader) was requested to present their submissions. The MT went through an iterative process in order to regroup some of the proposals, refine them, and address gaps. The relevance of topics from a donor and development demand perspective were explicitly taken into account. Gender and MELIA priorities were discussed and it was agreed to retain one priority for each of the two CCTs (out of the three that each submitted, the rest being mainstreamed within other priorities).

3. This led the MT to agree on a list of **22 operational priorities**[2] (see Annexes 1 and 2)

4. **Three priorities were identified as particularly cross-cutting:** restoration, plantations and tree-crop commodities and nutrition, and hence requiring a specific, program-wide approach for coordination. For each of these priorities, FP leaders were asked to propose in coordination with all associated FPs and CCTs, a short note explaining:

[1] It was decided, following their request, to give maximum time to FP leaders and CCT leaders to craft the proposals, and because of this it was not possible as originally planned for the MSU and MELIA to assess each proposal before the MT meeting. The calendar for the preparation of the POWB 2019 will be adjusted to give more time to prepare the submissions.

[2] Budget allocations to priorities were not discussed during the meeting, and focus was intentionally kept on substance and internal organization issues. Distinguishing the discussion on substance from the discussion on budget proved effective as when done jointly, budget matters tend to dominate the conversation over scientific issues, and drive choices, when the exact opposite is sought.

- How the priority and various outputs will be managed, and the case being, the composition of the coordination team and/or appropriate mechanisms.
- The means for ensuring inclusiveness with respect to all relevant Centers, FPs, CoAs, CCTs and different disciplinary approaches.

6. **The MSU crafted the 2018 contingency planning scheme**, based on latest information from the SMO on actual 2018 portfolio funding, and the recommendation for under-programming. The FTA Finplan in 2018 is of USD 9.86m, to which USD 0.78m of 2017 program-level carry-overs is to be added. This brings the maximum available for FTA in 2018 at USD 10.7m. Contingency tiers for 2018 were defined at 5.00m (Tier 1), 3.62m (Tier 2) and 2.04m (Tier 3). The logic of scaling is that the sum of Tier 1 and Tier 2 corresponds to a situation where the lead center could effectively distribute 80% of the USD 9.9m 2018 Finplan of FTA, plus the 0.78m of carry-overs. The SMO/SMB recommended CRPs to under-program by 10-15%, however FTA is more dependent on W1 funding, and therefore bears an increased level of uncertainty given the way relinking rules operate. Therefore, we can consider that Tiers 1 and 2 broadly correspond, in the context of FTA, to the under-programming recommendation of the SMO/SMB, with some conservative margin. If FTA gets 2.68m W2 from NL (1.7m already secured) and Australia (0.98m) then Tier 2 is reached if FTA receives 75% of its W1, which is compatible with a system globally funded at a level of 75% in 2018. There is today a reasonable prospect[3] that it will be the case.

7. In addition, **an uplift tier is created in 2018** that specifies key additional activities that represent priorities for the use of additional programmatic funding should this be available, but are not formally part of the 2018 POWB achievable with Finplan resources.

8. **FP and CCT leaders were given 1 month (22 December-22 January) to re-submit their activities/outputs and budget proposals** for all the agreed operational priorities, based on the decisions in the meeting, with guidance on the allocation of budget amongst tiers[4].

9. **The MSU compiled all re-submissions and proceeded to make marginal adjustments in consultation with FP leaders, to ensure that the budget matches the contingency planning tiers.**

10. Based on the MSU final proposal, two **teleconferences of the MT were organized on 15 and 28 February 2018** to agree on the final proposal to be presented to the ISC: list of priorities, key outputs, budget by tiers and partners, and corresponding mapping of bilateral projects.

[3] The CGIAR funding update is available here: on 8 March 2018, 81,82m W1 are received, committed or indicated, and 95,39m W2, hence 177,21m total, representing already 89% of the overall CGIAR 2018 finplan of 198,1m.
[4] It was not possible to give to FP and CCT leaders a guidance ahead of the meeting on the repartition of tiers, because the MSU did not have a good idea of overall "ask" that would derive from the retained priorities. The only indication given originally was a request for FPs not to deviate more than 20-25% percent from their budget in the FTA proposal, in their original submissions and in terms of overall ask, knowing that the excess would be put into an uplift tier.

List of operational priorities (the ordering does not imply any prioritization within the list).

1. Restoration
2. Plantations and tree crop commodities
3. Enhanced nutrition and food security
4. Biodiversity, safeguarding and conservation
5. NDCs (Nationally Determined Contributions of the Paris Agreement on Climate Change)
6. Bioenergy
7. Blue carbon and peatlands
8. Climate change adaptation
9. Landscape governance
10. Gender
11. Silvopastoral systems
12. Market-based agroforestry-forestry
13. Farm-forest policy interface
14. Agroecology
15. Livelihood trajectory modelling and assessment
16. Inclusive finance and business models
17. Innovating finance for sustainable landscapes
18. Public and private commitments to zero deforestation
19. Orphan crops
20. Effectiveness of approaches to sustainable supply (certification, FLEGT)
21. Quality of FTA research for development
22. Sentinel landscapes

Short narratives for the 22 operational priorities are found in Annex 1. As per the prioritization framework (see related document), the operational priorities are situated at the intersection of (i) key knowledge gaps and (ii) major development demands.

