ISC meeting 10 (18 June 2018)

Document 3

FTA' s priorities in 2018 POWB

FTA's Programme of work and budget (POWB) for 2018 is constructed around a set of 22 operational priorities[1] (see list in Annex 1 and description of each priority in Annex 2) in order to focus its work on a set of strategic issues that address main demands and knowledge gaps for international development.

These priorities were determined, in the frame of the proposal for phase 2, following a rigorous process, starting by the review of a wide range of synthesis and foresight publications, with a specific orientation towards the implementation of the SDGs and the Paris agreement on climate change (both came after the proposal was written).

The objective was also to build a rigorous process to ensure the best use of available resources, linking clearly W1+2 resources to pre-defined deliverables, and to facilitate contingency planning. It was also to strengthen program-wide collaborative approaches and to facilitate partnerships, building on the existing FPs structure, and also towards other CGIAR programs and platforms and with other organizations, including UN agencies and programs, the private sector and national research institutions and networks.

For each priority was prepared a dedicated program of work and budget, linked to specific activities and deliverables in 2018 undertaken by the different FPs and CCTs contributing to it.

The operational priorities are led by one flagship, with contributions of other flagships, and some of them comprise areas of interfacing with other CRPs. Three of them are particularly cross-cutting with a specific, program-wide approach for coordination: Restoration; Plantations and tree crop commodities; Enhanced nutrition and food security.

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) 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 **sustainable management of natural resources**: land and forest restoration, biodiversity, safeguarding and conservation of genetic resources, orphan crops, landscape governance (1, 4, 19, 9); and 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). Two operational priorities **ensure the quality of FTA research for development** (21) and monitor a set of sentinel landscapes (22).

[1] An operational priority is defined as "*a coherent and focused set of activities (funded by bilateral projects, W1+2 or 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] Numbers in parenthesis refer to the operational priorities in the list (Annex 1), with no significance of the order.

Annex 1. List of operational priorities [3]

1. **Restoration** of forests and landscapes, to carry out research on different aspects (from genetic resources to management modes and policy and governance options) and to integrate findings and emerging lessons into the main policy platforms and governance processes.
2. **Plantations and tree crop commodities**, 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[4],** supporting countries in meeting their NDC objectives through an improved use of their forests and tree-based resources.
6. **Bioenergy** 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 in order 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 need 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 generations (youth) across the FTA portfolio.
11. **Silvopastoral systems**, for production, fodder, shade, soil fertility and biodiversity. Retaining trees on pastures can halt and reverse degradation that follows 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 other 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.

[3] The ordering in the list does imply a hierarchy between these

[4] Nationally Determined Contributions of the Paris Agreement on Climate Change

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?

The operational priorities are situated, within a prioritization framework[5], at the intersection of (i) key research and knowledge gaps and (ii) major development demands, both listed below.

Key research and knowledge gaps

1. Contributions of FTA systems to food security and nutrition (FSN)
2. Land use and land use changes, and their consequences on FSN and on climate change (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 land use change 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, UNSPF
2. Increase, diversify and stabilize rural household incomes and economies: SDGs, CFS, UNSPF
3. Contribute to productive and resilient agricultural landscapes: SDGs 15,6,4, CFS
4. Preserve and sustainably manage biodiversity, ecosystems, environment: CBD, UNSPF, CFS
5. Contribute to climate change mitigation and adaptation: Paris Agreement, SDG 13, CFS, UNSPF
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

[5] Available on demand.

Annex 2: Operational priorities' short narratives as on the FTA website.

1. Restoration (forest and landscape restoration)

Countries 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 informed approaches that will help them achieve these targets, ensure that FLR contributes to the United Nations Sustainable Development Goals, and that lessons learned are fed back into FLR planning.

FTA scientists are conducting research in various Flagships, Clusters, and Cross-Cutting Themes on different aspects of FLR, evaluating natural regeneration and planting, seed supply, tree genetic resources , incentives, policy options, equity and inclusiveness, and many other topics. This operational priority will promote and facilitate collaboration and coordination to synthesize knowledge and communicate it effectively to better inform national and international organizations and processes.

2. Plantations and tree crop commodities

Timber and high-value tree crop plantations (for example, tea, coffee, cocoa, oil palm and rubber) are rapidly expanding in the sub-tropical and tropical regions, due to 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 they are a major source of income for more than 30 million smallholder farmers. Yet their expansion poses multiple economic, social and environmental challenges such as productivity gaps, negative environmental impacts, competition between large plantations and smallholders.

Several responses have been put in place to manage the challenges associated with the expansion of plantations, and to address performance gaps, including diversification options for production systems, production standards and certification schemes, labelling, and fair trade. 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. The effectiveness of such solutions (and trade-offs amongst objectives) depends on the commodity value chain, the scale of production, access to resources, and the organizational capacities of producers.

