



RESEARCH
PROGRAM ON
Forests, Trees and
Agroforestry



Annual Report 2021

CGIAR Research Program on Forests,
Trees and Agroforestry



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

Final version of 29 April 2022 (deadline for SMO)

FTA's managing partners: Center for International Forestry Research (CIFOR, lead center), World Agroforestry (ICRAF), The Alliance of Bioversity International and CIAT, the Tropical Agricultural Research and Higher Education Center (CATIE), the Agricultural Research Centre for International Development (CIRAD), the International Bamboo and Rattan Organisation (INBAR) and Tropenbos International (TBI).



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Executive summary

The CGIAR Research Program (CRP) on Forests, Trees and Agroforestry (FTA), created in 2011, is the world's largest research for development program to enhance the role of forests, trees and agroforestry in sustainable development and food security and to address climate change. CIFOR leads FTA in partnership with ICRAF, the Alliance of Bioversity International and CIAT, the Tropical Agricultural Research and Higher Education Center (CATIE), the French Agricultural Research Centre for International Development (CIRAD), the International Network for Bamboo and Rattan (INBAR) and Tropenbos International (TBI).

2021 marks the last year of FTA as a CGIAR CRP. It has a set of operational priorities which structure its program of work. These priorities address key development demands and knowledge gaps concerning the implementation of the SDGs and the Paris Agreement on climate change. These operational priorities have each a 3-yr operational workplan 2019-2021, with a detailed list of activities and outputs, identifying clearly those funded by W1W2. 2021 was therefore also the closing year of these triannual plans, mainly directed to finalizing projects and studies synthesising results and bringing these to the next users. Overall in 2021, FTA produced 509 publications, of which 464 open access, 213 peer-reviewed and 192 ISI journal articles. FTA delivered, in 2021, 23 major innovations and 19 major contributions to policies. FTA also wrapped-up its COVID-19 Rapid Research Response, releasing a set of key studies looking at impacts and ways to build resilience.

Looking at its development impact, FTA completed in 2021 a set of innovative integrated impact assessment studies focused on documenting progress of the program's contribution in addressing key global challenges linked to deforestation, unsustainable land management, land degradation, food insecurity and malnutrition, and poverty. It led to a quantified estimation of the contribution of the program to global objectives. This contribution is significant, as since 2011, FTA working together with partners, achieved:

- Between 2–35 million ha of land under **restoration**.
- Between 26–133 million ha of **forests under enhanced protection**. This represents up to 125 Gt of sequestered carbon dioxide.
- Between 60–204 million ha of **land under better management** via improved policy, monitoring and management practices.
- Between 5–19 million people with better **means to exit poverty**.
- Between 1–3 million people with additional **means to improve food and nutritional security**.

In 2021 FTA produced the "highlights of a decade" series, a premium product, which in 18 volumes details the achievements and legacy of the program over key areas of work since 2011. Directed to a general audience, FTA initiated in 2021 an innovative partnership with [Google Arts & Culture](#), with 8 online exhibits that feature key areas of the program, its action and impact.

FTA brought its results to major international events of 2021: the UNFSS (with FTA being at the origin, with partners, of the emergence of 2 coalitions, on agroecology and on soil health), the UNFCCC Glasgow COP and prepared its contribution to the CBD COP15 in Kunming, by organizing a major global hybrid science conference in Kunming, together with the Chinese Academy of Sciences and the Chinese Academy on Forestry on "*Forests, Trees and Agroforestry for diverse sustainable landscapes*", gathering more than 400 participants, that led to a set of recommendations towards the CBD. FTA [collaborated with the CBD](#) preparing a guidance on gender and inclusion to support the finalization of the Gender Plan of Action by COP 15, and its implementation in the coming years. FTA successfully concluded its current cycle of collaboration with FAO: it finalized the Asia-Pacific Roadmaps on forest technologies and on primary forests conservation, an FAO forestry paper on "Mainstreaming Biodiversity in Forest management", and contributed to the [State of the Worlds Forest \(SOFO\)](#), all to be published at the 15th World Forestry Congress in 2022. FTA wrapped-up its work in December with a 2021 [Conference on 10 years of FTA research for people and the planet](#). Going forward, FTA results are available to support the implementation of the sustainable development agendas as linked to forests, trees, agroforestry, sustainable landscapes and tree-based value chains.

Part A. Narrative section

1 Key results

1.1 Highlight global progress and achievements

1.1.1 Progress towards SDGs and SLOs

2021 marks the last year of FTA as a CGIAR Research program. In 2021, FTA completed a set of studies focused on documenting progress of the program's contribution in addressing key global challenges. These challenges were identified together with the management team and leadership of FTA, highlighting five important areas of commitments relevant to many countries and actors, donors' priorities, the Sustainable Development Goals, and the CGIAR SLOs and SRF targets.

The results of these studies, summarized in Table 1, demonstrate the following contributions to the SRF targets:

- **Addressing accelerating rates of deforestation and forest degradation:** Overall, an estimated 25.6m ha of forests have the potential to be under enhanced protection from deforestation and forest degradation as a result of collective processes to which FTA research and engagement contributed. If FTA-informed policies are effectively implemented and enforced, there are 133.4m ha of forests that have the potential to be better protected from deforestation and degradation in the countries assessed to date. Based on these estimates, between 24 Gt (low-end estimate) and 125.3 Gt (high-end estimate) of CO₂ emissions may be avoided as a result of FTA's contribution to enhanced forest protection.
- **Restoring degraded land and ecosystem services:** Cumulative effects of FTA's research and engagement contributed to placing at least 1.8 million ha under restoration, with the potential for up to 34.5 million ha to be under restoration in the future. Projected carbon sequestration effects of active planting facilitated by FTA is estimated to be from 1.4 million tons CO₂ to reach the potential of 511.5 million tons of CO₂ in the future.
- **Widespread Unsustainable Land Use Practices:** We estimate that 59.5 million ha of landscapes are now under improved management as a result of policy mechanisms, monitoring systems, and changes in on-the-ground management and land use practices influenced by FTA. In addition, if other

relevant FTA-influenced policies, action plans, and monitoring systems are effectively implemented and/or scaled up in the future, a total of 204 million ha of landscapes have the potential to be better managed.

- **Persistent Rural Poverty with Increasing Levels of Vulnerability:** Overall, the study estimates that 5.1m people (1.3 million people directly and 3.8 million household members indirectly) have additional means to exit poverty or have increased resilience to impoverishment as a result of FTA's contributions. This estimate includes people with increased access to inputs for tree- and agroforestry-based production; people who adopted enhanced management or diversified production practices to increase yields; people who adopted low-cost processing techniques and value-addition; people with enhanced access to formal markets and/or business and marketing skills. We project that if all individuals reached by FTA adopt FTA-promoted options and technologies into their practice, in addition to the effective implementation of FTA-influenced policies, strategies, and action plans, 19m people (5.7 million people directly and 13.3 household members indirectly) have the potential to benefit from additional means to exit poverty or reduce their vulnerability to falling into poverty.
- **Rising Demand and Need for Nutritious Food for both Current and Future Generations:** Overall, FTA reached over 760,000 households with additional means to improve their food security and nutritional status, with evidence of uptake of FTA innovations among one-third of these households (248,398). Evidence of significant FTA contributions to several policy-related outcomes was also found and documented.

1.2 CRP progress towards outputs and outcomes (spheres of control and influence)

1.2.1 Overall CRP progress

Please provide a summary of how **the CRP as a whole** progressed towards the agreed 'Program outcomes', highlighting:

A. Major pieces of work

In 2021, FTA finalized two major pieces of work.

First, the [integrative impact studies](#). This was a major exercise to assess FTA's contributions and impacts on five key development challenges. This process brought

together the Independent Steering Committee of FTA, impact assessment experts, FTA scientists and partners to (i) design an original, workable approach and operational method to credibly assess impacts at scale for the whole FTA program, since 2011; (ii) deploy the method against five development challenges FTA was expected to address; (iii) learn lessons from the exercise. The process results are 5 integrative impact studies, together with a synthesis, including key lessons and recommendations.

These show tremendous impacts achieved by FTA major clusters of work, over the years, and under respectively conservative to optimistic hypothesis:

- Brought between 2–35 million ha of land under **restoration**.
- Brought 26–133 million ha of **forests under enhanced protection**. This represents up to 125 Gt of sequestered carbon dioxide.
- Brought 60–204 million ha of **land under better management** via improved policy, monitoring and management practices.
- Provided between 5–19 million people with better **means to exit poverty**.
- Provided 1–3 million people with additional **means to improve food and nutritional security**.

The five development challenges, and the integrative studies, above can serve as a basis for a further assessment of the impact of the program on climate change mitigation, as well as on biodiversity: these two categories of impact in fact primarily depend on the 3 main categories assessed though this exercise: lands under restoration, lands under enhanced protection, and lands under sustainable management.

As part of this quantitative assessment, the studies precisely documented the way FTA reached its four FTA's end-of-program outcomes ([see Appendix 1](#)), and how these are interrelated to the 5 overarching objectives above. They enabled to confirm the conclusion of the [independent review of FTA](#) (2021) that stated that “FTA high scientific productivity and strong implementation performance in phase II and was likely to make significant progress toward most of its planned end-of-program targets”.

End-of-Program Outcome #1

25 countries improve governance mechanisms, institutions & tools for a) safeguarding forests/tree diversity and b) equitably managing forests & trees within mosaic landscapes.

End-of-Program Outcome #2

About 20 multinational companies and 500 private sector actors pursue models & investments for a) improved management. & safeguarding of forest & tree resources and b) enhancement of inclusive landscape-based livelihoods & ecosystem services.

End-of-Program Outcome #3

National and sub-national public & private sector actors in 25 countries deliver more effective & equitable tree related breeding, delivery, extension & pedagogical services.

End-of-Program Outcome #4

At least 40 million smallholders & other users access more productive tree planting material & uptake higher performing, context appropriate & inclusive Agroforestry & small-scale forestry management option

A key lesson from the integrative impact studies is that, to ensure long-term impact and scalability, it is necessary to work across the research-from-development continuum by means of long-term partnerships enabling solid on-the-ground buy-in and trust. Also, a key element of overall impact at scale, which was a key feature of the FTA program, is that effective and impactful action should combine technical, social, and institutional innovations, alongside with policy change.

The second major piece of work is the [FTA highlights series](#), that spotlight the achievements from a decade of FTA research, started in 2011. Reflecting the most significant work of FTA, the 18 volumes of the series concretely show how forests, trees and agroforestry, when effectively used, managed and governed, do improve production systems, enhance food security, support livelihoods, advance equity, and address landscapes, climate change and biodiversity challenges. Each issue reports the actual contributions of FTA to research and development challenges and solutions, over a decade. It features the work undertaken as part of the FTA program, by the strategic partners of FTA ([CIFOR-ICRAF](#), [The Alliance of Bioversity and CIAT](#), [CATIE](#), [CIRAD](#), [Tropenbos](#) and [INBAR](#)), with other international and national partners. The volumes contain a wealth of data, information, on-the-ground learning and country case studies. From this perspective of the FTA research undertaken, the series also tells the story of the issues themselves, their history and evolving narratives, in a decade that has seen many significant changes. The series shows an impressive track record of FTA, built over the years, and how solid the ground is over which to build for the years to come.

Finally, as forests and trees and the roles they play for people, farmers, foresters, consumers and the planet- are of everybody's concern, FTA also reached the broader public through two campaigns: the "[From Tree to Fork](#)" campaign, was inscribed in the International Year of Fruits and Vegetables to raise awareness about some of the most unrecognized and underappreciated fruits and vegetables that come from trees. These

foods can furnish important nutrients to local and indigenous diets and play a vital role in improving livelihoods through agroforestry systems or other tree products that generate income, and are key to crop genetic diversity and conserve ecosystems.

