

RESEARCH PROGRAM ON Forests, Trees and Agroforestry



KEY MESSAGES

All Flagships revised their impact pathways in 2013 to better articulate respective contributions to the CRP-FTA's central objective: Optimizing tree contributions to human well-being and environmental health. Flagship 2 reduced its Clusters of Activities, while adding a new one on 'restoration of tree-based ecosystems'. An evaluation of Flagship 2 was completed and provides useful input for its next phase (Kettle C, September 2013. Advancing conservation and management of forest and tree resources: Is CRP6.2 on track to deliver its outcomes?).

Two new, non-CGIAR partners (CIRAD and CATIE) officially joined the CRP-FTA, and are now full members of the FTA Steering Committee. The integration of these partners into the FTA provides the program with new expertise, networks, opportunities and impact. We are working to integrate CIRAD and CATIE financial and research contributions into our budgeting and planning processes. The FTA is the first CRP to be evaluated by the Independent Evaluation Arrangement. The results of the evaluation, expected mid-2014, will be used in the Phase 2 planning process.

Aggregating results and progress towards outcomes and impacts across the FTA's portfolio of 130+ active projects remains challenging. We are making progress in developing a systematic approach to capturing, learning from, and communicating the evidence of our contributions, successes, and failures. Having this system in place will facilitate the development of joint CRP sites, where multiple CRPs contribute to nationally-relevant development objectives. The FTA, WLE, CCAFS and Dryland Systems started a multi-CRP trial initiative in Burkina Faso in 2013.

The FTA work demonstrated the potential to contribute to large amounts of avoided GHG emissions in support

of System Level Outcome 4 (SLO 4). Analysis of 2004–2011 deforestation rates in Amazonia using our Terra-I platform showed that deforestation rates decreased in Brazil but increased in all other countries. This led to the development of a tool for low emission strategy development that was incorporated into national (Panama) and local (Ucayali, Peru) planning procedures. LUWES, a tool for Land Use Planning for Low Emissions Development Strategy at landscape scale, in the context of the Reducing Emissions from All Land Uses (REALU) project, helps plan for emission reductions and is currently used by 30 of the 33 provinces of Indonesia. The stepwise approach to national emissions reference level reporting spearheaded by FTA has been taken up as a United Nations Framework Convention on Climate Change (UNFCCC) decision in 2012. Emissions factors for peatlands, developed by the FTA, have been used in the most recent (2013) IPCC Guidelines for Wetlands. We are currently setting up a specific impact assessment study of our work on climate change.

In food security and poverty terms (SLO 1 and 2), the World Food Programme estimates that 1.8 million people in Malawi are currently vulnerable to food shortage, with poor access to inputs a key cause of low crop yields. The FTA is researching and promoting Faidherbia albida trees in fields as a low cost method to increase crop yields. Over 120,000 farm households have been reached with fertilizer tree technologies through FTA activities in Southern Africa to date. Fields with trees are showing 11–14% higher yields than those without, equating to an increased grain yield of 200 kg ha-1 yr-1, which is more than enough extra grain to feed a child for a year.



IMPACT PATHWAY AND INTERMEDIATE DEVELOPMENT OUTCOMES (IDOS)

The FTA theory of change is available from http://tinyurl.com/FTA-TOC-13. It uses interactive software to allow multiple sub-layers to be linked to the higher-level model. Flagship-level impact pathways are being revised and linked to the generic FTA theory of change. Our IDOs and indicators are being used to inform the Phase 2 FTA process.

FTA IDO	FTA IDO Draft Indicators
 Policies supporting improved livelihoods and sustainable and equitable resource management adopted 	Number of policies with targets by type and scaleProportion of policies that promote gender equity
2. Greater gender equity and women's empowerment in decision-making and control over forest, tree and agroforestry resource use	 Proportion of policies that promote gender equity Proportion of FTA value chains income received by women Proportion of women involved in FTA management decision making and control
3. Enhanced income from goods and services derived from forestry and agroforestry systems	 Income from FTA value chains Proportion of FTA value chains income received by women Proportion of share in FTA value chains by smallholders
4. Increased and stable access to nutritious food by rural and urban poor	Months of food insecurityDietary diversity
5. Production of wood, food, fuel and other products from forestry and agroforestry systems increase	Annual production of reference commodities (FTA index)
6. Biodiversity and ecosystem services (including carbon sequestration) from forests, trees and agroforestry resources conserved or improved	Area of deforestation and degradationArea of tree-based ecosystems restored