This priority is helping governments (at the national and sub-national levels) and stakeholders, including smallholder farmers who are still responsible for most of the global commodity supply, to understand the available options; plan for and devise plantation systems that reduce pressures on forests; and increase the contribution of plantations to sustainable food supply, poverty alleviation, and socio-economic resilience.

Work in this area will lead to recommendations for national and sub-national governance systems aiming to improve the productivity and resilience of production systems and enabling factors for sustainable 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 healthier and more diverse diets, through increased availability of, and access to, nutrient-rich wild and cultivated foods. For the populations in a landscape, their diet is influenced by the diversity of agricultural production, wild food provision, external forces and market supply.

Within this priority FTA is investigating how landscape configuration, and changing patterns of land use and productive activities at the landscape scale interacting with market forcesare causing changes in local diets in many countries. 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 connect these case studies to draw a broader picture of these phenomena at the national and regional levels. The knowledge gained from this data-informed process will be used to inform national discussions addressing the recommendations made in 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 from 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 [FGRs]); the optimal deployment of tree genetic resources (TGR), including inter- and intra-specific diversity in forest landscape restoration and multifunctional agricultural landscapes; and the 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, their impacts on human wellbeing, and on policies and strategies to reverse these trends.

The effective use and safeguarding of FGRs remains highly undervalued. Most restoration, agroforestry and afforestation projects do not consider the importance of seed sourcing or species diversity in their planning.

There is a need to improve tree species as well as effectively protect their seed sources *in* situ for sustainable use by future generations. Identifying priority sources of tree genetic material still needs to be carried out in many tropical countries.

This priority activity 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.

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

Nationally Determined Contributions (NDCs) are the national mechanisms contributing to the Paris Agreement objective of keeping global temperature increases below 2 or even 1.5 degrees Celsius. Through key partnerships in many developing countries, FTA is centrally placed to support countries to implement efficient and effective NDCs. The focus in this priority is on mitigation, but includes adaptation objectives of the NDCs.

FTA is analyzing how forest-based climate mitigation can be improved by countries in their NDCs. This includes analyzing REDD+ at country level and in the context of the NDCs, and an analysis of NDCs in selected Central American countries.

FTA is continuing to refine 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 (for example, Orinoco). FTA is also working on the genetic constraints of forest adaptation to climate change so that countries can meet their NDC objectives through the use of forests, trees and agroforestry resources.

With the aid of partner TropenBos International we are engaging with policy makers to make this knowledge available for greater efficiency and effectiveness of national policy making. This will move FTA towards the ultimate outcome of efficient, effective and equitable national and international climate mitigation policies and funding, aligned with development objectives (the 3E+ goals), and the establishment of 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 bioenergy development puts on productive agricultural land and food production. FTA is analyzing options for bioenergy production so that stakeholders better understand how land can best be allocated to bioenergy and how land use can be better taken into account in national policies in a way that further integrates food and bioenergy policies, and as a basis for upscaling bioenergy.

FTA is producing analysis on degraded land use suitable for biofuel production in Indonesia (spatial assessment, landowner perception, soil rehabilitation, and socio-economic and environmental food/fuel integration assessment). This includes 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, yet has less smoke and no sparks as well as a report on life cycle analysis of bamboo undertaken with INBAR.

7. Peatlands and blue carbon as major land carbon stores

Peatland ecosystems globally store 3-5 times more carbon per unit area than any other terrestrial ecosystem. They also 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 naturall disasters, and deteriorating food security and nutrition for local communities. Despite this importance, peatlands and mangroves are still under-researched areas.

FTA is expanding its work in its hallmark SWAMP project (Sustainable Wetlands Adaptation and Mitigation Project), which has built an expert network in 20 countries, and conducts research-for-development on peatland ecology, diversity and climate effects.

In addition, FTA is continuing to refine its global wetlands map – published in 2017 - by validating its peatland map in Africa and Latin America. Under this priority, FTA will generate global knowledge on peatland eco-hydrology and ecosystem services, and on carbon stock dynamics and the net primary productivity of rewetted peat as a peatland restoration option.

8. Climate change adaptation

Forests, trees and agroforestry resources are key to the adaptation of forest-dependent communities to climate change. They are also crucial 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 important to secure the adaptation of forests as a means to protect people and the environment against a changing climate.

FTA is co-producing, together with the Food and Agriculture Organization of the United Nations (FAO), the *Framework Methodology for Climate Change Vulnerability Assessments of Forests and Forest Dependent People*, aimed at practitioners, including forest owners, and land-use planners, managers and administrators in the private and public sectors and in community forestry organizations.