FTA launched its partnership with Google Arts & Culture with eight visually-engaging digital exhibits for forests, trees and agroforestry making 10 years of forest-based research and impact more accessible to global audiences. This work forms part of a larger Google collaboration with over 60 international organizations aiming to reduce “plant blindness” — the tendency for people to have difficulty empathizing with plants and the environment at risk.

B. Any major course corrections.

There were no major course corrections.

1.2.2 Progress by Flagship

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

Among the achievements targeting the **outcome on adoption of methods, tools and practices to mitigate threats** to valuable TGR and with a focus on the **FTA priorities of Biodiversity and Restoration** but also **Nutrition and Seed delivery** were: an article in [Restoration Ecology](#) on the value of local ecological knowledge in tropical dry forests of Peru and Ecuador and a manuscript submitted to [Biological Conservation](#) on range-wide priority setting for the conservation and restoration of Asian rosewood species.

Focused on the **outcome of implementing cost-effective domestication** and the **priorities of Nutrition and Orphan crops** were various domestication studies covering more than 100 species in more than 15 countries. A major study on Genomic Resources to Guide Improvement of the Shea Tree was published in [Frontiers in Plant Science](#). Contributions were made to a [new book](#) on Orphan Crops for Sustainable Food and Nutrition Security, and to a review of fruits and vegetables for healthy diets to set priorities for food system research and action at the [Food Systems Summit](#) in 2021.

For the **outcome of adopting cost-effective and equitable tree-planting material delivery**, outputs relating to the **FTA priorities on Restoration and Tree Seed Delivery** with emphasis on **climate suitability** included an article in [Trends in Plant Science](#) providing a systems approach to plant breeding using diversity breeding of trees as example to target major global problems through avenues of participation, environment, biotechnology and markets. Important steps were taken towards the

establishment of a transformative partnership platform (TPP) on improving the quality of tree planting material, including e.g. the establishment of two new websites, the [global tree knowledge platform](#) and [the resources for tree planting platform](#), as well as further work on the [Diversity For Restoration species and seed selection tool and the climate change atlas for African tree species](#).

FP2 Livelihood systems

The [Transformative Partnership Platform on Agroecology](#) (TPP) established by FP2 was [launched at the UN Committee on World Food Security \(CFS\) 48th Session](#) that adopted [policy recommendations](#) resulting from the CFS High Level Panel of Experts (HLPE) report on agroecology, that FP2 led. The TPP now has a project portfolio of >150M USD for research to address knowledge and implementation gaps constraining agroecological transitions identified by FTA. The TPP incubated a [coalition to transform food systems through agroecology](#) (based on CFS HLPE agroecological principles articulated by FP2), emerging as a significant outcome of the UN Food Systems Summit (UNFSS), following inclusion of plenary and parallel [sessions on agroecology](#) evidence in the presummit and an FP2-produced [video](#) screened during the summit plenary. So far 27 countries and 35 organisations have signed the coalition's declaration of commitment which was showcased by the Chair of CFS and the President of Sri Lanka, during an FTA [side-event at the UN Framework Convention on Climate Change \(UNFCCC\) COP26](#), where [agroecology figured in draft text of the Koronivia Joint Work on Agriculture](#) mirroring a call for agroecological practices to be promoted in [resolution E/CN.9/2021/L.5](#) of the UN Commission on Population and Development based on FP2 evidence.

FP3 Sustainable value chains and investments

FP3 work on **inclusive business models** in 2021 focused on the sphere of engagement with business, civil society and state actors. This involved establishing an inclusive/sustainable business [online platform](#) to serve as a vehicle to disseminate, engage and give visibility to major inclusive business innovations and national and international champions. Work on **innovating finance for sustainable landscapes** resulted in [additional case studies](#), broadening the range of different mechanisms analysed. This further influenced financial institutions to adopt environmental, social and governance (ESG) criteria when lending to timber, trees and select agricultural crops. A whitepaper was prepared on [how international finance can better meet local needs and aspirations](#), and an investment case was discussed at GLF Glasgow on [inclusive food system transformation](#).

On **public and private commitments to zero deforestation**, FTA upscaled and adapted the arrangements and initiatives to other jurisdictions of the six selected countries where it has been working. Results and approaches to jurisdictional

performance monitoring systems and certification were diffused in international seminars. The efforts helped to demonstrate that private sustainability initiatives, in conjunction with supportive public policy, can foster improved management and business practices with enhanced socio-environmental performance.

Joint FP3-FP4 work addressed productivity, environmental and social challenges of **plantations and tree-crop commodities, with a global** review on mixed timber plantations¹, work on labor issues in oil palm plantation labor in Indonesia, Malaysia, Brazil, and Ghana; and assessment on rubber traceability in Ivory Coast and a review of Rubber Agroforestry systems from 1994 to 2019 in West Kalimantan province, Indonesia².

As part of evaluating the **effectiveness of approaches to sustainable supply**, work was completed on public and private sustainability standards. FTA assessed the role of sustainable cocoa certification in Cameroon on the profit of small-scale producers; the sensitivity of national consumers to certified chocolate; and the operational costs of cocoa traceability systems. These documents fed the political dialogue between EU and Cameroon in November 2021 on sustainable and deforestation-free cocoa. In Burkina Faso work on the governance of shea value chains fed into the development of local action plans to sustainably manage shea parklands as part of the state-approved forest management units. [A policy brief on rubber and climate change was prepared with IRSG, IRRDB and CIRAD, building upon the workshop coorganized with IRSG in 2020.](#)

FP4 Landscape dynamics, productivity and resilience

FP4 made significant progress in 2021. FP4 delivered a special issue on [Social Ecology, Climate Resilience and Sustainability in the Tropics](#) in the Sustainability Journal featuring 11 articles covering the intersections between restoration, climate and other ecosystem services. FP4 also published a book on Tree Commodities and Green economies in Africa with 30 chapters covering the production, economic and environmental dynamics of key tree commodities in Africa including chiefly, cocoa, coffee, oil palm, cashew nuts, timber and others. Various noteworthy articles that have made important contributions to global discourses were published. These include an article on six modes of co-production for sustainability published in Nature Sustainability and another on hot topics in the governance of forests and natural resources in Forest Policy and Economics. In terms of Impact, 51 000 trees were integrated into community forests and farms in the Gambia, involving 1100 farmers and community members and covering 1369 ha of community forests and 610 ha of

¹ Mixed timber plantations and their potential role in innovative production systems for forest restoration: Lessons from Latin America, Sub-Saharan Africa and Asia/Pacific.

² https://www.dropbox.com/scl/fi/hiecb4yxdg0r90glmwxj/rapport-EP-JSB-rubber-resilience-FTA_14-octobre-2021-V3.docx?dl=0&rlkey=tmn7mep6n4w75mijok3mqat85

farmland. In Indonesia 1474 Ha of land were conserved in the Pasuruan District. At policy level, through work with the Ministry of Environment in Sri Lanka FP4 contributed to the development of a Country Programme, a Manual of procedures and Stakeholder Engagement, a manual of procedures for project development and access to finance from the Green Climate Fund.

FP5 Climate change mitigation and adaptation

FP5 research advanced on climate change mitigation efforts (FTA Priority 5 NDCs) under GCS-REDD+, in Brazil, Cameroon, DR Congo, Indonesia, Peru, and Vietnam (together covering 55% of global tropical forest area), and globally. FP5 worked on REDD+ finance, transparent monitoring, Article 6 of the Paris agreement and [Transformational Change](#). FP5 advanced on adaptation objectives (Priority 8), above all in the Gambia and across other African countries, with training and scaling moving forward, and the adoption of the Banjul Multisectoral Integrated Livestock Management Resolution on transhumance. Under Priority 6 (bioenergy) FP5 developed, piloted and implemented biofuel crops in countries/regions as diverse as Indonesia, Kenya and the Balkans, and worked on bamboo charcoal in Ghana. FTA's peatland work (Priority 7) has made policy progress possible in Peru, protecting this important biome. The impact of many of these efforts has been documented in CIFOR "Stories of Change" for [jurisdictional REDD+](#) and [wetland MRV](#) in Indonesia, for [PFES in Vietnam](#) and [co-management of protected areas in Peru](#). The Transformative Partnership Platform on [Circular Bioeconomy](#) establishes 'overlooked' pathways to emission reduction. An Engagement Landscape on Green Just Transformation in the Western Balkans was established as a result of FTA's [engagement](#) in the region since 2020.

1.2.2.1 Relevance to COVID-19 by Flagship

In 2020, FTA started a program-wide COVID-19 rapid research response, partially funded by the efficiency gains. This included two dimensions. First a significant contribution to the CGIAR COVID-19 hub, in the four working groups of the hub, and with the Director of FTA also being coordinator of the working group on "Building back better" of the hub. Second, FTA launched a set of 12 covid-19 impact studies.

FTA's COVID 19 Rapid Research Response aimed at understanding the impacts of the current crisis and underlying, vulnerabilities, and drawing lessons from our research on previous shocks and crisis, to propose adapted solutions, both to (i) address the original risks of such pandemic: zoonosis, interface with wildlife, wildlife trade and markets, and (ii) build resilience of livelihoods, landscapes, value chains to any type of crisis, of similar or different origin, to contribute to "Build back better".

FTA organized two seminars, one on [6 September 2021](#) showcasing the [results of the FTA studies](#) as part of the FTA Rapid Research Response, the other one on [17](#)

[December 2021](#) showcasing the results of the “Build back better” working group of the COVID-19 hub.

The 12 FTA Rapid response studies are available on the FTA web. They concerned:

- Woodfuel value chains and their actors in DRC³
- Shea value chains in Burkina Faso ([Wardell et al. 2021](#)).
- Forestry enterprises in Cameroon,
- Natural rubber value chains in Indonesia,
- Smallholder agroforestry [farmers in Honduras](#),
- Short supply chains of agroforestry products in Nicaragua and Costa Rica,
- Impacts on a large-scale land restoration initiative in India,
- Food security in West Papua,
- Coffee and potato farmers in Peru
- Indigenous peoples’ women in Vietnam,
- Wildlife farms in Vietnam,
- An overall synthesis study on COVID-19 and agroecosystem Resilience.

FTA’s involvement in the COVID-hub is not reported here but further detailed in the COVID-hub annual report.

In addition, FTA contributed in 2021 to the elaboration of the 2022 FAO's [State of the Worlds Forest \(SOFO\)](#), in particular to the focus on green recovery plans and programmes and their impact.

As part of the one health agenda, the interactions between trees and zoonotic disease vectors at forest-to-agriculture interfaces have been identified as an area of future work in the context of diversity breeding ([Graudal et al. 2022](#)), as well as the role of food-tree-crop portfolios for resilient food systems that best support communities’ nutrition and health.

1.2.3 Variance from planned program for this year

A. Areas significantly expanded

A program-wide COVID-19 rapid research response, described in detail in section 1.2.2 was an expansion of FTA workplan. The work was funded by redirection of field

³ [Impact of COVID-19 on woodfuel value chains in the DRC; Addressing risks and vulnerabilities of operators and end-users.](#)

resources and deliverables blocked because of COVID-19 pandemic. This work resulted in a set of 12 COVID-19 impact studies.

FP3 in Priority 18 on enabling sustainable commodity supply chains expanded collaboration with the Forest Stewardship Council (FSC) to include an additional focus on how the new [Conversion Remedy Procedure](#) could also be applied to a remedy framework, which could be applied to the [FSC Policy of Association](#). Under Priority 17 on innovating finance for sustainable landscapes, initiatives were expanded to link farmers, SMEs and communities to financial institutions and impact investors building on the analysis of the case studies ([Green Finance for Sustainable Landscapes](#), and [Green Finance for SMEs](#)).