PROGRESS ALONG THE IMPACT PATHWAY

Progress towards outputs

Key developments have been made in genetic characterization and propagation methods for six indigenous high-value West African tree species, including mapping variation in seed and pod traits of the African oil bean (*Pentaclethra macrophylla*), improvement in rooting of leafy stem cuttings in *P. macrophylla*, *Garcinia lucida* and the three *Allanblackia* species that are emerging, through the FTA collaboration with Unilever, as major new oil trees for Africa. Progress has also been made in identifying microbial symbionts from natural stands of *A. stuhlmannii* and air layering in the African pear (*Dacryodes edulis*). Two years of data have been collected on seed production from pollarded *Gliricidia sepium* and a protocol for testing seed viability on farms has been developed.

The new global Agroforestry Species Switchboard links 22,212 plant species to information about them in 13 web-based databases. This interactive species tool, associated with natural vegetation maps, is underpinning new approaches to promoting tree diversity across seven countries in Africa. An atlas of the distribution of, and threats to, 100 neotropical forest tree species has been made available on the web,¹ and species-specific distribution maps for 1022 East African tree and shrub species are also available.²

A major synthesis of the role of trees in resilient livelihoods in dryland Africa has been produced in conjunction with the Dryland Systems CRP, highlighting how trees sit at the nexus of meeting the needs for food, energy and water.³ Baseline data from Ethiopia and Rwanda indicate higher food security in households with higher and more diverse tree cover and this is informing participatory trials across the East African region on using trees as a basis for sustainable intensification.⁴ A first paper with evidence that landscape-level tree cover and forests is positively correlated with dietary diversity and child nutrition⁵ has been published and shared in policy circles.

A global assessment of the extent to which mapping tools can inform management of ecosystem service provision from rural areas has revealed a critical gap in the ability to relate field- and farm-level decisions about change in tree cover to their consequences for ecosystem services. This is at the local landscape scale where they first manifest and can be managed.⁶ A new tool, Polyscape, with the capability to address this gap has been developed and will form a key plank in our strategy for research to link landscapes and livelihoods.

Highlights of the FTA's Global Comparative Study on REDD+ are the analysis, publication, dissemination and uptake of research results on REDD+ policy and governance, and REDD+ implementation challenges in national and international policy arenas. Examples include the pick-up rates of global comparative chapters in *Analysing REDD*+ and journal articles on the discourse on equity and participation. The policy network analysis is proceeding and country cases made available to stakeholders (e.g. on knowledge brokers for REDD+ in Tanzania). Articles in a special issue of *World Development* highlight the overarching role of tenure in REDD+. Importantly, we have shared socioeconomic baseline field research results with REDD+ proponents and study villages, for their use.



We have developed a database of 230+ adaptation and mitigation projects worldwide for analyzing the potential for synergies between adaptation and mitigation, and to assess how gender is considered in these projects.

Other outputs include: (a) the completion of a feasibility analysis of landscape level emission reduction scenarios; (b) the development and testing of financial and nonfinancial incentives in progress in project landscapes; and (c) a new REDD+ readiness assessment framework that has been developed and applied in four countries as a framework for adaptive management of readiness processes.

FTA completed research on the impacts that FLEGT-VPA (an initiative for ensuring the compliance of legality in timber supply of European Union markets) has had in producer countries, specifically in Cameroon, Gabon, DRC, Indonesia and Ecuador. We have provided recommendations on how best to support the integration of smallholders and small-scale chainsaw millers into the domestic timber markets without affecting their livelihoods as a result of additional requests for legality.

We have completed research on the forestry, mining and agricultural impacts of Chinese-related investments in sub-Saharan Africa. We have completed two regional overviews, one in Congo and another one in Miombo woodlands, depicting the main implications, and undertaken four case studies in Mozambique, Zambia, Cameroon and Gabon. In addition, we have completed research on the influence that Chinese-related investments have on expanding rubber production in Laos, and its socio-economic and environmental implications. This research will inform initiatives to promote greater sustainability in the supply to growing emerging market economies, such as China.