FTA will also co-produce with FAO *Supplementary Guidelines* for the insertion of forestry and agroforestry in National Adaptation Plans. These two publications will be major policy products of international importance.

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

9. Landscape governance

As landscape approaches relate to agriculture, forestry and other land uses, and to the livelihoods they sustain, it transcends traditional management and governance boundaries, and seeks to provide tools and concepts to identify, understand and address a complex set of environmental, social and political challenges, and enable evidence-based and inclusive prioritization, decision-making and implementation.

At the heart of this approach are a set of governance challenges, which include managing the mandates and boundaries of different institutions working in a landscape; the reality of power imbalances and the political economy of decision-making; and reconciling conflicting social, economic and environmental objectives. Principles of good governance (for example, legitimacy and participation, accountability and empowerment) and related processes are not taken into account and implemented sufficiently in landscape restoration efforts, ecosystems-based adaptation enhancement, or land-based emission reduction approaches (including REDD+).

This operational priority seeks to enhance the understanding and practice of good governance as a key component of landscape approaches.

10. Gender

This priority aims at integrating a gender equality and social inclusion perspective—including issues of generation (youth) and the intersection of gender and 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 scientific analysis of the differential capacities, interests, and priorities of women and men across the research-in-development cycle, and the development of policies, programs, and innovations that can advance gender equality. It contributes to global efforts to 'achieve gender equality and empower all women and girls' (United Nations Sustainable Development Goal 5), in line with efforts within the CGIAR and among influential donors to promote women's rights and gender equality as a means to achieve 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

The Food and Agriculture Organization of the United Nations (FAO) estimates that grasslands are by far the largest agricultural use of land (26% of all land globally and more than70% 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, sustain soil fertility, and contribute to biodiversity conservation. While retaining trees on pastures can halt and reverse degradation following deforestation, appropriate species and densities are required to do this profitably and productively.

This operational priority aims to 1) quantify greenhouse gas emissions reduction through the development of climate smart silvopastoral systems (SPS); 2) understand best options for forage management and fodder value of bamboo; and 3) policy analysis and engagement to overcome constraints to SPS development in Africa.

A systematic review of SPS research priorities is required to underpin the development of SPS globally to 2022, and leverage existing programs involving CATIE, Bangor, the International Network for Bamboo and Rattan (INBAR), the Centre for International Forestry Research (CIFOR) and the World Agroforestry Centre (ICRAF). This will be complemented by the development of a co-investment strategy with the Livestock CGIAR Research Program.

12. Market-based agroforestry

On-farm trees and improved forest management by smallholders can increase farm income through the 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 for the return on investment for tree promotion and associated intensification of smallholder systems.

Our key hypothesis is that there are high returns to investing in trees and forest management that represent an investment in ecological infrastructure (such as root systems, tree architecture, forest habitat and soil carbon) 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 for the return on investment in market-based agroforestry in Vietnam, Indonesia, Ethiopia, Uganda and Zambia, together with a synthesis across these cases which 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

FTA research in agroforestry in East Africa and Southeast Asia has led to unprecedented opportunities to work with governments to scale-up adoption nationally. 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 establishing an inter-ministerial national agroforestry scaling up platform with a delivery unit set up in the ministry.

National and provincial governments in Vietnam and Indonesia are involved in the second phase of research for the Australian Centre for International Agriculture Research (ACIAR)-funded AFLi and Kanoppi bilateral projects. Policy engagement in Peru is leading to changes in forest regulations. In Rwanda, The Food and Agriculture Organization of the United Nations (FAO) invited FTA scientists to assist in advising the government on a national agroforestry strategy and policy. 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 recent decades and will be pivotal to addressing the needs of a rapidly growing population and the increased pressure over natural resources in the context of climate change.

Agroecology (including agroforestry) and other innovative approaches, practices and technologies can play a critical role in strengthening sustainable agriculture and food systems 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 that its High-Level Panel of Experts 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 the CFS46 Plenary Session in October 2019. This priority will support FTA's contribution to the development of this report.

The priority will synthesize data, knowledge and perspectives to formulate FTA's vision for how agroecology can contribute to global food and nutrition security, drawing on knowledge across all flagship and partners, which will be publicized widely.