List of key research and knowledge gap areas

1. Contributions of FTA systems to Food Security and Nutrition
2. Land use and land use changes, and their consequences on FSN and on CC
3. Role of forests and trees in water circulation
4. How to improve FTA systems
5. Impacts of CC and adaptation to it
6. Role of FTA systems for and impact of LUC on ecosystem services
7. How to improve landscape management and forest and land restoration, to manage synergies and tradeoffs for ecosystem services, tree genetic resources, biodiversity and to underpin production
8. Building sustainable, efficient and inclusive value chains and business models
9. Responsible investments for sustainable production and consumption
10. Governance arrangements in value chains, in landscapes, and across sectors (including gender)
11. Cross-cutting research gaps

List of key development demand/priority areas:

1. Improve food security nutrition and health: SDGs 2,3, CFS-Forestry, UNSPF-2
2. Increase, diversify and stabilize rural household incomes and economies: SDGs, CFS-SH, UNSPF-2
3. Contribute to productive and resilient agricultural landscapes: SDGs 15,6,4, CFS-SH, CFS-Forestry
4. Preserve and sustainably manage biodiversity, ecosystems, environment: CBD, UNSPF-1, UNSPF-3, CFS-Forestry
5. Contribute to climate change mitigation and adaptation: Paris Agreement, SDG 13, CFS-CC, UNSPF-1
6. Contribute to sustainable value chains and sustainable production and consumption, including renewable energy and materials: SDGs 7, 12, 13
7. Improve gender equality and social inclusion: SDG 5, CFS-Forestry, CFS-SH

Table 1 shows how FTA's operational priorities relate to the framework of key knowledge gaps and development demands, and Table 2 shows the main areas of focus of the priorities within this framework.

How does the set of operational priorities relate to the FTA structure?

Each priority from 4 to 22 is led by a FP (lead FP/CoA), with contributions from one or several clusters of the FP, and from other FPs and/or cross-cutting themes of the Support Platform. Other CRPs could also contribute to an operational priority by means of co-investments. Therefore, FPs/CoAs can be seen as "suppliers" of research/work to the operational priorities (see Figure 1).

Priorities 1, 2 and 3 are particularly cross-cutting. A specific organization is being put in place for each of the three: each one will be led by an oversight group[5].

Table 3 shows how the different FPs contribute to the priorities, and in consequence get W1+2 funding for this in 2018. Some priorities have joint works with other CRPs.

How do bilateral/W3 projects relate to the set of operational priorities?

Bilateral/W3 projects and CGIAR W1+2 funded activities are linked to operational priorities. W1+2 funding is only directed to priorities. Bilateral projects must relate to one of the operational priorities in order to be "mapped" to FTA. Therefore, the priority-setting process and the mapping process are integrated.

[5] The composition of these three oversight groups will be determined for each of these three specific priorities. They will each comprise the FP leaders, the FTA Director and any additional partner representative as relevant.

Table 1: FTA's Operational priorities in relation to key knowledge gaps and major development demands.

	Priorities	Knowledge gaps											Development demands						
		1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7
1	Restoration			X	X		X	X							X	X	X		
2	Plantations and tree c				X				X	X					X		X	X	
3	Enhanced nutrition an	X	X										X						
4	Biodiversity, safeguar	X					X	X								X			
5	NDCs (Nationally Dete		X	X		X											X		
6	Bioenergy								X	X					X		X	X	
7	Blue carbon and peatl					X	X	X							X	X	X		
8	Climate change adapt			X		X											X		
9	Landscape governance										X								X
10	Gender											X							X
11	Silvopastoral systems				X								X	X	X				
12	Market-based agrofor	X			X				X	X			X	X					
13	Farm-forest policy int				X										X			X	
14	Agroecology	X			X								X		X	X			
15	Livelihood trajectory n	X											X	X					X
16	Inclusive finance and l								X	X				X				X	X
17	Innovating finance for								X	X								X	
18	Public and private com		X		X		X		X	X							X	X	
19	Orphan crops	X							X	X			X	X	X	X			
20	Effectiveness of appro								X	X						X	X	X	
21	Quality of FTA researc											X	X	X	X	X	X	X	X
22	Sentinel landscapes											X			X				

Table 2: Focus table: mapping of priorities vis a vis key knowledge gaps and development demands