In support of the Consortium open access and data management policy we have established two interoperability data sharing platforms with more than 100 datasets uploaded and shared. Randomized farm-level trials, institutional mapping, participatory research at the village level; household-level interviews and clustered hierarchical soil, vegetation and land-use assessments have been implemented across 6 sentinel sites within 2 pilot landscapes. Models have been developed that allow the causal link between vegetation cover and land health to be analyzed.

Progress towards the achievement of research outcomes and IDOs

The Peruvian Ministry of Environment has a national program for forest conservation, targeting 54 million ha of the Peruvian Amazon. It requested FTA assistance in



prescribing practices for smallholders to reduce forest loss and degradation. These focus on alternatives to slash and burn, and sustainable intensification of cocoa and oil palm cultivation amongst settler populations together with a broad range of agroforestry options amongst indigenous communities. Additionally, the Peruvian government, drafting new rules on forest use and planning policies and projects, drew on FTA knowledge combining GIS and government databases to provide up-to-date information on the degree of overlap between conflicting land uses in Madre de Dios. Maps and accompanying analyses showed that large areas of forests in Brazil nut concessions are being cleared for farming and mining, putting livelihoods and forests at risk. The FTA researchers identified which articles of the new Forests and Wildlife Law had weaknesses that could be rectified by implementing regulations. Senior officials in the Peruvian National Agency for Monitoring of Forest Resources

and Wildlife, and the Ministry of Environment informed FTA that policymakers will refer to the research results when designing projects related to governance, land-use planning, policy coordination and sustainable economic activities in forests.

Based on research carried out by FTA on bushmeat hunting, a participatory bushmeat monitoring system (PBMS) has been designed for district and provincial level authorities in Brazil. A framework on the impact of road building on bushmeat and other forest resources will be included in environmental assessments on road building in the Ecuadorian Amazon.

In Cote d'Ivoire, engagement with the private sector and government within the Mars-supported Vision for Change project has led to development of a cocoa agroforestry research strategy, aimed at sustainable production. FTA scientists are helping the Indonesian government on implementation arrangements for their Payment for Ecosystem Services law ⁷ that regulates economic incentives for environmental management. A negotiation support toolbox for learning landscapes⁸ was published, with 50 methods that have been tested for use by national partners in this respect. A tool for participatory land-use planning at the interface of livelihoods and environmental integrity, the LUWES tool⁹ initially developed and adopted at a national scale in Indonesia, was introduced in Peru and Vietnam and adopted after adaptation to local circumstances, to support decisions and negotiations in the face of landscape-level trade-offs.

FTA analysis of the 2004–2011 deforestation rates in Amazonia (showing that deforestation rates decreased in Brazil but increased in all other countries) using terra-i¹⁰ in South America led to the development of a tool for low emissions strategy development that was incorporated into national (Panama) and local (Ucayali, Peru) planning procedures. Terra-i detects land-cover changes resulting from human activities in near real-time, with updates every 16 days. LUWES, a Land Use Planning Tool for Low Emissions Development Strategy at landscape scale in the context of the REALU project, helps planning for emission reductions and is currently used by 30 of the 33 provinces of Indonesia.

The FTA-developed stepwise approach to national emissions reference level reporting has been taken up as a UNFCCC decision and is being implemented to better take into account the different capacities in different countries. We are also seeing uptake of the stepwise idea by other international organizations (IIED, GOFC-GOLD, etc.). Emissions factors for peatlands developed by the FTA have been used in the most recent (2013) IPCC Guidelines for Wetlands. Research on the synergies between adaptation and mitigation policies is informing the UNFCCC's Adaptation Board.

FTA research on promoting the integration of smallholders, chainsaw millers and traders, who depend on domestic timber markets included in FLEGT-VPA agreements, has been used in policy reforms and implementation taking place in Cameroon, DRC, Indonesia and Ecuador. In Cameroon and Ecuador, findings from our research have been used in forest policy working groups to enhance forest governance. Our findings are acknowledged in discussion forums organized by Chatham House, FAO, European Forests Institute and other global organizations.