FP5 expanded on its work to develop forest-based bioeconomy activities and concepts in its eponymous TPP further, e.g. by publishing new, important analytical papers on [social sustainability](#) and [social inclusion](#) and holding an [event on social inclusion](#) in the bioeconomy at GLF in November. FP5 pilot plantation for the proof of concept of short-rotation biomass plantations, originally targeting only Serbia, was successfully expanded to Bosnia upon interest from authorities in that country, and in both countries, the large state-owned energy and mining enterprises are on their own scaling up biomass plantations as a part of the pathway to a green transition in the traditionally coal-based energy sectors in the Western Balkans, a region which has become an Engagement Landscape for CIFOR-ICRAF.

B. Research lines dropped or significantly cut back

Due to final funding being less than expected, with a FTA 2021 finplan target set at 90% its original value decided in 2019 by the CGIAR System council as per the 2019-2021 plans, FTA did not program the third-tier (T3) part of its 2021 workplan. For the record, FTA contingency planning scheme splits the W1/W2 income into three tiers of decreased probability of funding and T3 activities are, at the moment of elaborating the POWB, those of the least probability of funding. It was indicated to partners already at the beginning of 2021 that the probability of T3 funding was very low, hence these were not to be programmed. . The Program has activities-based workplans, therefore, we can provide on demand a complete list of all T3 "cut back" activities, and provide some examples below:

FP1: A strategy paper on Trees, Landscapes and Human Health.

FP2: Study on performance of market-based agroforestry options in Vietnam as well as addressing policy implementation gaps.

FP3: An article on alternative governance regimes for sustainable cocoa.

FP4: A policy brief on the potential of Amazonian forests to produce timber on the long term.

FP5: A workshop on bioenergy and landscape restoration.

C. Flagships or specific research areas which changed direction

Due to COVID-19 FPs were forced to make a few changes to the workplan by delaying highly fieldwork dependent and travel related deliverables in early parts of the year. FTA also turned to extensive reviews and consultations instead of workshops for validation of key policy documents in Sri Lanka and also a framework for measuring progress on global adaptation goal in agroforestry. New work taken up in lieu of some of these changes is the development of a policy brief on the “missing middle” – i.e. meso level actors and capacity in the sphere of restoration. A series of papers were also done in lieu of conference events on tree commodities in Africa and the ESP Africa events that were postponed due to COVID.

1.3 Cross-cutting dimensions (at CRP level)

1.3.1 Gender

Gender integration and research have continued to occupy a central place in the FTA portfolio. Efforts in 2021 focused on the creation and dissemination of legacy products with key partners and constituencies, drawing on years of FTA research:

- A chapter in the FTA Highlights book offered a retrospective on 10 years of FTA gender research, summarizing key FTA findings and outcomes in the area of gender equality and social inclusion.
- A paper and brief called for and outlined the contours of a feminist agroecology, providing key knowledge to the Transformative Partnership Platform on Agroecology and other stakeholders.
- FTA produced a toolkit and brief to guide practitioners in adopting Gender Transformative Approaches for equitable forest- and tree-product based value chain development.
- A framework summarized key gender considerations for practitioners, researchers and policymakers seeking to implement landscape approaches equitably.
- A guide and brief offered directions for gender-responsive project implementation in the context of a Global Environment Facility (GEF) Integrated Approach Pilots, Resilient Food Systems Programme

As the UN Decade on Ecosystem Restoration began on 5 June 2021, FTA contributed to positioning gender equality in restoration agendas, discourses, and practices:

- Presentations, panels, and webinars, such as for the Society on Ecological Restoration, on gender and restoration disseminated FTA research and strengthened capacities of key restoration stakeholders on integrating gender considerations in restoration initiatives.
- An interactive online learning module on gender in restoration, designed for practitioners, researchers, and policymakers, has packaged cutting-edge information and approaches for designing, implementing and monitoring equitable restoration initiatives.
- Two papers demonstrated the effects of rural men's outmigration on the capacities of remaining household members to adopt and manage restoration innovations in Burkina Faso and Kenya.
- A comparative study showed different pathways for supporting gender equity through restoration initiatives based on different country contexts (Cameroon, Peru, and Philippines).
- A protocol and "how to" guide demonstrated how to integrate gender transformative approaches in land restoration initiatives, drawing on a case study from the 'Regreening Africa' initiative in the Upper East Region of Ghana.

In the context of the Conference of the Parties (COPs) of the Convention of Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC):

- FTA co-produced with the CBD secretariat a set of infographics, social media campaign, and briefs on how gender equality can accelerate progress towards the CBD objectives and offered recommendations for achieving this.
- Drawing on FTA research, an FTA paper demonstrated the synergies to be achieved among gender equality, biodiversity conservation, climate action, and land degradation neutrality through land-based approaches.
- A brief co-produced between FTA and the Nairobi Work Programme under the UNFCCC provided recommendations to the Parties on gender-responsive climate action.
- FTA scientists provided inputs on the post-2020 Global Biodiversity Framework, including as experts in the Gender & Biodiversity Nexus Dialogue organized by the UN Environment Management Group and the CBD.
- Youth, gender and other social inclusion aspects were included in FP5 adaptation efforts and in work on safeguards and multilevel governance aspects of REDD+, together with analysis with regard to social sustainability (summarized here) and social inclusion.

FTA work on governance continued producing knowledge products for capacity development and engagement in key partnerships:

- As part of joint work with IFAD under the Women's Resource Rights Initiative, FTA produced six socio-legal analyses of women's land rights in Ethiopia, The Gambia, Uganda, Kyrgyzstan, Bangladesh and Colombia.
- Through policy engagement events co-organized with IFAD, including a Policy Dialogue in The Gambia and a call to action to recognize women's land rights through climate action at the UNFCCC COP-26, FTA continued engagement with key partners.
- A handbook on gender and social inclusion published as a companion to FTA's guide on multistakeholder forums (MSFs), as well as training materials to accompany FTA's Practitioner's guide on Tenure Pathways for Gender Equality, were developed to enhance capacities to integrate gender and social inclusion considerations in governance processes.
- A paper summarizing extensive research on multi-stakeholder forums provided conceptual guidance on social inclusion in resource governance processes.

FTA has contributed to a growing body of evidence on the power of gender transformative approaches to catalyse change in gender relations. This evidence has encouraged FTA scientists to apply these approaches in nearly all their gender research and gender integration work to increase the CRP's influence on gender equality. For example:

- A new FTA and IFAD-funded project on gender-transformative approaches to strengthen women's land and productive resource rights set the stage for reviews of the systemic barriers women face in relation to resource tenure in six countries, including social norms that discriminate against their ownership and inheritance of land.
- Regreening Africa project partners are planning to adopt gender transformative approaches in their own projects and activities, beyond the scope of the project. The experience will be shared through a [webinar](#) with teams from seven sub-Saharan countries participating in the project.
- A new project promoting nature-based solutions for land in Kenya, funded by the UK Pact Green Recovery Challenge Fund, is proposing the co-development of gender transformative approaches to support households in selecting restoration options while fostering collaboration and equitable benefit sharing. This builds on [recent research](#) highlighting the need for approaches that engage entire households in restoration decision-making and implementation.

The departure of one of the members of the FTA Gender Team mid-year was an important loss to FTA. His position was not re-filled.

The non-eligibility of CIFOR-ICRAF scientists to receive funding from the CGIAR GENDER Platform because the centers are not joining the OneCGIAR represented a lost opportunity to obtain co-funding for gender-specific research.

Ongoing challenges to travel and face-to-face meetings as a result of the pandemic have resulted in the cancellation of fieldwork plans and certain events (e.g. the World Forestry Congress) where dissemination of FTA gender products had been planned.

1.3.2 Youth and other aspects of Social inclusion / “Leaving No-one Behind⁴”

FTA takes an intersectional approach to research to examine how gender and other social relations interact and co-create discrimination or privilege.

Important FTA work on social inclusion in 2021 included:

- A double special issue published in *Ecological Restoration*, co-guest edited with PIM and WLE, demonstrated the importance of social inclusion issues and offered ways forward for equitable restoration.
- An article drawing from the 11 special issue papers, co-authored by 47 of the special issue contributors, provided 10 actionable people-centered rules to decision-makers and practitioners for sustainable and equitable restoration.
- A comparative study demonstrated the effects of young men’s rural outmigration on rural households and production systems, including intra-household decision-making, labour allocation, and shifts in farming patterns.
- A retrospective chapter for the FTA Highlights book highlighted FTA’s contribution to youth studies over the past decade.
- A review paper provided a conceptual framework to analyse different approaches to enhance social inclusion in multistakeholder forums and resource governance processes, with emphasis on exclusions produced at the intersection of ethnicity and age.
- [FTA](#) held an [event on social inclusion](#) in the bioeconomy at GLF in November 2021, with a background paper addressing [youth aspects in the bioeconomy](#).

1.3.3 Capacity development

FTA continued its Capacity Development efforts during the current reporting period, primarily as part of other projects, and with limited central support or coordination. Due to the COVID-19 pandemic, many training courses continued to be held virtually. A synthesis of CapDev activities supported by FTA during the period 2012-2021 was prepared as Chapter 16 in the series of FTA Highlights.

21,455 people, of whom 56% were women, were trained through a wide range of short-term training efforts by FTA’s partners during 2021. 267 people, of whom 69% were

⁴ Leaving no-one behind is a key facet of the SDGs: <https://unstats.un.org/sdgs/report/2016/leaving-no-one-behind>

women, were undergoing long-term training of whom 25 were PhD candidates (52% women) supported by FTA.

FTA flagships continued to provide short and long-term training courses on a diverse array of topics including germplasm management, species site matching and nursery training, coffee pruning, ecosystem-based adaptation, land degradation surveillance, climate change and gender and community action plans for sustainable woodfuel production. FTA continued to provide media training as well as technical training on REDD+, peatlands, bioenergy, climate change adaptation and NAMAs, the latter notably in Vietnam and the Central American region.

FTA's partners also continued to provide a broad array of training courses during 2021. INBAR and its project partners delivered 43 Training of Trainers (TOTs) which benefited more than 1.200 participants (37% women). INBAR's innovative South-South knowledge transfer strategies for scaling-up resulted in 782 smallholder farmers now being able to produce bamboo charcoal in Ethiopia, Tanzania and Madagascar. CATIE continued to provide diploma courses to professionals and technicians on Integrated Management of Water Resources, Artificial Insemination and Adaptation to Climate Change for the Management of Sustainable Coffee and Cocoa Farming Systems. The African Plant Breeding Academy (AfPBA), in partnership with CIFOR-ICRAF as part of the African Orphan Crops Consortium, benefited more than 150 scientists from 29 countries, 90% of whom are PhD holders (40% women). FTA continued to strengthen capacities in gender-responsive participatory research in many research projects including the recently-completed IDRC/FTA-supported 'Globalizations in a nutshell – Opportunities and risks for women shea producers in West Africa shea parklands'.⁵

During the final FTA Science Event held on 9 December 2021, it was noted that future CapDev activities will need to i. strengthen engagements with global and regional Multi-Stakeholder Initiatives and business fora to provide knowledge products and services; ii. enable national and sub-national jurisdictions in the global South, in partnership with international NGOs, to collaborate in the generation and use of research results and piloting of solutions, and co-developing tools and materials for up-scaling; and iii. promote Capacity Development of local NGOs and CSOs to experiment with research-based solutions, by learning from experience and refining experiences to test at the larger landscape scale.