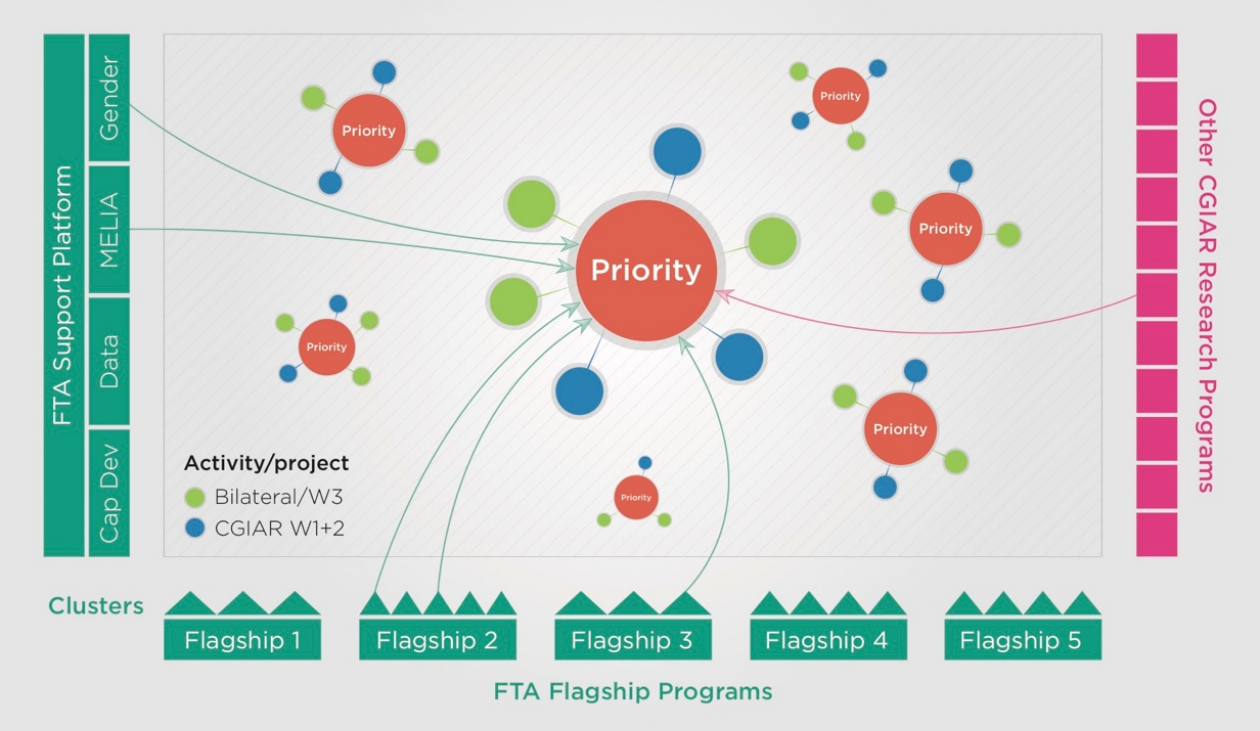
		development demands						
		1	**2**	**3**	**4**	**5**	**6**	**7**
Knowledge gaps	**1**	3,12,14,15,19	12,15	14,19	4,14,19			15
	2					5		
	3			1	1	1,5,8		
	4	11,12,14	11,12	1,2,11,13,14	1,14	1,2,18	2,13,18	
	5			7	7	5,7,8		
	6			1,7	1,4,7	1,7,18	18	
	7			1,7	1,4,7	1,7		
	8	12	12,16	2,6	20	2,6,18,20	2,6,16,17,18,20	16
	9	12,19	12,16,19	2,6,19	19,2	2,6,18,20	2,6,16,17,18,20	16
	10							9
	11	21	21	21,22	21	21	21	10,21

This table lists the priorities that contribute to filling a knowledge gap (lines), in relation to development demands (columns). The 22 priorities cut all across the seven major development demands identified, with a specific focus on food security and nutrition (column 1), productive and resilient agricultural landscapes (column 3), climate change mitigation and adaptation (column 5), sustainable value chains and sustainable production and consumption (column 6). Main areas of FTA focus regarding key knowledge gaps are: contributions of forests trees and agroforestry to food security and nutrition (line 1), ways to improve forests, trees and agroforestry systems (line 4), forest, trees and agroforestry for climate change mitigation and adaptation (line 5) and sustainable value chains and responsible investments (lines 8,9).

Table 3. Specific contributions of Flagships and CCT to priorities, and related W1+2 budget (Tiers 1+2+3)

PRIORITY	BUDGET	FP1	FP2	FP3	FP4	FP5	Melia	Gender	MSU
PR 1	1.033.105	464.800			240.000	40.000	50.000	238.305	
PR 2	874.500		299.000	255.000	287.000			33.500	
PR 3	338.500				308.000		25.000	5.500	
PR 4	282.456	269.750						12.706	
PR 5	530.000					530.000			
PR 6	40.000					40.000			
PR 7	180.000					180.000			
PR 8	359.506					240.000		29.506	90.000
PR 9	291.400				278.800			12.600	
PR 10	344.340						75.000	269.340	
PR 11	105.000		105.000						
PR 12	369.512		342.000					27.512	
PR 13	250.000		250.000						
PR 14	90.000		90.000						
PR 15	208.718		187.000					21.718	
PR 16	413.046			355.340				57.706	
PR 17	234.500			234.500					
PR 18	329.818			329.818					
PR 19	207.500	207.500							
PR 20	132.000			132.000					
PR 21	432.391						432.391		
PR 22	75.000				75.000				
COORD	1.000.000	190.000	230.000	190.000	195.000	195.000			
TOTAL	8.121.292	1.132.050	1.503.000	1.496.658	1.383.800	1.225.000	582.391	708.393	90.000

Figure 1. Schematic representation of FTA priorities and relationships with the FTA structure



Annex 1: Operational priorities' short narratives.

1. Restoration (forest and landscape restoration)

Nations around the world have pledged to meet ambitious forest and landscape restoration (FLR) targets. National governments, civil society and private sector organizations, and the international organizations supporting them, need knowledge and approaches to help them achieve these targets, ensure that FLR contributes to the SDGs, and that lessons learned are fed back into FLR planning. FTA scientists in various Flagships, Clusters, and Cross-Cutting Themes are carrying out research on different aspects of FLR, evaluating natural regeneration and planting, seed supply, tree genetic resources issues, incentives, policy options, equity and inclusiveness, among many other topics. FTA needs a framework and a process for discussion and integration of research findings so that guidelines and recommendation are built on the full range of insights and emerging lessons are synthesized; and so that these can be translated into priority actions and strategies to inform policy and practice and enhance uptake of new knowledge and approaches for improving restoration outcomes.