In Indonesia, in addition to work conducted to support forest reforms related to the implementation of FLEGT-VPA, we have supported small-scale furniture enterprises and their suppliers in Jepara through the establishment of the Jepara Small-scale Furniture Producers Association, allowing member producers to negotiate with the Indonesian Furniture Industry, Handicrafts Association, and the Jepara Wood Traders Association. About 85% of Association members have seen improvement in total production, sales and profits in the last few years.

The Global Landscapes Forum was held on the sidelines of the UNFCCC Conference of Parties in Warsaw, Poland (2013). A website created for the conference — www. landscapes.org — now serves as a knowledge-sharing hub about forestry and agroforestry issues. It publishes content from all FTA centers and has generated 200,000 page views since its launch in August 2013. Between August and November 2013, the Forum's social media campaign saw 14,558 landscapes- and Forum-related tweets sent by 1,936 contributors, reaching a total audience of 3.49 million people. More than 1,000 people from more than 100 countries attended the two-day Forum, including 180 official climate change negotiators and 100 journalists. Thousands more followed the event online via live video. According to a participant survey, 85% believed that the Forum informed the Sustainable Development Goals and 56% believed that the Forum informed the UNFCCC negotiations. More than 50 partner organizations developed an Outcome Statement, including 13 recommendations to the UNFCCC, during the two-day Forum, which was covered extensively by national and international media.

FTA research contributed to formulation of the recommendations and priorities of the first Global Plan for Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources, adopted in 2013. ¹¹

Progress towards impact

The World Food Programme estimates that 1.8 million people in Malawi are currently vulnerable to food shortage, with poor access to inputs a key cause of low crop yields. The FTA is researching and promoting Faidherbia trees in fields as a low-cost method to increase crop yields. We found that over 70% of maize fields that had Faidherbia trees in them (sample stratified for farmers within and outside FTA project target areas) and that fields with trees were associated with 11–14% higher yields than those without (depending on the model fitted to the data), equating to around 200 kg ha-1 yr-1, which is more than enough extra grain to feed a child for a year. Higher yields were associated with higher tree density and larger tree size, and the trees in the measured plots were still young (mean of 26.3 cm DBH) and sparse (mean of 9.6 trees ha-1), so a greater impact on crop yields is expected as the existing trees grow larger, and there is further potential to intensify by encouraging more trees. Over 120 thousand farm households have been reached with fertilizer tree technologies through FTA activities in Southern Africa to date.

In 2013, Government agencies in Peru used an FTA InfoBrief ¹² to draft new rules on forest use and to plan policies and projects. Through a series of maps and an accompanying analysis, research showed that large areas of forest in Brazil nut concessions are being cleared for farming and mining, thus putting livelihoods and forests at risk. The overall area covered by our study is around 2 million ha of Brazil's nut rich forests, among which there are up to 100,000 ha of conflict "lands" between 40-yr Brazil nut concessions and agricultural titling that were at a very high risk of being cleared for agriculture. They represent on average 300 tons of carbon per ha in terra firme forests in Madre de Dios. This work has therefore contributed to about 30,000,000 tons of carbon stored or the equivalent avoided emissions.

GENDER RESEARCH ACHIEVEMENTS

A 2013 study illustrates ways in which gender disparities in forest management can be addressed. By deploying gender transformative techniques among participating user groups in fifteen randomly selected villages/communities in Uganda and Nicaragua, researchers and delivery partners were able to increase the proportion of women in leadership roles, and increase the number of women planting preferred tree species on farms owned by men. Women contributed actively in group meetings, and increased their contact and coordination with external actors such as forestry agencies and NGOs. The process appears to have increased prospects for joint learning of men and women, resulted in increased confidence among women both in leadership and as group participants, and contributed towards greater gender responsiveness among men and women, officials and NGOs.