15. Livelihood trajectory modelling and assessment

This priority seeks to go beyond reporting data on the performance of individual innovation, and 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 to develop a suite of sub-models that can capture the likely impact of adopting innovations on smallholder livelihoods in a range of different contexts. To do so we are collaborating with an innovative software development company, Simulistics, in Edinburgh, and the Commonwealth Scientific and Industrial Research Organisation (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

The private sector, non-governmental organizations 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, to help address market participation, standards compliance, and the 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 with, and building the capacities of, key stakeholders. By ensuring that research is demand-driven, we will form the basis for developing business cases and attracting the buy-in from service providers and investors. This will also allow us to develop a better understanding of the 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, as well as with 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

This priority is related to the potential of responsible finance for providing incentives for the uptake and upscaling sustainable production practices. It focuses on improving the schemes and modalities for financing landscapes. As much of the current debate on finance for sustainable smallholder production focuses on financing landscape approaches, FTA has expanded its finance capacity and expertise, improved its positioning and visibility in global debates, and actively engaged with the relevant financing/investment networks, initiatives and organizations.

This has been in order to obtain a better understanding of the specific demand for knowledge, engage in capacity building and dialogue on more effective approaches, expand partnerships for collaboration and the leveraging impact of FTA work, as well as produce (joint) proposals for research and outreach. A series of activities has already been initiated, which is complemented by new activities that aim at meeting the knowledge and research gaps already identified, and respond to wider demands expressed in key international agreements and events.

18. Public and private commitments to zero deforestation

Commitments from the private sector and governments to zero deforestation (ZD) and to restore forests and peatlands have multiplied in recent years, and have been particularly notable since the New York Declaration on Forests (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.

Sub-national governments within the Governors' Climate and Forests Task Force (GCF) have committed to low emission rural development, including ZD. In turn, the Bonn Challenge has established very ambitious forest restoration targets, which was followed by the AFR100, and the Initiative 20x20. ZD and restoration initiatives mark major progress towards sustainability in tropical forest countries, yet little is known about the positive social, economic and ecological impacts of these commitments in practice. While both ZD and restoration dynamics interact strongly with each other in production landscapes, they tend to be considered as separate processes.

This priority examines the interactions and implications of these two initiatives, since they tend to focus on overlapping landscapes, and seeks to unravel 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.

Africa faces serious nutrition-related challenges; a 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 the quality, as well as the productivity, of food crops is vital for food and nutritional security.

Novel breeding approaches deploying sequencing 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) is to develop foundational resources that support the strategic, long-term genome-enabled domestication of 101 new and orphan African crops for SSAThese 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 improvements that exploit the full potential of species for yield, nutritional quality, pest resistance, adaptation to abiotic stresses and other constraints.

20. Effectiveness of approaches to sustainable supply (certification, FLEGT)
Different approaches to sustainable supply, often related to multi-stakeholder processes, have recently emerged 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.

Governments in consumer countries (for example, the European Union), are adopting measures (such as FLEGT and the Amsterdam Declaration) to constrain imports from unsustainable/illegal supply. While an important body of work exists to assess the implications of certification, it is not yet clear how other self-regulatory mechanisms contribute to sustainable supply. In addition, more knowledge is needed to understand how combined public and private initiatives may contribute to more effective transitions to sustainable supply, with no negative social effects.

FTA is examining the main innovations in the design and implementation of institutional governance arrangements for improved sustainable supply in forest landscapes. Primary attention is given to arrangements in consumer countries that aim to improve the governance capacities of producer countries, which aim to halt deforestation linked to agricultural commodities such as cacao and oil palm.

We are also examining the extent to which embracing wider territorial approaches can contribute to the uptake of sustainability standards and certification, and the institutional barriers that need to be overcome to support the scaling-up of sustainability practices in ways that benefit smallholders and the rural poor. This will inform debates on the measures required to support sustainable supply in ways that reconcile the interests of producer and consumer countries, and stakeholders along the value chain.

21. Quality of FTA research for development
FTA includes many innovative research-for-development approaches aimed at making research more engaged, pluralistic and democratic, and thus more effective. There is a great opportunity and need to analyze and learn from these experiments, and to understand their implications in terms of quality of FTA research (QoR4D).

This priority is investigating how R4D contributes to change and to the generation of International Public Goods (IPGs). It aims to develop broader principles of effective R4D.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 thus has a specific focus on gender, and involves an evaluation of gender integration in FTA Phase 1. This evaluation, based on a 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 their research portfolio and performance frameworks. This work builds on the recommendations of the CGIAR-wide gender mainstreaming evaluation and will examine the lessons that can be drawn from existing gender integration practice to inform the gender integration strategy of FTA Phase 2.

22. Sentinel landscapes

In Phase 1, FTA devised its own framework 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 further develop SL in Phase 2 of FTA we are critically examining the current context in terms of international demand; the key questions which FTA aims to answer; and the evolution of the funding environment, especially for long-term observatories.

We are examining where SL currently stands, what the tangible results have been since its inception, and what the challenges were during its roll-out in Phase 1.