This operational priority will promote and facilitate this process of collaboration and coordination to synthesize knowledge and communicate it effectively to better influence both national and international organizations and processes. These include the CBD, UNCCD, FAO's Forest and Landscape Restoration Mechanism and the Global Partnership on Forest and Landscape Restoration, the 20 X 20 Initiative, Africa 100 and capacity development initiatives.

2. Plantations and tree crop commodities

Timber and high-value tree crop plantations (i.e. tea, coffee, cocoa, oil palm and rubber) are rapidly expanding in the sub-tropical and tropical regions, due to a growing domestic and global demand for related commodities. They contribute to land use intensification which can help globally to reduce pressures on natural forests and are a major source of income for more than 30 million smallholder farmers. Their expansion however poses multiple economic, social and environmental challenges. First, large price fluctuation and persistence of productivity gaps, due to soil fertility decline, pest and disease, or inappropriate practices. Second, negative environmental impacts if they replace carbon and biodiversity rich forests. Third, competition for land and water used by large plantations with smallholder farmers, and market failures and unequal business models in plantation value chains, that limit the capture of benefits by upstream smallholder suppliers. Finally, given the longer typical timeframes of these systems, there is a critical need to consider climate change effects.

Several responses have been put in place to manage these challenges, and to address the performance gaps of plantations including diversification options for production systems, production standards and certification schemes, labeling, and fair trade. In addition, principles for responsible investment and finance have also emerged to influence large-scale plantation development, as well as several social safeguards and monitoring frameworks to reduce their potential negative impacts. These solutions, however, require wider governance arrangements, with the capacity to attract public and private investment able to support transitions to more

sustainable development, which at the same time make economic sense for local producers, while supporting their resilience capacities to adjust to market and price oscillations and to increasing climate variability.

This priority will contribute to help governments (at the national and sub-national levels) and stakeholders, including smallholder farmers who are still responsible for most of global commodity supply, understand available options, plan for and devise plantation systems that reduce pressures on forests, while increasing the contribution of plantations to sustainable food supply, poverty alleviation, and socio-economic resilience. There is a need to understand how solutions (and trade-offs amongst objectives) depend on the commodity value chain, the scale of production, access to resources, and the organizational capacities of producers. It will lead to recommendations on national and sub-national governance systems, options by context recommendations for improving productivity and resilience of production systems and enabling factors for guiding public and private investments.

3. Enhanced nutrition and food security

Malnutrition caused by unhealthy diets is a global problem. In tropical developing countries this is often manifested in micronutrient deficiencies as a result of monotonous staple-based diets. Forests and tree-based agricultural systems are contributing to and can contribute to healthier and more diverse diets, through the increase of availability, and access to, nutrient rich wild and cultivated foods from these landscapes. For the populations in a landscape, their diet is influenced by the diversity of agricultural production, wild food provision, as well by external forces and market supply.

This priority will investigate how landscape configuration and changing patterns of land use and productive activities at the landscape scale, interacting with market forces, are causing changes in local diets in many countries. While much of this research currently takes place on a case study basis at the project scale in various landscapes throughout the tropics, this operational priority will help to link up these case studies to aggregate up to a broader picture of these phenomena at the national and regional scales. The knowledge gained from this data-informed process will be used to inform national discussions addressing recommendations made from recent High-Level Panel of Experts' (HLPE) reports on *Sustainable Forestry for Food Security and Nutrition* and on *Nutrition and Food Systems*.

4. Biodiversity, safeguarding and conservation

Within forests and agroforestry systems, the individual components of biodiversity (spanning genes to ecosystems) are critical for productivity and resilience. FTA research focuses on different facets of biodiversity including the conservation of trees (forest genetic resources, FGR), optimal deployment of tree genetic resources (TGR, including inter- and intra-specific diversity) in forest landscape restoration and multifunctional agricultural landscapes and impacts of agrobiodiversity on dietary diversity. Over exploitation of forests and land conversion coupled with climate change pose major threats to conservation and sustainable

use of the genetic resources of diverse flora and fauna. FTA research focuses on understanding the extent of these declines, impacts of these declines on human wellbeing and on policies and strategies to reverse these trends.

There is a need both to improve tree species as well as effectively protecting their seed sources in situ for sustainable use by future generations. Identifying priority sources of tree genetic material remains to be carried out in many tropical countries. This work will ensure effective and sustainable use of TGR through: (1) distribution maps of economically and/or nutritionally important and threatened tree species, and identification of key populations for protection, (2) prioritization tools for the establishment of Genetic Conservation Units for priority species and (3) seed transfer zone mapping to help in the choice of seed for restoration that is resilient to future climate change, (4) capacity building of national partners to develop a roadmap for networks of Genetic Conservation Units for ecologically and economically important tree species.

The effective use and safeguarding of FGR remains highly undervalued. Most restoration, agroforestry and afforestation projects do not consider the importance of seed sourcing or species diversity in their planning. This priority activity will address this global challenge by (1) screening and identifying genetic diversity traits that influence production and value, enhance adaptation to climate change or identify centers of genetic diversity; (2) build the evidence base for the economic value of FGRs for multiple benefits; and (3) raise awareness of the economic and ecological importance of FGRs through engagement with policy makers. This work will focus on priority species including but not limited to Cacao, priority Fruits, orphan crops and other NTFP species such as Brazil Nuts and Shea butter and high value tropical hardwoods such as Dalbergia from Africa and SE Asia.