Analysis across 10 countries in Africa, Asia and Latin America revealed that there was less conflict in participatory forest management institutions where women participated and were in leadership positions, and that women were more likely to participate where education levels were higher and there was low income inequality.¹³ Around Jelo forest in Ethiopia, women generated four times the amount of forest income than men, and women-headed households obtained over half their total income from forest.¹⁴ Demand for our work has grown among the development community, with CARE-Nepal adapting and translating our methods manual, RECOFTC requesting support in conducting a gender analysis of forest policy in five Southeast Asian countries, global initiatives in food security and in forest resource assessments seeking our input, and global

forestry research associations inviting the delivery of keynote addresses on topical issues. Our 2013 gender relevant products include policy briefs (3), tools (6), journal articles (8), and blogs (9).

The FTA gender strategy was the first to be approved in January 2013. Five training programs were conducted in 2013, reaching 109 scientists and partners. Four workshops and write-shops were conducted to supplement and/or complement the gender strategy's capacity strengthening campaign. Topics included the development of FTA-wide research on gender and forestry value chains and gender methodologies for long term monitoring sites. The FTA scientists participated in the CG gender network's gender, norms and agency global comparative initiative. 2013 saw the recruitment of three PhD-level gender specialists and significant advances in the recruitment of a further two postdoctoral fellows and one junior professional officer at masters level. Five gender fellowships were awarded in 2013. A draft FTA gender strategy M&E plan is available, and Bioversity has integrated gender requirements into performance appraisal of its Flagship 2 scientists.

Baselines against which longer-term gender-related assessments and impact evaluations can be conducted are under consideration. These include: a) the network of sites in Africa, Asia and Latin America of the Poverty and Environment Network; b) the network of sites in Africa, Asia and Latin America where of the Global Comparative Study on REDD+; and c) the network of FTAs long-term monitoring sites/Sentinel Landscapes.

PARTNERSHIP BUILDING ACHIEVEMENTS

The FTA achieved major new partnership milestones in 2013, with the formal integration of two new partners (CIRAD and CATIE) into the FTA's Steering Committee. This membership significantly expands the FTA's reach and impact delivery. At the national level, a partnership agreement was signed between CIFOR and the government of Peru for research to support policy development.¹⁵

In Burkina Faso, the FTA is working collaboratively with CCAFS, WLE and Dryland System CRPs to develop joint input to common development objectives aligned with national planning priorities. The range of national and regional partners that have bought into and are contributing to the elaboration of the joint CRP site initiative is significant and provides the basis for further expanding the joint CRP site concept to other locations (e.g. Zambia, Mekong).

The FTA has cultivated a strong partnership with FAO, with both its Commission on Genetic Resources and its Forestry Department. Through inputs to the State of the World's Forest Genetic Resources Report and Action Plan, and FAO's 2013 Forests and Food Security Conference and publications, FTA has been able to promote our research results and recommendations to governments through FAO. Partnerships are being built with six timber concessionaires in the Congo Basin (two each in Cameroon, Gabon and Congo DRC), for the combined purpose of carrying out research on the concessions and jointly developing management recommendations to safeguard local people's access to forest resources important for their livelihoods. During 2013, several joint discussions involving communities, the concessionaires and the research team represented the first time that communities and concessionaires had come together to discuss issues of mutual concern.

The FTA's research partnership approach ensures national ownership of knowledge products and a much more targeted dissemination in national policy arenas, where our partners themselves are active members. Partners from domestic civil society organizations and national research institutions have successfully published papers based on FTA core methodology. Examples include papers on climate change discourse analyses in Nepal (with ForestAction), Peru (with Libelula), and PNG (with colleagues from NRI and UPNG), and country profiles published for Nepal (with ForestAction) and DRC (with CODELT).

CAPACITY BUILDING



We have undertaken capacity building activities in support of results delivery, as per our theory of change. In 2013, more than 2000 people participated in capacity development activities supported by the FTA. Over 100 interns were hosted by FTA institutions, and over 25 undergraduate, masters and PhD students contributed to FTA research¹⁶ in 2013. Highlights include: journalist training courses conducted by FTA and partner organizations at a two-day regional forestry conference in Central Africa, eight training courses in GIS and R in Central and South America, training workshops on methods in governance and media discourse analysis, journalist trainings regarding climate change and REDD+, and training in outcome mapping.