⁵ See <https://www.cifor.org/knowledge/publication/8402>, <https://www.cifor.org/knowledge/publication/8403> and https://forestsnews.cifor.org/75948/shoring-up-burkina-fasos-shea-trade-requires-intensive-landscape-restoration-efforts?fnl=en&utm_campaign=CIFOR_ICRAF_Newsletter&utm_medium=email&utm_source=2022_MC_Newsletter_January

1.3.4 Climate change

FP1's African Climate Change [Atlas](#) is now available for 127 tree species. CIFOR-ICRAF's [Tree Genebank](#) distributes locally adapted tree planting material, and the [African Orphan Crops Consortium](#) is developing genomics, also improving tree adaptation to climate change.

FP3 authored reviews (in press) on sustainability of biomass, bioenergy and biomaterials, and the role of tree plantations in renewable energy production and land restoration. Biofuel production is now scalable: climate smart agroforestry on degraded land is starting in Indonesia ([remote islands](#)) and the [Western Balkans](#).

In the Gambia, Ecosystems-Based Adaptation protocols developed for 250 farms and 50 community forests went into implementation by FP4; in Benin, seven EbA-sensitive community forest management plans were participatorily developed. FP4 scientists co-edited a [Special Issue](#) of Sustainability on resilience and EbA.

In FP5, the [Global Comparative Study](#) of REDD+ was extended for another 3 years. Four "Stories of Change" document policy impact in Indonesia ([here](#) and [here](#)), [Vietnam](#) and [Peru](#). Vietnam's MARD adopted FTA recommendation to include incentives for policymakers and the private sector in the national programme to plant 1 billion trees till 2025.

A participative vulnerability and adaptation assessment led to climate action priority plans in West Kalimantan, Indonesia, and West Northern Ghana. Kenya's Bioenergy [Strategy](#); a [practical guide](#) for improving charcoal production; capacity development on sustainable charcoal for over 380 charcoal producers—through training of trainers and peer to peer outreach—and community action plans for sustainable woodfuel (charcoal and firewood) in two counties in Kenya were enabled by FTA.

The Transformative Partnership Platform on [Circular Bioeconomy](#) establishes 'overlooked' pathways to emission reduction. An Engagement Landscape on Green Just Transformation in the Western Balkans was established as result of our [engagement](#) in the region since 2020.

2 Effectiveness and efficiency

2.1 Management and governance

The ISC, with the Board of Trustees (BoT) of the Lead Center CIFOR are the two key components of the **governance** of FTA. CIFOR BoT is now a Common Board with ICRAF BoT.

There has been no change in program management and governance in 2021.

The Independent Steering Committee and the Management Team of FTA operated until 31-12-2021.

2.2 Partnerships

2.2.1 Highlights of external partnerships

In June, FTA launched together with key partners the **Agroecology Transformative Partnership Platform** (TPP) during the annual plenary of the Committee on World Food Security (CFS48). As one of the funding partners, FTA also facilitated the TPP's **Policies for Agroecology** event on July 15, which brought together 20 speakers and more than 570 participants from over 50 countries to discuss the **policy gaps** standing in the way of agroecological transitions that work with nature.

FTA reinforced its ties with the Chinese Academy on Forestry and Chinese Academy of Sciences, the Kunming Institute of Botany, in organizing a major global conference in an innovative « hybrid » format (virtual+physical). **The FTA Kunming Conference 2021** brought together almost 400 participants to look at concrete options to explore the role of forests, trees and agroforestry in enhancing diverse and sustainable landscapes, to a green circular economy and to healthy, diversified diets, and making recommendations for the agenda on biodiversity and the upcoming CBD COP 15.

The Priority on innovating finance for sustainable landscapes expanded its partnerships in collaboration with the UNEP Finance Initiative and the Collaborative Partnership on Forests led by the FAO. Based on this collaboration, a panel session was successfully completed at the November 2021 Global Landscapes Forum Conference on Climate: Forests, Food, Finance – Frontiers of Change.

FTA collaborated with IUCN on Trees on Farms for Biodiversity partnership. [Trees on Farms for Biodiversity](#) is a joint programme that supports agriculture and livelihoods through conservation by incorporating trees in managed and productive ecosystems to generate both ecological and societal benefits. Trees on Farms for Biodiversity (TonF) concluded three workshops in April and May 2021, with the five host countries – Rwanda, Indonesia, Peru, Honduras and Uganda – to generate policy and science exchanges and share new ideas for increased impact and implementation. ICRAF implements the project globally with activities in five countries and also directly manages it in Uganda, Rwanda and Peru. CIFOR is the lead in Indonesia, supported by Tanjungpura University, Pontianak. CATIE leads in Honduras. The International Union for Conservation of Nature provides knowledge management and outreach expertise.

FTA Priority 18 on enabling sustainable commodity supply chains expanded collaboration with the Forest Stewardship Council (FSC) in 2021 to include an additional focus on how the new [Conversion Remedy Procedure](#) could also be applied to a remedy framework, which could be applied to the [FSC Policy of Association](#).

FTA worked with Ministries of Environment (Sri Lanka), Ministry of Environment, Natural Resources and Climate Change (Gambia) and Ministry of Environment and Livelihood (Benin), and with provincial governments and associations in these countries, on various policy level issues ranging from cross-sectoral collaboration, developing manuals, programme priorities and green growth plans. FTA also engaged with the United Nations Environment Programme on EbA in various countries.

FTA together with E3 International led the [Sustainable Land, Livelihoods, and Energy Initiative \(SLLEI\) for Serbia](#). SLLEI seeks to achieve large-scale land restoration and the creation of 'green' jobs in support of Serbia's green and just transition from coal to renewable energy sources (RES). Toward this end, SLLEI aims at establishing short-rotation plantations (SRPs) of fast-growing tree species (willow, poplar, black locust) to produce woody biomass for energy on about 75,000 ha of abandoned and degraded land, along with agroforestry borders (AFBs) and permanent tree areas (PTAs). This initiative contributes to the Green Agenda of the Western Balkans with an integrated approach spanning sustainable energy production, improvement of air quality, biodiversity restoration, and economic and livelihoods development, with the potential to be scaled to Bosnia & Herzegovina and the Western Balkans as a whole.

FTA also collaborated with FAO on the preparation of the [State of the World's Forest \(SOFO\)](#) to be published at the World Forestry Congress in mid 2022.

Gender Team [collaborated with the CBD](#) preparing some guidance on gender and inclusion to support the finalization of the Gender Plan of Action by COP 15, and its implementation in the coming years.

Finally, FTA initiated in 2021 an innovative partnership with [Google Arts & Culture](#), that features the main elements of the legacy of the program, its action and impact, through 8 online exhibits.

2.2.2 Cross-CGIAR partnerships

FTA co-organized and supported a [workshop](#) on [Measuring the Impact of Integrated Systems Research](#), with **PIM** and **WLE**. The workshop focused on tacking stock of recent experiences and reviewing existing and new tools and approaches with the potential to overcome challenges faced when assessing the impact of integrated systems research.

FTA participated significantly in the **COVID-19 hub** (see section 1.2.2.2 on Covid). The activities are reported under the COVID-19 hub.

FTA collaborated with the **Gene Bank Platform**, contributing knowledge that supports diversification of food systems through integrating nutrient rich orphan crops into current food systems with a range of outputs: Characterization of genotypes and phenotypes, and cultivar development of trees and crops, including African Orphan Crops with enhancement using genomics and business model development focusing on food trees but also including other functional uses.

FTA Gender team in partnership with the **Gender platform** developed training modules supporting the [Gender and Inclusion in Forest Landscape Restoration \(FLR\) e-learning course](#). The course aims to build the capacities and understanding of diverse stakeholders on the gender and FLR nexus and address inequalities for more equitable and sustainable FLR.

FTA produced together with **PIM** a global review of [agroecologically conducive policies](#). It was then discussed in a webinar for which >1600 people registered.

2.3 Intellectual assets

On genome data, germplasm collection and selection of re-sequencing lines, FTA continues to generate genome data under the African Orphan Crops Consortium (AOCC), which is publicly accessible and for open access.

The consortium published a high quality shea tree (*Vitellaria paradoxa*) genome and also analyzed genome level diversity in a few representative populations in 2021 (Hale et al. 2021; <https://www.frontiersin.org/articles/10.3389/fpls.2021.720670/full>).

No technology, patent, or new plant variety applications were filed during 2021.

There have been no specific issue or concern in making the sequenced information publicly available.

2.4 Monitoring, evaluation, impact assessment and learning (MELIA)

In 2021, **FTA's work on Monitoring, Evaluation, Learning and Impact Assessment (MELIA)** continued the work started in 2020 to document progress of FTA contribution in addressing key global challenges where FTA is expected to deliver results and to assess FTA contribution to SRF relevant targets associated with these challenges. A set of five integrative studies were completed, as well as a synthesis, investigating how FTA generated new knowledge, attitudes, skills, and relationships among key actors to (i) enhance the protection of forests from deforestation and forest degradation, (ii) restore degraded land and ecosystem services, (iii) address unsustainable land management, (iv) give people means to exit poverty, and (v) improve food security and nutrition. The assessments used a theory-based evaluation approach to model collective FTA activities and outputs as well as intended outcomes and impacts and estimate (potential) FTA contributions to the SRF targets related to the challenges mentioned above. Overall results for these studies are presented in Section 1.1 above and in Table 1.

FTA MELIA co-organized a workshop on *Measuring the Impact of Integrated Systems Research* with PIM and WLE.

FTA MELIA led the preparation of the FTA Highlight on Monitoring, Evaluation, Learning and Impact Assessment (FTA Highlights of a Decade No. 17)⁶.

Finally, in 2021, FTA ISC and Management Team elaborated a response to the independent review of the CRP undertaken by the CGIAR CAS in 2020.

2.5 Efficiency

Due to the continued COVID-crisis, and lockdown restrictions, all meetings have been held virtually, and there were also restrictions to field activities. FTA adapted pro-actively its workplan and work modalities, with electronic communication tools to hold meetings and workshops, even at the community level, and intensifying desk work to compensate some of the impossible field work. Prior to this, in FTA, there was already

⁶ https://www.cifor.org/publications/pdf_files/FTA/FTA-Highlights-17.pdf

a well-established culture and practice of virtual meetings, with 90% of the management and half of ISC meetings being held virtually in pre-COVID times. In other instances, when originally foreseen activities and outputs were compromised, these were replaced by activities and outputs contributing to the same outcomes and within the same operational priorities. Therefore, there was no impact of COVID-19 on the delivery for FTA.

2.6 Management of risks to your CRP

In its closing year of operation as a CGIAR CRP, FTA set-up three mechanisms to manage financial and operational risks.

- First the continuation of contingency planning mechanism for W1-2 funds, now well established. Under this mechanism, the 2021 POWB was split into three tiers of decreased probability of funding, that are progressively implemented along the year, as uncertainties on actual funding resolves. This allowed FTA to efficiently manage disbursements and partners to appropriately plan and adjust execution of the workplans along the year. Tier 3 was removed from the workplan and budget as it represented the part above the 90% finplan funding target from the SMO. This mechanism has been praised and cited as a model by the independent external review.
- Second, the non-delivery risk of FTA partners is managed by a quarterly traffic light output monitoring system overseen by the MSU and the MT, enabling for course-corrections and adaptive management. This enables program management to follow delivery very closely, and in case of delays to put corrective measures in place. In 2021, this enabled to perform some workplan adjustments on course of the year because of COVID, with such revisions endorsed by the management team, ISC and BoT. As a result of this adaptive management, the full funded workplan was delivered. In some instances - all documented- FTA management accepted a draft deliverable for discharge of a final product, for instance when a paper was submitted to a journal but was not yet officially published.
- Third, a new "safe landing" mechanism was put in place to track proper financial execution and expenditures of partners on a monthly basis, to make sure the workplan will be fully spent. This mechanism, with results transparently reviewed each month by the FTA management team, enabled to make sure that there is proper execution and no need (or a very limited need) to return any funds to the CGIAR, to comply with the low accrual ceiling allowed into 2022.