5.NDCs - the central mechanism for climate policy under the Paris Agreement

NDCs are the national mechanisms for cumulatively reaching the Paris objectives of keeping global temperature rise below 2 or even 1.5 degrees. Through key partnerships in many developing countries, FTA is centrally placed to support to countries along the pathway to more efficient and effective NDCs. The focus in this priority will be here on mitigation, but as NDCs often involve adaptation objectives, adaptation will have to play a role.

FTA will produce analysis of how countries can best improve forest-based climate mitigation (avoided emissions from deforestation/degradation, forest restoration and enhanced forest carbon sink capacity) in their NDCs. This will include analyzing REDD+ at country level and in the context of NDCs, and an analysis of NDCs in selected Central American countries. FTA will use and improve a rating tool for sustainable landscapes in jurisdictions originally developed by The Climate, Community & Biodiversity Alliance (CCBA). The tool provides rapid and objective assessment of a jurisdiction's capacity to establish and ensure effective functioning of policies, plans, strategies, regulations, monitoring systems and multi-stakeholder platforms – i.e. the key components in fostering sustainable jurisdictions;

Also, FTA will continue the work on refining terra-I as a remote-sensing-based monitoring tool for early warning and near-real time detection of deforestation as well as an MRV tool for whole landscapes (example Orinoco). Finally, FTA will also work jointly with FP1 on the genetic constraints of forest adaptation to a changing climate for countries to meet their NDC objectives through the use of forests, trees and agroforestry resources.

With the aid of partner TropenBos International we will engage with policy makers to make this knowledge available to them for greater efficiency and effectiveness of national policy making. This will move FTA towards the ultimate FP5 outcome of efficient, effective and equitable climate national and international mitigation policies and funding, aligned with development objectives (3E+ goals), and to establish FTA as a global player in this arena.

6.Bioenergy an essential part of low-emissions development strategies and policies

Bioenergy production on marginal land is a pathway to lessen the pressure that bioenergy development puts on productive agricultural land and food production. FTA will analyze options for bioenergy production for stakeholders to better understand how land can be best allocated to bioenergy and how land-use can be better taken into account in national policies, towards more integrated food and bioenergy policies, and as a basis for upscaling bioenergy. This includes field work in Kalimantan, engagement with policy-makers, underpinned with global analysis and policy work.

FTA will produce analysis on degraded land use suitable for biofuels production in Indonesia (spatial assessment, landowner perception, soil rehabilitation, and socio-economic and environmental food/fuel integration assessment). This will include generating technical information to broaden the species basis for bioenergy, with a special focus on bamboo as a fast-growing provider of charcoal that compares well with Teak and Acacia in terms of calorific value while having less smoke and no sparks. CIFOR will work with INBAR on a report on life-cycle analysis of bamboo performance (different bamboo species in different product and energy forms).

7. Peatlands and blue carbon as major land carbon stores

Peatland ecosystems globally store 3 to 5 times more carbon per unit area than any other terrestrial ecosystems and help conserve biodiversity, provide ecosystem services, food and income for local, often poor, communities. Mangroves, in addition, prevent floods, storm surges and provide Tsunami protection. These ecosystems are disappearing at an alarming rate with strong negative implications for climate change, increased risk of damages from national disasters, and deteriorating food security and nutrition for local communities.

Despite this importance, peatlands and mangroves are still under researched areas. FTA will expand its work in its hallmark SWAMP project (Sustainable Wetlands Adaptation and Mitigation Project), which has built an expert network in 20 countries, and carries out research-for-development on peatland ecology, diversity and climate effects (it has repeatedly contributed to IPCC guidelines to measure GHG in wetlands, for example). In addition, FTA will

continue refining its 2017 published global wetlands map by validating its peatland map in Africa and Latin America. FTA will generate global knowledge on peatland eco-hydrology and ecosystem services, and on carbon stocks dynamics and net primary productivity of rewetted peat as a peatland restoration option.

8.Climate change adaptation

Forests, trees and agroforestry resources are key to adaptation of forest-dependent communities to climate change, but also at broader levels for the adaptation of agricultural systems, from continental to local scales, due to effects on the water cycle and other environmental services. It is also important to secure adaptation of forests themselves as a means to protect people and the environment against a changing climate. Adaptation measures are not disconnected from other key objectives such as landscape restoration and development objectives.

FTA will co-produce with FAO the *Framework Methodology for Climate Change Vulnerability Assessments of Forests and Forest Dependent People*, aimed at practitioners, including forest owners, land-use planners, managers and administrators in the private and public sectors and in community forestry organizations. FTA will also co-produce with FAO the *Supplementary guidelines for the insertion of forestry and agroforestry in National Adaptation Plans*. These two publications will be major policy products of international importance, engaging formally with FAO and UNFCC processes.

FTA will work with partners on the role of landscape restoration in adaptation to climate change and disaster risk reduction, by undertaking spatial analysis on the link between forest cover and disasters in Peru, and analyzing the interaction between adaptation, human mobility (migration) and development. Fast-growing tree species including bamboo are often being critically regarded in terms of their water use. However, their adaptive benefits may be large. A workshop with TropenBos International will make the new knowledge on landscape-level adaptation available to policy makers.

The operational priority will provide approaches and tools for risk and vulnerability assessment for both people and forests to climate change, to be used by actors towards ecosystem-based adaptation (EbA) policy and practice, including joint mitigation and adaptation approaches.