RESEARCH PROGRAM ON FORESTS, TREES AN

RISK MANAGEMENT

Risk 1: How to manage short term expectations about impacts

It is our responsibility to engage donors in a discussion about our probability-based theory of change, results framework, and the complexities of knowledge transfer and uptake. We conduct research that, through the establishment of strong and productive partnerships with a range of intermediary knowledge users (boundary partners), informs policies and practices most likely to trigger change. This planned contribution to change in behavior (outcomes), mainly through boundary partners, is as far as a research organization can contribute to higher-level development achievements. While donors expect their investments in CRPs to yield results that contribute to System Level Objectives, judging a CRP's performance annually on the achievement of results far beyond its control or influence is likely to be counterproductive. It is therefore necessary to think carefully about the management of donor expectations of what a research program can be held accountable for.

Risk 2: Lack of systematic approaches to planning, monitoring and learning

The FTA informs policy and practice, and contributes to change processes through a range of knowledge generation, capacity strengthening, network development and agenda setting activities. Our knowledge generation, sharing, and upscaling processes are allowing us to reach our target audiences, however, we currently lack a systematic approach to capture, learn from, and communicate evidence of these achievements. We are working to develop and implement the approaches and tools that will allow us to better plan and target our contributions, understand and learn from feedback loops, and communicate progress and achievements to donors.

Risk 3: Interrupted W1/2 funding puts our long-term objectives at risk

The approved FTA is a framework proposal with clear expected impacts after 10 years that is managed through a 3-year rolling operational plan (OP) where the actual outputs/outcomes are defined in detail. The OP implementation is monitored every 6 months via a traffic-light report and is revised annually to consider the funding situation, level of achievement and new research endeavors. We are working towards 10-year CRP and System objectives, and are leveraging W1/2 funds with W3/bilateral grants. Working on a 10-year framework program, with 3-year tranches, creates some significant risks of interruption of W1/2 funding during transitions between funding tranches. It also puts the CRP at risk of non-delivery or of creating significant opportunity costs, especially regarding cross-cutting themes such as gender integration, communications, monitoring, evaluation and impact assessment, and sentinel landscapes.

LESSONS LEARNED

We have a high level of confidence in the quantitative indicators, e.g. number of people trained. We have less confidence in other types of indicators, such as the number of policies influenced. We provided a report for USAID in 2013 (available on request) that lists the types of policies influenced, the stage of influence, and a short description of that influence. We continue to develop a systematic approach to collecting this and other types of performance indicators from across our portfolio.

Engaging with decision makers in regional and national state agencies, in consumer countries, may be more effective in developing policy incentives and mechanisms to regulate investments and have more leverage within international policy processes and the donor community than policymakers in producer countries. The latter are, however, important with regard to the adoption of specific measures that have impact on the ground with regards to the actors and landscapes where we implement our projects. Therefore, it may be useful to more actively engage consumer country governments more actively and explore new avenues and opportunities for doing so.

Efforts were made to develop a global mango distribution map based on point location data available from http:// www.gbif.org/occurrence. It was found that there were insufficient location data points and the available data were strongly biased, showing a marginal distribution in India, but occurrence in North America.¹⁷ The global mapping effort based on species distribution modelling approaches had to be abandoned. A lack of good data is often a constraint to analyzing status, trends and patterns, and developing solutions or recommendations.

The majority of projects in the FTA portfolio do not contain explicit progress markers for knowledge uptake or strategies that can be systematically monitored. Instead they rely on logframe-friendly research leading to knowledge generation, knowledge use and ultimately a better world model. Given that the FTA theory of change is based on research interface with policy and practice via intermediary knowledge users in a complex, dynamic system, we need to unpack project-level knowledge uptake assumptions, and develop approaches for aggregating results across multiple projects in order to derive an FTA-wide outcome progress dashboard. In order to achieve this objective, shorten our intervention feedback loops, and provide a more real time understanding of progress towards outcomes, we are introducing a range of knowledge uptake planning and monitoring approaches, and tools across key portfolio elements. These include question-based approaches which allow multiple sources of evidence (e.g. digital stream, citations, network analysis, reports from the field) to inform performance rubrics.

For more details, see the full report with annexes at: http://www.cifor.org/fileadmin/subsites/CRP/FTA_AR_2013_web.pdf

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