Institutional risks (as per the [CGIAR Risk Management Guidelines](#)) and their management falls under the remit of FTA partners.

2.7 Use of W1-2 funding

W1-2 funded work result from (i) principles and criteria for prioritization agreed upon by the management team and the ISC, (ii) strategic orientations considering end-of-program objectives discussed with the ISC, (iii) collective analysis by the MT of draft work plans submitted by FPs, and (iv) consideration of past delivery performance.

FTA is one of the few CRPs with activity/deliverable-level specification for all W1-2 funded research. This enhances accountability, delivery, performance monitoring, and management effectiveness. The activities receiving W1-2 funding are summarized in a traffic light report available on request.

In FTA, W1-2 funds prioritize work that leads to the generation of IPGs, including those that can link up work on technological, social and institutional innovations to advice on a better enabling and policy environment at national and international level, to promote uptake and impact.

In 2021, a part of W1-W2 was used to support its COVID-19 Rapid research response; to bring research results in a synthetic way to supporting international bodies and conventions (example: UNFCCC, FAO, and CBD through the partnership with the Chinese Academy on Forestry with a major (hybrid) international conference in Kunming); to engage with end-users towards the uptake of past research (that was the logic of the final year of the 3-yr workplans 2019-2021 for the operational priorities); and to support the synthesis for the impact and legacy of FTA (FTA integrative impact studies, FTA highlights).

3 Financial summary

In 2021, as in previous years the innovative FTA contingency planning mechanism did help all partners to manage irregular W1-W2 cash flows and ex-ante uncertainty in W1-W2 funding. The FTA 2021 POWB was based on a funding level as per the 3-yr CGIAR finplans 2019-2021 (see FTA POWB 2021), in line with the CGIAR funding target of USD 9,440,000 for FTA, this amount being 90% of the original 2021 funding target set the System Council. During the year, given the information on W1W2 funding targets made regularly available from the CGIAR System Management Office (SMO) and published in the CGIAR Dashboard, the Management Team of FTA gave instructions to partners to engage in budget proposed. FTA Management Team, ISC and Lead Center has been monitoring progress on a monthly basis on 2021 delivery of W1W2 funded deliverables, and on related spending of all partners, also to avoid situations of overspending or underspending. This enabled to effective and adaptive management, and enabled to finish 2021 with a full programmatic delivery and financial execution in line with the W1W2 funding targets for FTA.

Part B. Tables

Table 1. Evidence on Progress towards SRF targets (Sphere of interest)

| SLO Target (2022) | Brief summary of new evidence of CGIAR contribution | Expected additional contribution before end of 2022 | Geographic Scope |
|---|---|--|---|
| <p>1.1 ADOPTION: 100 million more farm households have adopted improved varieties, breeds, trees, and/or improved management practices.</p> | <p>We estimate that 59.5 million ha of landscapes are now under improved management as a result of policy mechanisms, monitoring systems, and changes in on-the-ground management and land use practices influenced by FTA. In addition, if other relevant FTA-influenced policies, action plans, and monitoring systems are effectively implemented and/or scaled in the future, a total of 204 million ha of landscapes have the potential to be better managed. This area corresponds to respectively 39,7 million households now and a potential for a total of 136 million households in the future. [1] https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-3_Final-Report.pdf [1] Lowder et al, 2021 https://www.sciencedirect.com/science/article/pii/S0305750X2100067X .</p> | <p>According to the AR template for 2021, this field is no longer required</p> | <ul style="list-style-type: none"> • Geographic Scope: Global. |
| <p>1.2 EXIT POVERTY 30 million people, of which 50% are women, assisted to exit poverty</p> | <p>5.1m people (1.3 million people directly and 3.8 million household members indirectly) have additional means to exit poverty or have increased resilience to impoverishment as a result of FTA's contributions. This estimate includes people with increased access to inputs for tree- and agroforestry-based production; people who adopted enhanced management or diversified production practices to increase yields; people who adopted low-cost processing techniques and value-addition; people with enhanced access to formal markets and/or business and marketing skills. We project that if all individuals reached by FTA adopt FTA-promoted options and technologies into their practice, in addition to the effective implementation of FTA-influenced policies, strategies, and action plans, 19m people (5.7 million people directly and 13.3 household members indirectly) have the potential to benefit from additional means to exit poverty or reduce their vulnerability of falling into poverty. https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-4_Final-Report.pdf</p> | <p>According to the AR template for 2021, this field is no longer required</p> | <ul style="list-style-type: none"> • Geographic Scope: Global. |

| SLO Target (2022) | Brief summary of new evidence of CGIAR contribution | Expected additional contribution before end of 2022 | Geographic Scope |
|--|---|---|---|
| <p>2.1 YIELD INCREASE Improve the rate of yield increase for major food staples from current < 1% to 1.2-1.5% per year</p> | N/A | | |
| <p>2.2 MINIMUM DIETARY REQUIREMENTS 30 million more people, of which 50% are women, meeting minimum dietary energy requirements</p> | <p>Overall, FTA reached over 760,000 households, comprising approximately 3.4 million individuals, with additional means to improve their food security and nutritional status, with evidence of uptake of FTA innovations among one-third of these households (248,398). https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-5_Final-Report.pdf</p> | According to the AR template for 2021, this field is no longer required | <ul style="list-style-type: none"> • Geographic Scope: Global. |
| <p>2.3 MICRONUTRIENT DEFICIENCIES 150 million more people, of which 50% are women, without deficiencies of one or more of the following essential micronutrients: iron, zinc, iodine, vitamin A, folate, and vitamin B12</p> | N/A | | |
| <p>2.4 WOMEN'S NUTRITION</p> | N/A | | |

| SLO Target (2022) | Brief summary of new evidence of CGIAR contribution | Expected additional contribution before end of 2022 | Geographic Scope |
|---|--|---|---|
| 10% reduction in women of reproductive age who are consuming less than the adequate number of food groups | | | |
| 3.1 WATER AND NUTRIENT EFFICIENCY 5% increase in water and nutrient (inorganic, biological) use efficiency in agro-ecosystems, including through recycling and reuse | N/A | | |
| 3.2 REDUCED GREENHOUSE GAS EMISSION Reduce agriculturally-related greenhouse gas emissions by 0.2 Gt CO ₂ -e yr ⁻¹ (5%) compared with business-as-usual scenario in 2022 | Based on FTA's research and activities on the prevention of deforestation, between 24 Gt (low-end estimate) and 125.3 Gt (high-end estimate) of CO ₂ emissions may be avoided as a result of FTA's contribution to enhanced forest protection. https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-1_Final-Report.pdf | According to the AR template for 2021, this field is no longer required | <ul style="list-style-type: none"> • Geographic Scope: Global. |
| | Projected carbon sequestration effects of active planting facilitated by FTA is estimated to be from 0.0014 CO ₂ to reach the potential of 0.51 Gt of CO ₂ in the future. https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-2_Final-Report.pdf | According to the AR template for 2021, this field is no longer required | <ul style="list-style-type: none"> • Geographic Scope: Global. |
| 3.3 ECOSYSTEM RESTORED | Cumulative effects of FTA's research and engagement contributed to placing at least 1.8 million ha under restoration, with the potential for up to 34.5 million ha to be under restoration in the future. | According to the AR template for 2021, this field is no longer required | <ul style="list-style-type: none"> • Geographic Scope: Global. |

| SLO Target (2022) | Brief summary of new evidence of CGIAR contribution | Expected additional contribution before end of 2022 | Geographic Scope |
|--|---|--|---|
| 55 million hectares (ha) degraded land area restored | https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-2_Final-Report.pdf | | |
| 3.4 PREVENTION OF DEFORESTATION 2.5 million ha of forest saved from deforestation | <p>Overall, an estimated 25.6m ha of forests are under enhanced protection from deforestation and forest degradation as a result of collective processes to which FTA research and engagement contributed. In addition, if FTA-informed policies are effectively implemented and enforced, there is the potential for 133.4m ha of forests to be better protected from deforestation and degradation in the countries assessed to date.</p> https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-1_Final-Report.pdf | <p>According to the AR template for 2021, this field is no longer required</p> | <ul style="list-style-type: none"> • Geographic Scope: Global. |

Table 2. Condensed list of policy contributions in this reporting year (Sphere of Influence)