9. Landscape governance

As it relates to agriculture, forestry and other land uses, and to the livelihoods they sustain, the landscape approach transcends traditional management and governance boundaries, seeking to provide tools and concepts to identify, understand and address a complex set of environmental, social and political challenges, and to enable evidence-based and inclusive prioritization, decision-making and implementation. At the heart of this are a set of governance challenges, including dealing with mandates and boundaries of different institutions working in a landscape, with the reality of power imbalances and political economy of decision making, and with the difficulty to reconcile conflicting social, economic and environmental objectives.

Principles of good governance (e.g. legitimacy and participation, accountability, empowerment etc.) and related processes are not enough taken into account and implemented in efforts such as landscape restoration, ecosystems-based adaptation enhancement, or land-based emission reduction approaches (including REDD+).

This operational priority will seek to enhance the understanding and practice of good governance as a key part of landscape approaches. It addresses a research gap in the current design of FTA.

10.Gender

This priority aims at integrating a gender equality and social inclusion perspective—including attention to issues of generation (youth) and the intersection of gender with different factors of social differentiation that cause marginalization—across the FTA portfolio. It focuses on strengthening the capacities and institutional processes for gender and social analyses to ensure that FTA proposes equitable and locally relevant innovations that can be readily and sustainably adopted. It supports scientists in analyzing the differential capacities, interests, and priorities of women and men across the research in development cycle, and in informing the development of policies, programmes, and innovations that can advance gender equality. It contributes to global efforts to 'Achieve gender equality and empower all women and girls' (SDG5), and high support within CGIAR and among influential donors for promoting women's rights and gender equality as a means to achieving several outcomes, but also as legitimate goals in and of themselves.

The coordinated implementation of this strategy across FTA through FTA's multi-center Gender Integration Team will continue to strengthen the network of gender expertise across flagships; and to underscore the importance of addressing gender and generational dimensions in forestry and agroforestry research in development for achieving quality science and development outcomes.

11. Silvopastoral Systems

FAO 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. Trees in pastures are ubiquitous in the Sahel, East Africa and much of Latin America and provide fodder and shade for animals as well as sustaining soil fertility and contributing to biodiversity conservation. It is increasingly realized that while retaining trees on pastures can halt and reverse degradation following deforestation, appropriate species and densities are required to do this profitably and productively. The independent evaluation of FTA in phase 1 recommended that FTA should expand its work on silvopastoral systems (SPS) drawing on expertise of CATIE as a strategic partner.

This operational priority aims to make progress in 2018 on 1) quantifying GHG emission reduction through development of climate smart SPS; 2) understanding best options for forage management and fodder value of bamboo and 3) policy analysis and engagement to overcome

constraints to SPS development in Africa. It will conduct a systematic review of research priorities required to underpin development of SPS globally to 2022, and leverage existing programmes involving CATIE, Bangor, INBAR, CIFOR and ICRAF. This will be complemented by development of a co-investment strategy with the Livestock CRP to address them.

12. Market-based agroforestry-forestry

A key reason for investment in FTA is that on-farm trees and improved forest management by smallholders can increase farm income through production and marketing of high value tree and non-timber forest products. We know that there are constraints to investment in trees including: the time lag between investment and return, and the paucity of evidence of the return on investment to tree promotion and associated intensification of smallholder systems through better management of interactions. Our key hypothesis is that there are high returns to investing in trees and forest management that represent an investment in ecological infrastructure (root systems, tree architecture, forest habitat, soil carbon etc.) that delivers high value products (from timber and fruits to mushrooms), in a sustainable way because they are produced together with other ecosystem services.

This research priority will deliver evidence of the return on investment in market-based agroforestry in Vietnam, Indonesia, Ethiopia, Uganda and Zambia together with a synthesis across these cases that sets out an evidence base for investment in trees, quantitative examples of success (including financial and ecological performance) and practical strategies for overcoming the time-lag between investment and returns.

13. Farm-forest policy interface

Progress of FTA research in agroforestry in East Africa and Southeast Asia has led to unprecedented opportunities to work with governments to scale-up adoption nationally while new initiatives on the forest-farm policy interface in West Africa are breaking new ground in linking the needs of smallholder farmers to local and national policy processes.

This priority will seek to better understand policy constraints at the farm-forest interface and embed FTA-developed methods, approaches, tools and technologies at the heart of major national agroforestry scaling-up programs in Ethiopia, Vietnam, Indonesia, Peru, Rwanda and Uganda. In Ethiopia, the Minister of Agriculture invited FTA to assist the government in setting up an inter-ministerial national agroforestry scaling platform: a delivery unit has been set up in the ministry and the Minister has asked for an FTA scientist to be attached to it to provide expertise in rolling out the FTA 'RinD' approach to scaling nationally though out Ethiopia. National and provincial governments in Vietnam and Indonesia are involved in the second phase research for the ACIAR-funded AFLi and Kanoppi bilateral projects, respectively. Policy engagement in Peru is leading to changes in forest regulations. In Rwanda, FAO invited FTA scientists to assist in advising government on a national agroforestry strategy and policy to be taken forward in 2018. In Uganda FTA scientists are engaged in a parliamentary process to develop a national agroforestry policy and strategy that was initiated in mid-2017 brokered by the Uganda National Farmers Federation.