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed (max 30 words) | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDs (max. 2) | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|--|-------------------|---|----------------------------------|------------------|------------------|-----------------|---|
| | | | | Gender | Youth | Capdev | Climate Change | |
| 707 - Contribution to the development of the Forest Stewardship Council Policy on Conversion | FTA contributed to the development of the policy which provides FSC's general position and fundamental principles on conversion of natural forests and High Conservation Value areas to other land uses. | Stage 1 | <ul style="list-style-type: none"> • Conducive agricultural policy environment • Land, water and forest degradation (Including deforestation) minimized and reverse | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | 1 - Significant | FTA participated in the working group to develop a high-level conversion policy considering compensation for past conversion, in terms of: a. restoration and/or conservation for environmental values: and b. restitution for socio-economic values. https://fsc.org/en/current-processes/fsc-policy-on-conversion |
| 710 - Contribution to the adoption of the Banjul Tree Cover Resolution in the Gambia | The Resolution aims to increase tree cover and calls for an agroforestry policy, the institutionalization of | Stage 2 | <ul style="list-style-type: none"> • Land, water and forest degradation (Including deforestation) | 0 - Not Targeted | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | OICR4646 |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed (max 30 words) | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDs (max. 2) | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|--|---|-------------------|---|----------------------------------|-----------------|-----------------|-----------------|--|
| | | | | Gender | Youth | Capdev | Climate Change | |
| | tree ownership and rights, and the prioritization of high value, locally adaptable tree species | | <p>minimized and reversed</p> <ul style="list-style-type: none"> • Conducive agricultural policy environment | | | | | |
| 872 - Committee on World Food Security Policy Recommendations on agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. | FTA led the project team of the report of High Level Panel of Experts of the CFS, from which the policy recommendations are derived, advised during the convergence process and incubated the coalition to transform food systems through agroecology that emerged from the United Nations Food Systems Summit (UNFSS) within which 27 countries and 45 | Stage 2 | <ul style="list-style-type: none"> • Land, water and forest degradation (Including deforestation) minimized and reversed • Increased resilience of agroecosystems and communities, especially those including smallholder | 1 - Significant | 1 - Significant | 1 - Significant | 1 - Significant | OICR4642 |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed (max 30 words) | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDOs (max. 2) | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|--|--|-------------------|--|----------------------------------|------------------|------------------|-----------------|---|
| | | | | Gender | Youth | Capdev | Climate Change | |
| | organizations are engaged in implementing the recommendations . | | | | | | | |
| 873 - FTA Research informs Resolution E/CN.9/2021/L.5 of the UN Commission on Population and Development | FTA's presentation to the expert group informing the 54th session of the Commission on Population and Development which informed the resulting resolution E/CN.9/2021/L.5. The resolution calls for greater efforts to transform food systems emphasizing that promotion of agroecological practices is a key element for poverty eradication. | Stage 1 | <ul style="list-style-type: none"> Land, water and forest degradation (Including deforestation) minimized and reversed Increased resilience of agro-ecosystems and communities, especially those including smallholder | 0 - Not Targeted | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | OICR4642 |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed (max 30 words) | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDOs (max. 2) | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|--|-------------------|--|----------------------------------|------------------|------------------|-----------------|---|
| | | | | Gender | Youth | Capdev | Climate Change | |
| 882 - FTA contributed to the formal recognition of peatlands in Peru | FTA research has contributed to Peru's national Forest Reference Emission Levels (FREL) reported to UNFCCC, a recognition of peatlands in Amazonia and their environmental importance and climate change mitigation potential. | Stage 2 | <ul style="list-style-type: none"> Enhanced adaptive capacity to climate risks (More sustainably managed agro-ecosystems) | 0 - Not Targeted | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | OICR4635 |
| 883 - Strategy for 'diversity breeding' | Looking at different plant breeding methods related different sets of values the strategy describes how breeding can help to address the multiple global production, consumption and environmental challenges | Stage 1 | <ul style="list-style-type: none"> Increased conservation and use of genetic resources | 0 - Not Targeted | 0 - Not Targeted | 2 - Principal | 1 - Significant | The strategy is being implemented in ongoing development programmes (PATSP0 supported by NICF1) as well development programmes such as "Transforming Eastern Province |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed <i>(max 30 words)</i> | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDs <i>(max. 2)</i> | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|--|-------------------|------------------------------------|----------------------------------|-------|--------|----------------|--|
| | | | | Gender | Youth | Capdev | Climate Change | |
| | | | | | | | | <p>through adaptation”(TREPA) supported by the Green Climate Fund and, in 2023, the RTRP-Seed supported by the International Climate Initiative</p> <p>Graudal L, Dawson IK, Hale I, Powell W, Hendre P, Jamnadass R (2021) ‘Systems approach’ plant breeding illustrated by trees. Trends in Plant Science (in press, available online). https://doi.org/10.1016/j.tplants.2021.09.009</p> |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed <i>(max 30 words)</i> | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See <i>guidance for what to cover.</i> | Level of Maturity | Link to sub-IDOs <i>(max. 2)</i> | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|--|-------------------|---|----------------------------------|------------------|-----------------|-----------------|--|
| | | | | Gender | Youth | Capdev | Climate Change | |
| 884 - Strategy for integrated seed system development | The strategy considers how the high demand for tree seed from large global restoration commitments can be met with quality seeds integrating formal and informal approaches. | Stage 1 | <ul style="list-style-type: none"> • Increased conservation and use of genetic resources • More efficient use of inputs | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | 1 - Significant | The strategy is being implemented in ongoing development programmes (PATSP0 supported by NICFI) as well development programmes such as “Transforming Eastern Province through adaptation”(TREPA) supported by the Green Climate Fund and, in 2023, the RTRP-Seed supported by the International Climate Initiative. Lillesø J-PB, Dawson IK, Graudal L, Jamnadass R. Quality seed for tree planting: Supporting |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed <i>(max 30 words)</i> | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDs <i>(max. 2)</i> | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|---|-------------------|--|----------------------------------|------------------|------------------|-----------------|---|
| | | | | Gender | Youth | Capdev | Climate Change | |
| | | | | | | | | more effective agroforestry and forest landscape restoration by learning from crop Integrated Seed System Development. World Agroforestry Centre, 2021. 9 p. (Policy Briefs; No. 54). http://outputs.worldagroforestry.org/cgi-bin/koha/opac-detail.pl?biblionumber=43573 |
| 885 - FTA contributes to Vietnam's national tree planting program | Vietnam adopts FTA recommendation to include incentives for policymakers and the private sector in the national program to plant 1 billion trees by 2025. | Stage 1 | <ul style="list-style-type: none"> Reduced net greenhouse gas emissions from agriculture, forests and other forms of land-use (More sustainably | 0 - Not Targeted | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | Vietnam adopts FTA recommendation to include incentives for policymakers and the private sector in the national program to plant 1 billion trees |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed <i>(max 30 words)</i> | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDs <i>(max. 2)</i> | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|--|-------------------|------------------------------------|----------------------------------|-------|--------|----------------|---|
| | | | | Gender | Youth | Capdev | Climate Change | |
| | | | managed agro-ecosystems | | | | | by 2025. The research by CIFOR that informed the policy is available in the following two reports: https://www.cifor.org/publications/pdf_files/WPapers/WP269Pham.pdf https://www.cifor.org/publications/pdf_files/WPapers/WP261Pham.pdf The justification letter for the policy sent to the Prime Minister by the Ministry of Agriculture and Rural Development (available on request) includes sections of CIFOR's reports. |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed (max 30 words) | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDOs (max. 2) | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|--|-------------------|--|----------------------------------|------------------|------------------|-----------------|---|
| | | | | Gender | Youth | Capdev | Climate Change | |
| 886 - FTA contributes to Indonesia's establishment of a Strategic Coordination Team for Wetlands Management to achieve Sustainable Development Goals and Low Carbon Development | FTA project is working group member of the Strategic Coordination Team set up by the Ministry of National Development Planning/National Development Planning Agency of Indonesia. | Stage 1 | <ul style="list-style-type: none"> Enhanced adaptive capacity to climate risks (More sustainably managed agro-ecosystems) | 0 - Not Targeted | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | OICR4648 |
| 888 - FTA coordinates study and publication on the Status and Outlook for agroforestry in the Association of Southeast Asian Nations | The report presents recommendations pertinent to the needs and interests of ASEAN Member States and aims to motivate actions among ASEAN Ministers and Senior Officials of Agriculture and | Stage 1 | <ul style="list-style-type: none"> Increased resilience of agro-ecosystems and communities, especially those including smallholders Land, water and forest degradation | 1 - Significant | 1 - Significant | 0 - Not Targeted | 1 - Significant | World Agroforestry (ICRAF) and the Southeast Asian Regional Center for Graduate Study and Research in Agriculture coordinated publication of the first report on the status of, and |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed <i>(max 30 words)</i> | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See <i>guidance for what to cover.</i> | Level of Maturity | Link to sub-IDOs <i>(max. 2)</i> | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|--|-------------------|---|----------------------------------|-------|--------|----------------|---|
| | | | | Gender | Youth | Capdev | Climate Change | |
| | Forestry along with local resource users, the private sector, researchers and others in expanding the scale of sustainable natural resource management through agroforestry. | | (Including deforestation) minimized and reverse | | | | | <p>outlook for, agroforestry in Southeast Asia.</p> <p>The report is part of a Technical Cooperation Programme between the Food and Agricultural Organization of the United Nations (FAO) and the Association of South-East Asian Nations (ASEAN). The report, State and outlook of agroforestry in ASEAN: status, trends and outlook 2030 and beyond, provides an overview of advances in, and ongoing challenges to, agroforestry</p> |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed <i>(max 30 words)</i> | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDOs <i>(max. 2)</i> | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|--|-------------------|--|----------------------------------|------------------|------------------|-----------------|--|
| | | | | Gender | Youth | Capdev | Climate Change | |
| | | | | | | | | development and research in ASEAN. https://apps.worldagroforestry.org/region/sea/publications/detail?pubID=4915 |
| 889 - FTA supports the development of Sri Lanka Green Climate Fund Country Program | The program presents a set of priority investment areas for Sri Lanka as well as a potential project portfolio over the next 3-5 years. | Stage 1 | <ul style="list-style-type: none"> Enhanced adaptive capacity to climate risks (More sustainably managed agro-ecosystems) | 0 - Not Targeted | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | The Development of the Country Programme on Climate Change for the GCF related activities was funded by the Green Climate Fund (GCF) Readiness Support Program, through partnership with the World Agroforestry Center (ICRAF) as the delivery partner. https://drive.google.com/file/d/17e9i9EK6stlpg09OgSI4ifB20TU9poZH/view |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed (max 30 words) | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDOs (max. 2) | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|---|-------------------|---|----------------------------------|------------------|------------------|-----------------|---|
| | | | | Gender | Youth | Capdev | Climate Change | |
| 890 - FTA supports the development of the Sri Lanka Green Climate Fund Operation Manual and Stakeholder Engagement Strategy | The Operation Manual and Stakeholder Engagement Strategy provide simplified and practical guidelines to all stakeholders about the Green Climate Fund (GCF), its modalities and procedures in Sri Lankan context. | Stage 1 | <ul style="list-style-type: none"> Increased capacity of partner organizations, as evidenced by rate of investments in agricultural research Enhanced adaptive capacity to climate risks (More sustainably managed agro-ecosystems) | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | 1 - Significant | Formulation of the Operation Manual for the GCF-related activities was funded by the Green Climate Fund (GCF) NDA Readiness Support Programme, through partnership with the World Agroforestry Center (ICRAF) as the delivery partner http://www.climatechange.lk/CCS2020/NDA%20Operation%20Manual%20-%20Final%20V1.pdf |
| 891 - FTA informs the calculation of Indonesia's Forest Reference Emission Levels | Methods suggested by CIFOR-ICRAF scientists were adopted for the calculation of Indonesia's 2nd | Stage 1 | <ul style="list-style-type: none"> Reduced net greenhouse gas emissions from agriculture, forests and other | 0 - Not Targeted | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | The methods adopted include refinement through accounting of non-CO2 GHG emissions from peat |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed <i>(max 30 words)</i> | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDOs <i>(max. 2)</i> | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|--|-------------------|---|----------------------------------|-------|--------|----------------|--|
| | | | | Gender | Youth | Capdev | Climate Change | |
| | Forest Reference Emission Levels (FRELs) to be submitted to the UNFCCC in early 2022 | | forms of land-use (Mitigation and adaptation achieved | | | | | decomposition, inclusion of soil emissions from mangroves, updating of peat fire activity data and adopting of IPCC defaults for peat fires, employing Monte-Carlo simulation in uncertainty analysis calculation rather than error propagation. One of the recommendations FTA made was the inclusion of non-CO2 greenhouse gases in the FREL. In the FREL there are also significant contributions and citation of FTA's work on Peatland C-stocks, fluxes |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed <i>(max 30 words)</i> | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See guidance for what to cover. | Level of Maturity | Link to sub-IDs <i>(max. 2)</i> | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|---|---|-------------------|--|----------------------------------|------------------|------------------|-----------------|---|
| | | | | Gender | Youth | Capdev | Climate Change | |
| | | | | | | | | and emission factors, Mangrove sedimentation, emission factors and Fire emission factor. CIFOR Principal Scientist Prof. Daniel Murdiyarto is acknowledged as a contributor to FREL submission. https://redd.unfccc.int/files/2nd_frl_indonesia_final_submit.pdf |
| 892 - FTA engages in the United Nations Food Systems Summit, contributes to public consultations of the UN Action Tracks, and | FTA proposed a set of game-changing solutions, contributed to public consultations of the UN Action Tracks, to dialogues and to debates in action tracks; significantly influencing the | Stage 2 | <ul style="list-style-type: none"> • Conducive agricultural policy environment • Increased availability of diverse nutrient-rich foods | 1 - Significant | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | OICR4641 |

| Title of policy, legal instrument, investment or curriculum to which CGIAR contributed <i>(max 30 words)</i> | Description of policy, legal instrument, investment or curriculum to which CGIAR contributed (30 words). See <i>guidance for what to cover.</i> | Level of Maturity | Link to sub-IDs <i>(max. 2)</i> | CGIAR cross-cutting marker score | | | | Link to OICR (obligatory if Level of Maturity is 2 or 3) or link to evidence (e.g. PDF generated from MIS) |
|--|---|-------------------|---|----------------------------------|------------------|------------------|-----------------|--|
| | | | | Gender | Youth | Capdev | Climate Change | |
| proposes game-changing solutions that have been adopted by the UNFSS | discussions and results. | | | | | | | |
| 893 - Contribution to the Banjul Multi-sectoral Integrated Livestock Management Resolution on transhumance in the Gambia | The Resolution aims to address the the social, ecological and resource stress caused by transhumance | Stage 2 | <ul style="list-style-type: none"> Conducive agricultural policy environment | 0 - Not Targeted | 0 - Not Targeted | 0 - Not Targeted | 1 - Significant | OICR4646 |