14. Agroecology

Innovation has been a major engine for agriculture transformation in the past decades and will be pivotal to address the needs of a rapidly growing population and the increased pressure over natural resources (including biodiversity, land and water) in a context of climate change. Agroecology (including agroforestry) and other innovative approaches, practices and technologies can play a critical role to strengthen sustainable agriculture and food systems in order to successfully combat hunger, malnutrition and poverty and contribute to the advancement of the 2030 Agenda. The revised FTA FP2 proposal endorsed by ISPC sets out an integrated agro-ecological approach to improving smallholder livelihoods founded on systems thinking.

The Committee on World Food Security (CFS) requested last year its High-Level Panel of Experts to produce a report on "*Agroecological approaches and other innovations for sustainable agriculture and food systems that enhance food security and nutrition*", to be presented at CFS46 Plenary session in October 2019. This priority will support FTA's contribution to the development of this report, for which FP2 Flagship Leader, following official nomination by FTA, has been appointed as Project Team Leader (amongst 255 candidatures). The priority will contribute to synthesizing data, knowledge and perspectives to formulate FTA's vision for how agroecology can contribute to global food and nutrition security, drawing from knowledge across all FPs, and to publicize this widely.

15. Livelihood trajectory modelling and assessment

In a recent donor evaluation of FTA research, Malu Ndavi of IFAD said that he was not interested in hearing about the activities implemented but wanted to know how they would, if indeed they could, transform the livelihoods of smallholder farmers with respect to their food security and exit from poverty. This challenges FTA to go beyond reporting data on the performance of individual innovation, and to evaluate the extent to which their adoption (alone or in combination) can help achieve food and nutrition security and end poverty for smallholder farm households, including migrants and people on the brink of a decision to migrate.

This priority aims at developing a suite of submodels (simulation model components) that can capture the likely impact of adopting innovations on smallholder livelihoods in a range of different contexts. To do so we will team-up with an innovative software development company (Simulistics) in Edinburgh and CSIRO in Australia. It will build upon data on the performance of individual innovations from a range of FTA projects, together with information on the knock-on effects that they can have on total factor productivity of complex livelihoods, including through interactions with the wider rural economy.

16. Inclusive finance and business models

Private sector, NGOs and government agencies are increasingly promoting business and finance models that are both inclusive of smallholders and contribute to enhancing the environmental and social performance of agricultural production. Because models that manage to achieve

these objectives develop in adaptation to their geographic, economic, and political context, developing appropriate policies and interventions to support scaling and replication has proven challenging for governments and development agencies. It is increasingly recognized that in order to align business models to local sustainable development needs and help address market participation and standards compliance barriers faced by smallholders, strong coordination and learning amongst diverse stakeholder groups is required, as well as targeted financial services.

This priority is based on an action-research approach that combines the need to address knowledge gaps, while engaging and building capacities of key stakeholders. By ensuring the research is demand-driven, we will form the basis for developing business cases and attracting the buy-in from service providers and investors. It will also allow us to develop a better understanding of learning and innovation processes and pathways that make inclusive business models effective and efficient, with emphasis on the institutional factors governing the relationships among value chain actors, and between them and external input and service providers and regulatory stakeholders. We will draw on ongoing value chain research on livestock in Kenya and Tanzania, sugar and timber in Tanzania and Mozambique, oil palm in Indonesia, cocoa in West Africa, and beef/dairy and oil palm in Brazil.

17. Innovating finance for sustainable landscapes

A critical piece of work under Flagship 3 is related to the potential of responsible finance for providing incentives for the uptake and upscaling sustainable production practices. This work is being developed under CoA 3 “Scaling through responsible finance and investments”. This specific proposal focuses on improving the schemes and modalities for financing landscapes. It has close connection with the other two proposals developed under FP3 on zero deforestation and restoration, and on inclusive business models. This line of work has been prioritized under FP3 since much of the current debate on finance for sustainable smallholders’ production focuses on financing landscape approaches, as a potential way for scalability.

FTA will expand its finance capacity and expertise, improve its positioning and visibility in global debates, and actively engage with the relevant financing/investment networks, initiatives and organizations. This in order to get a better understanding of the specific demand for knowledge, capacity building and dialogue on more effective approaches, expanding partnerships for collaboration and leveraging impact of FTA work, as well as developing (joint) proposals for research and outreach. The work plan in 2018 consists of a series of activities already started or identified in 2017, complemented with new activities that aim at meeting knowledge and research gaps already identified, and placed under a wider demand expressed in key international agreements and events.

18. Public and private commitments to zero deforestation

Commitments from private sector and governments to zero deforestation (ZD) and to restore forest and peatlands have multiplied in the last years, notable since the New York Declaration in Forest (NYDF) signed in 2014. In addition, “No Deforestation, No Peat, No Exploitation”

(NDPE) policies have been embraced by companies in the palm oil sector in Southeast Asia, as well as commitments to sustainable palm oil and cocoa in West Africa, and sub-national level governments grouped in the Governors' Climate and Forests Task Force (GCF) have committed to a low emission rural development, including zero deforestation. In turn, the Bonn challenge has set up very ambitious forest restoration targets, followed by the AFR100, and the Initiative 20x20. The Zero-Deforestation and the restoration initiatives, both are considered as a major progress towards sustainability in tropical forest countries, yet still little is known about the positive social, economic and ecological impacts of those commitments in practice. While both zero deforestation and restoration dynamics interact strongly each other in the production landscapes, they tend to be considered as separate processes.

This priority will consider the interactions and implications of these two initiatives, since they tend to focus on overlapping landscapes, unraveling their underpinning dynamics and linkages.