Table 3. List of Outcome/ Impact Case Reports from this reporting year (Sphere of Influence)

| Title of Outcome/ Impact Case Report (OICR) | Link to full OICR | Maturity level |
|---|----------------------|----------------|
| OICR4093 - Adoption of "How are we doing?" tool by the Peruvian Service for Natural Protected Areas to enable more equitable co-management of 76 protected areas | Link | Stage 2 |
| OICR4634 - The right tree for the right place: Use of centralized agroforestry species database system (Agroforestry Species Switchboard) by over 340,000 people worldwide supports decisions for context-sensitive agroforestry research, planting, and restoration initiatives | Link | Stage 2 |
| OICR4635 - FTA contributes to shaping a peatland policy in Peru. Peatland have a strong role in mitigating the effects of climate change, preserving biodiversity, minimising flood risk, and ensuring safe drinking water | Link | Stage 2 |
| OICR4637 - FTA develops a predictive breeding tool to save the Shea Tree in Africa intended to benefit women and smallholder farmers | Link | Stage 1 |
| OICR4641 - FTA engages in the United Nations Food Systems Summit, contributes to public consultations of the UN Action Tracks, and proposes game-changing solutions that have been adopted by the UNFSS | Link | Stage 2 |
| OICR4642 - FTA agroecological approaches are implemented by the Commission on Population and Development and the United Nations Population Fund | Link | Stage 1 |
| OICR4646 - Restoring degraded forests and agricultural landscapes in the Gambia through policies to implement eco-based adaptation systems and interventions that aim to restore 7,000 ha of degraded forests and 3,000 ha agricultural land, with 11,550 and 46,200 direct and indirect beneficiaries respectively | Link | Stage 2 |
| OICR4647 - Supporting district-level jurisdictional approaches in Indonesia. Jurisdictional approaches are implemented to foster sustainable forest and landscape management | Link | Stage 1 |
| OICR4648 - FTA science on wetlands helps refine Indonesian measurement, reporting and verification and forest reference emission level development | Link | Stage 1 |

Table 4. Condensed list of innovations by stage for this reporting year

| Title of innovation with link | Innovation Type | Stage of innovation | Geographic scope (with location) |
|---|--|--|----------------------------------|
| 769 - BiodiversityR packages for Community Ecology and Suitability Analysis | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | Global |
| 1467 - Vegan Community Ecology Package | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | Global |
| 1468 - Agroforestry Species Switchboard 2.0: an online information source to support tree research and development activities | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | Global |
| 1516 - WorldFlora: R package to standardize Plant Names According to World Flora Online Taxonomic Backbone. | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | Global |
| 2126 - Mechanism for the Operationalization of the Forest Stewardship Council Policy on Conversion | Research and Communication Methodologies and Tools | Stage 2: successful piloting (PIL - end of piloting phase) | Global |
| 2130 - Shademotion software for tree shade modeling, Version 5.0 | Research and Communication Methodologies and Tools | Stage 4: uptake by next user (USE) | Multi-national |
| 2172 - "How are we doing?", a tool for participatory monitoring and adaptive learning in multi-stakeholder fora | Social Science | Stage 4: uptake by next user (USE) | National |
| 2796 - 13 Agroecological principles for a global transition to sustainable food systems | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | Global |
| 2797 - Web accessible agroecological knowledge toolkit | Research and Communication Methodologies and Tools | Stage 1: discovery/proof of concept (PC - end of research phase) | Global |
| 2798 - Hourglass procedure for combining ecosystem based adaptation and agroecology | Research and Communication Methodologies and Tools | Stage 1: discovery/proof of concept (PC - end of research phase) | Global |

| Title of innovation with link | Innovation Type | Stage of innovation | Geographic scope (with location) |
|---|--|--|--|
| 2799 - SCAF Spatially Characterised Agroforestry tool for use in Vietnam | Research and Communication Methodologies and Tools | Stage 2: successful piloting (PIL - end of piloting phase) | National: The Socialist Republic of Viet Nam |
| 2800 - Livelihood trajectory simulation model tool | Research and Communication Methodologies and Tools | Stage 2: successful piloting (PIL - end of piloting phase) | Global |
| 2801 - Climate resilient food safety net basins for dryland restoration in Eastern Africa | Production systems and Management practices | Stage 2: successful piloting (PIL - end of piloting phase) | Regional: Eastern Africa |
| 2802 - A Framework for Monitoring Ecosystems-Based Adaptation to Climate Change: Experience from The Gambia | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | National: Gambia |
| 2804 - Technical guide on Forest tenure pathways to gender equality | Social Science | Stage 3: available/ ready for uptake (AV) | Global |
| 2808 - AlleleShift: an R package to predict and visualize populations level changes in allele frequencies in response to climate change | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | Global |
| 2809 - Climate Change Atlas for Trees of Africa | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | National: Ethiopia |
| 2810 - What to Plant Where - the tree species and seed source selection tool for Ethiopia | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | National: Ethiopia |
| 2811 - The Resources for Tree Planting Platform | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | Global |
| 2812 - The Global Tree Knowledge Platform | Research and Communication Methodologies and Tools | Stage 3: available/ ready for uptake (AV) | Global |
| 2824 - Inclusive and sustainable business online platform for Ghana, Peru, and the United Republic of Tanzania | Research and Communication Methodologies and Tools | Stage 1: discovery/proof of concept (PC - end of research phase) | Multi-national: Ghana, Peru, Tanzania, United Republic |

| Title of innovation with link | Innovation Type | Stage of innovation | Geographic scope (with location) |
|--|---|--|----------------------------------|
| 2825 - Landscape Finance Hub | Production systems and Management practices | Stage 2: successful piloting (PIL - end of piloting phase) | Global |
| 2831 - Reference genome of the shea tree (Vitellaria paradoxa), a tool for predictive breeding | Biophysical Research | Stage 2: successful piloting (PIL - end of piloting phase) | Regional: Sub-Saharan Africa |

Table 5. Summary of status of Planned Outcomes and Milestones (Sphere of Influence-Control)

| FP | FP Outcomes 2022 | Sub-IDs | Summary narrative on progress against each FP outcome this year | Milestone | 2021 milestones status | Brief Explanation <i>Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed</i> | Link to evidence |
|-----|--|--|--|---|------------------------|---|---|
| FP1 | FP1 Outcome: Managers and policy makers adopt effective monitoring methods, tools and practices to mitigate threats to valuable tree genetic resources, and implement suitable safeguarding strategies in line with international initiatives, such as the Global Plan of Action for Forest Genetic Resources and the Global Strategy on Conservation and Use of Cacao Genetic Resources | <ul style="list-style-type: none"> • Increased conservation and use of genetic resources • Adoption of CGIAR materials with enhanced genetic gains • More efficient use of inputs | Species and seed source conservation, selection, and delivery tools have been developed and are being implemented across more than five countries for a large number of species in collaboration with national partners. | 2021 - Effective, efficient and equitable approaches and policy recommendations for TGR conservation developed for 5-10 priority species in target countries in each of three continents. Training materials, characterization methods, policies and indicators of status and threats adopted in 5 countries. | Completed | Papers on diversity for restoration methods, capacity development, improved data resolution, conservation priority setting tools, valuation of TGR, and links to nutrition and food insecurity in multiple countries, covering several species, including cacao, dalbergia, brazil nut, bamboo, rattan, mangrove across a total of 12 deliverables. | https://onlinelibrary.wiley.com/doi/abs/10.1111/rec.13347 https://www.sciencedirect.com/science/article/abs/pii/S0378112721002152 https://cgiar-my.sharepoint.com/personal/r_jalonen_cgiar_org/_layouts/15/onedrive.aspx?id=%2Fpersonal%2F%5Fjalonen%5Fcgiar%5Forg%2FDocuments%2FBiodiversity%2FCRP%20FTA%2FPlanning%20and%20reporting%2F2021%2FJAPPL%2D2021%2D00695%5FProof%2Epdf&parent=%2Fpersonal%2F%5Fjalonen%5Fcgiar%5Forg%2FDocuments%2FBiodiversity%2FCRP%20FTA%2FPlanning%20 |

| FP | FP Outcomes 2022 | Sub-IDs | Summary narrative on progress against each FP outcome this year | Milestone | 2021 milestones status | Brief Explanation <i>Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed</i> | Link to evidence |
|----|------------------|---------|---|-----------|------------------------|---|---|
| | | | | | | | <p>and%20reporting%2F2021</p> <p>https://cgia-my.sharepoint.com/personal/r_jalonen_cgiar_org/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fr%5Fjalonen%5Fcgia%5Forg%2FDocuments%2FBioversity%2FProjects%2F2018%20Darwin%20dalbergia%2FPublications%2FJalonen%20etal%202020%2FBION%2DS%2D21%2D01390%20SUBMITTED%2Epdf&parent=%2Fpersonal%2Fr%5Fjalonen%5Fcgia%5Forg%2FDocuments%2FBioversity%2FProjects%2F2018%20Darwin%20dalbergia%2FPublications%2FJalonen%20etal%202020</p> <p>https://bonndoc.ulb.uni-</p> |

| FP | FP Outcomes 2022 | Sub-IDOs | Summary narrative on progress against each FP outcome this year | Milestone | 2021 milestones status | Brief Explanation <i>Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed</i> | Link to evidence |
|----|---|--|--|--|------------------------|--|---|
| | | | | | | | bonn.de/xmlui/handle/20.500.11811/9141 |
| | FP1 Outcome: Agricultural and horticultural research partners adopt cost-effective domestication approaches for priority tree species, based on impacts and maximizing efficiency, and considering trade-offs involved in intensification | <ul style="list-style-type: none"> • Increased conservation and use of genetic resources • Enhanced conservation of habitats and resources • Enrichment of plant and animal biodiversity for multiple goods and services • Adoption of CGIAR materials with enhanced genetic gains | Collaboration with national partners in all domestication/ breeding activities provide for immediate access and adoption of the improved material developed. | 2021 - Stakeholders testing at least 5 more potential 'varieties' of trees across agro-ecological zones; public and private partners engaged in tree domestication activities to reach identified needs with incipient cultivars for at least three more tree species In at least 3 countries: Policies and/or strategies recommended based on FTA work are promoted for | Completed | Papers on characterization of genotypes and phenotypes, cultivar development (orchards), socioeconomic impact and genomes of orphan and other underutilized crops in multiple countries across 4 major deliverables composed of some 25 outputs (linked to 3 priorities: orphan crops, nutrition, and delivery). | https://link.springer.com/article/10.1007/s10457-021-00592-z https://doi.org/10.3923/ajps2021.183.195 https://doi.org/10.20546/ijcmas.2021.1007.060 https://www.mdpi.com/1999-4907/12/3/373 https://link.springer.com/article/10.1007/s00267-021-01490-x https://doi.org/10.1080/14728028.2021.1944328 https://www.worldagroforestry.org/file-download/download/public/23847 |

| FP | FP Outcomes 2022 | Sub-IDOs | Summary narrative on progress against each FP outcome this year | Milestone | 2021 milestones status | Brief Explanation <i>Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed</i> | Link to evidence |
|----|------------------|---|---|--|------------------------|---|--|
| | | <ul style="list-style-type: none"> • Increased access to diverse nutrient-rich foods • More productive and equitable management of natural resources • Enhanced adaptive capacity to climate risks (More sustainably managed agro-ecosystems) • More efficient use of inputs • Increased access to | | implementation to support improvement of diets of low-income rural and urban consumers by using a variety of nutrient-rich wild and cultivated nutrient-rich food. | | | <p>https://doi.org/10.33687/ijae.009.03.3616</p> <p>https://ethnobiomed.biomedcentral.com/articles/10.1186/s13002-021-00441-4</p> <p>https://www.emerald.com/insight/content/doi/10.1108/JADEE-08-2020-0183/full/html</p> <p>https://regreeningafrica.org/wp-content/uploads/2021/09/Short-guide-on-tree-value-chains_final.pdf</p> <p>https://www.routledge.com/Orphan-Crops-for-Sustainable-Food-and-Nutrition-Security-Promoting-Neglected/Padulosi-King-Hunter-Swaminathan/p/book/9780367902827</p> |