19. Orphan Crops

Farmers in sub-Saharan Africa (SSA) face the daunting challenge of increasing production to feed a growing population, while improving the sustainability and resilience of cropping systems. The African population is set to boom over the next few decades, and is predicted to reach 2.5 billion by 2050 (UN Department of Economic and Social Affairs 2013). Africa faces serious nutrition-related challenges; the lack of nutritious foods has come at a huge cost for African nations, affecting not only human wellbeing but also economic progress and infrastructure development. Improving quality as well as productivity of food crops is vital for food and nutritional security. In a recent Nature Genetics article by Hickey et al. (2017), novel breeding approaches deploying sequencing were outlined. These can be applied to new and orphan tree crops that are often characterized by their resilience, adaptation to environmental stress and nutritional value compared with many better-researched commodity crops. The overarching goal of the African Orphan Crops Consortium (AOCC, http://africanorphancrops.org/) is to develop foundational resources that support the strategic, long-term genome-enabled domestication of 101 African new and orphan crops for SSA (Dawson et al., 2017; explained also in a recent popular article in The Economist, 2017, These 101 crops, half of which are food trees, were selected by NEPAD as priorities for African consumers' nutrition. Their sequencing is being undertaken to expedite improvement that exploits the full potential of species for yield, nutritional quality, pest resistance, adaptation to abiotic stresses and other constraints to use.

20. Effectiveness of approaches to sustainable supply (certification, FLEGT)

Different approaches to sustainable supply have emerged in the last time, often related to multi-stakeholder processes (e.g. commodity roundtables), to define sustainability standards linked to wider certification systems. Yet, the uptake of certification has proven slow due to several institutional factors and associated costs. In addition, private governance regulations have emerged aimed at the self-governance of private actors through codes of conduct, principles and guidelines, and wider commitments to sustainability. In this context, pledges to zero deforestation have become prominent, while their means of implementation are still being

developed, and their outcomes are uncertain. Furthermore, governments in consumer countries (e.g. European Union), are adopting measures to constraint imports from unsustainable/illegal supply (e.g. FLEGT, Amsterdam Declaration). While important body of work exist to assess the implications of certification, it is not yet clear the way in which other self-regulatory mechanisms contribute to sustainable supply. In addition, more is needed to understand the way in which combined public and private initiatives (e.g. jurisdictional approaches) may contribute to trigger more effective transitions to sustainable supply, with no negative social effects.

FTA will examine what are the main innovations in the design and implementation of governance institutional arrangements aimed at improved sustainable supply in forest landscapes. Main attention will be placed to arrangements initiated in consumer countries (e.g. European Union) that intend to improve the governance capacities in the producer countries, such as FLEGT, when extended to halt deforestation linked to agricultural commodities (e.g. cacao and oil palm). We will also put attention to the extent to which embracing wider territorial approaches can contribute to improve the uptake of sustainability standards and certification, and what other institutional barriers have to be overcome to supporting scaling up of sustainability practices in ways that benefit smallholders and the rural poor. The latter will be based in refined assessment of costs and benefits from adopting sustainability standards across different production systems, particularly in the context of the sustainability debate of palm oil supply. This will inform debates on measures to support sustainable supply in ways that reconcile the interests of producer and consumer countries, and stakeholders along the value chain. In 2018 FTA will (i) conduct studies on the implementation of FLEGT approaches in other commodities (additional cases in cocoa), (ii) an analysis of emerging territorial approaches and options, beyond product certification, based on available case studies, (iii) assess costs and benefits of standards implementation in oil palm in Indonesia, and likely scenarios.

21. Quality of FTA research for development

FTA includes many innovative research-for-development approaches intended to make research more engaged, pluralistic and, democratic, to be more effective. There is a great opportunity and a need to analyze and learn from these experiments, and to understand the implications in terms of quality of FTA research (QoR4D). This priority will investigate whether and how R4D contributes to change and to the generation of International Public Goods (IPGs). It will aim to develop broader principles of how to make R4D more effective. To do so, it will conduct outcome evaluation of several case studies (Peru AF Concession Policy; GCS REDD+ Vietnam; 3 GCS tenure cases in Indonesia, Uganda, Peru). It will draw from individual cases (mature research projects) and from comparative analyses of sets of cases.

Properly addressing gender is an important dimension of QoR4D. This operational priority will therefore have a specific focus on gender, conducting an evaluation of gender integration in FTA Phase 1. How and in what ways has gender been integrated into the FTA phase 1 research, contributed to outcomes and influenced international agreements? This evaluation, based on

modified realist review and outcomes harvesting methods, is being undertaken with the combined support of the DFID funded KNOWFOR project and FTA W1+2. Both DFID and FTA have prioritized the integration of gender into the research portfolio and performance frameworks. This work builds on the recommendations of the CGIAR wide gender mainstreaming evaluation and will examine what lessons can be drawn from existing gender integration practice to inform the gender integration strategy in FTA Phase 2.

22. Sentinel Landscapes

FTA, in phase 1, had devised its own set up to observe changes in landscapes, their causes and consequences. This innovative set-up, called sentinel landscapes (SL), is at a turning point. In order to understand how to bring it forward in phase 2, we need a critical look at the new context in terms of international demand, the key questions to which FTA aims at providing answers, as well as the evolution of the funding environment, especially for long term observatories. Where does SL stand, what are the tangible results since its inception? What were the challenges during the roll-out in phase 1? How to move forward?