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| | | <p>productive assets, including natural resources</p> <ul style="list-style-type: none"> • Increased genetic diversity of agricultural and associated landscapes • Improved forecasting of impacts of climate change and targeted technology development • Enhanced capacity to deal with climatic risks and extremes | | | | | <p>https://www.foreststreesagroforestry.org/publications/research-publication/?title=contribution-of-forests-and-trees-to-food-security-and-nutrition&id=11463_20225</p> <p>https://www.sciencedirect.com/science/article/pii/S221191242030119X?via%3Dihub</p> <p>https://www.agropolis.org/publications/agroecology.php</p> <p>https://www.crd.york.ac.uk/prospero/display-record.php?RecordID=248475</p> <p>https://bonndoc.ulb.uni-bonn.de/xmlui/handle/20.500.11811/9140</p> |

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| | | <p>(Mitigation and adaptation achieved)</p> <ul style="list-style-type: none"> • Technologies that reduce women's labor and energy expenditure adopted • Improved capacity of women and young people to participate in decision-making • Increase capacity of beneficiaries to adopt research outputs | | | | | <p>https://www.biorxiv.org/content/10.1101/2021.04.14.439117v1</p> <p>https://www.frontiersin.org/articles/10.3389/fpls.2021.720670/full</p> <p>https://www.agropolis.org/publications/agroecology.php</p> |

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| | | <ul style="list-style-type: none"> • Conducive agricultural policy environment • Enhanced institutional capacity of partner research organization • Increased capacity for innovation in partner development organizations and in poor and vulnerable communities | | | | | |
| | FP1 Outcome: National governments, extension services and private partners adopt cost-effective | | Collaboration with national partners in all delivery associated activities provide | 2021 - Policy-makers have incorporated appropriate certification standards into | Completed | Papers on breeding, use (delivery), climate suitability, guidelines, monitoring, impact and regulation of TGR for different functional purposes in multiple countries on different | http://apps.worldagroforestry.org/downloads/Publications/PDFS/PB21003.pdf |

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| | and equitable tree planting material delivery pipelines, with appropriate decision-support tools, to supply high quality site-appropriate tree planting material to smallholders and other growers | | for immediate access and adoption of the the tools and materials developed. | delivery systems in two countries. Changes in policies and strategies by national governments and implemented by national extensions services have resulted in entrepreneurial suppliers becoming more engaged in delivery in three countries. The role tree nursery operators within efficient tree seed and seedling systems will be understood and demonstrated. Tools will be available to account for the | | species across 19 deliverables (linked to 5 priorities: restoration, nutrition, biodiversity, orphan crops and delivery). | https://www.mdpi.com/1424-2818/13/8/367 https://doi.org/10.1016/j.qfs.2021.100557 https://www.mdpi.com/2223-7747/10/2/328 https://doi.org/10.30574/msarr.2021.2.2.0053 https://doi.org/10.1016/j.dib.2021.107073 https://doi.org/10.1016/j.tplants.2021.09.009 http://atlas.worldagroforestry.org/ https://patspo.shinyapps.io/WTPW_Ethiopia/ https://worldagroforestry.org/tree-knowledge https://doi.org/10.7717/peerj.11534 |

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| | | | | potential effects of climate change when planning for national and regional tree seed production and distribution. | | | https://rpubs.com/Roel and-KINDT/792916 https://www.frontiersin.org/articles/10.3389/ffgc.2020.615682/full |
| FP2 | FP2 Outcome: Improved food security and livelihood opportunities for 20 million smallholder households (100 million people) and more productive and equitable management of natural resources over an area of at least 50 million ha. This outcome integrates some outputs from other research clusters through their scaling. | <ul style="list-style-type: none"> • Increased livelihood opportunities • Increased access to diverse nutrient-rich foods • More productive and equitable management of natural resources | It has become evident as the program matures that co-learning, beyond developing locally appropriate options, accelerates scaling through spontaneous spread of options being trialed in communities of practice. In Vietnam farmer co-operatives neighboring exemplar | 2021 - Generalized understanding of how contextual variables affect suitability of tree-based options to improve smallholder livelihoods across large scaling domains in Africa, Asia and Latin America | Completed | Impact of adopting a co-learning approach on greening outcomes across seven countries in Africa showed increased integration of trees on farmland resulting in improved soil health, productivity and income. Co-learning in Vietnam led to development of multistrata options preferred by farmers that provide greater and more reliable returns while colearning led to viable oil palm diversification strategies in Brazil. | https://doi.org/10.1007/s13593-020-00624-5 https://www.foreststresagroforestry.org/wp-content/uploads/fta-2020-science-conf/stream1/T1-S1-58-FTA%20-%20Andrew%20Miccolis_Scaling%20up%20Oil%20Palm%20Agroforestry%20in%20the%20Brazilian%20Amazon.ppsx |

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| | | | <p>landscapes have sought and replicated success, in Kenya farmers not directly involved in projects have started using innovations such as planting basins because of the interest generated by groups of farmers adapting basin designs to their local circumstances. We are now directing effort to document spontaneous spread and understand what enables or constrains it.</p> | | | | |

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| | <p>FP2 Outcome: Improved livelihood opportunities involving timber, fruit and NTFPs contributing a 25% increase in income for over 5 million people and more equitable management of natural resources, including a 25% increase in women's participation in decisions involving tree and forest management and utilization and improvement in substantive representation of women in community forest management institutions.</p> | <ul style="list-style-type: none"> • Increased livelihood opportunities • More productive and equitable management of natural resources | <p>The quantification of benefits far exceeding 25% increased income from market based agroforestry options in Vietnam coupled with farmer preferences for more diverse and hence resilient options and the critical need for strategies to cover the time lag between investment and return; have shifted our emphasis from comparative evaluation of different options to holistic assessment of what</p> | <p>2021 - Analysis of institutional arrangements for financing sustainable intensification and marketing products with specific reference to opportunities for women and young people</p> | <p>Completed</p> | <p>Livelihood and environmental benefits from community forestry were analysed across 643 cases in 51 countries and augmented by detailed analysis of impacts on farm income for different agroforestry options quantified across three provinces in Vietnam.</p> | <p>https://doi.org/10.1038/s41893-020-00633-y</p> <p>https://doi.org/10.1007/s13593-020-00624-5</p> |

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| | | | combinations of options (technology, market and policy) lead to rapid uptake and impact. | | | | |
| | FP2 Outcome: Diversified tree-crop production systems covering 5 million ha and improving diets and livelihood opportunities for 20 million people in smallholder producer households. | <ul style="list-style-type: none"> • Increased livelihood opportunities • Agricultural systems diversified and intensified in ways that protect soils and water | Combining local knowledge of tree attributes, including litter decomposition rates, with scientific advances in understanding how tree litter traits impact soil fertility has allowed development of practically useful tools for selecting companion trees for both cocoa and coffee production systems that are | 2021 - Diversified coffee production practices that confer adaptability to climate change in key coffee growing regions (Africa, Asia and Latin America) | Completed | Understanding of effects of trees and other management factors on soil fertility and tools for selecting companion tree species to sustain soil fertility (amongst other utilities) developed for both cocoa and coffee. | https://doi.org/10.1007/s11104-018-03921-x https://www.sciencedirect.com/science/article/abs/pii/S0308521X19312673 https://doi.org/10.1007/s11104-019-04004-1 https://www.shadetreeadvice.org/ |

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| | | | <p>now freely available and being taken up and enhanced by growing community of users who access tree selection tools online. Farmers rarely select companion trees for the sole purpose of improving soil fertility, and so embedding impacts on soil fertility within the overall basket of goods and services provided by different tree species in varying contexts matches advice about impacts of trees on soil</p> | | | | |

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| | | | fertility to farmer needs. | | | | |
| | FP2 Outcome: Increased access to diverse, nutrient-rich food for 20 million people by closing yield gaps by trees in agricultural systems, improving and maintaining soil health, intensifying system interactions (fodder and fuelwood), directly contributing to production, reducing and reversing land degradation, and increasing the resilience of smallholder livelihoods. | <ul style="list-style-type: none"> • Increased livelihood opportunities • Increased access to diverse nutrient-rich foods • Land, water and forest degradation (Including deforestation) minimized and reversed | Understanding how trees influence soil micro and macro fauna is critical for both productivity and product quality, recent breakthroughs in metagenomics facilitate making faster progress in understanding what practices can influence microbial diversity and abundance as well as understanding their implications for yield and product quality. | 2021 - A system for determining threshold levels of tree density and diversity required to maintain long term soil health. | Completed | The current state of knowledge about impacts of trees on soil health has been synthesised and a system to guide decision making about the tree density and diversity required to maintain soil health in specific contexts set out. □1. Barrios E., Coe R., Place, F., Sileshi, G. and Sinclair, F. (2022). Nurturing Soil Life through Agroforestry: The Roles of Trees in the Ecological Intensification of Agriculture. In Uphoff, N. and Thies, J. (Eds) Biological Approaches to Regenerative and Resilient Soil Systems. CRC Press (in press). | https://www.frontiersin.org/articles/10.3389/fufs.2020.607935/full https://www.dropbox.com/scl/fi/vr33bpaz2gsxq9pu0rwmz/Chapter-21-Agroforestry_FINAL_CLEAN-11Dec2021.docx?dl=0&rlkey=vtzc7ztnmdqta1123oi95dgo3 |

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| | FP2 Outcome: Reducing yield gaps through improved pasture management and animal husbandry on over 15 million ha and 1 million animals and contributing to reducing and reversing land degradation on over 5 million ha. | <ul style="list-style-type: none"> Land, water and forest degradation (Including deforestation) minimized and reversed | The programme has taken a key step forward in quantifying effects of heat stress on productivity of dairy cattle in China and identifying where, given climate change predictions, interventions are most needed to protect animals from heat stress. The emphasis of research has now shifted to comparative analysis of different options of reducing heat stress, and particularly the difference between living shade from trees in fields (that | 2021 - Governance models required to enable sustainable silvopastoral management evaluated in relation to context | Completed | Effects of heat stress on dairy cattle and their productivity were quantified in China identifying areas where climate change is predicted to exacerbate this and management interventions to reduce heat stress, including tree shade, are therefore important. | https://doi.org/10.1007/s10584-020-02688-4 |

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| | | | may also provide aseasonal fodder) and options that involve housing animals in buildings or other providing shade from other artificial structures. | | | | |
| FP3 | FP3 Outcome: Public and private actors adopt effective governance arrangements, mechanisms and tools for ensuring sustainable, inclusive, equitable commodity supply in at least three countries. | <ul style="list-style-type: none"> • Improved access to financial and other services • Reduced market barriers • Diversified enterprise opportunities • Increased value | On public and private commitments to zero deforestation, significant progress was made at sites in Brazil, Colombia, Ecuador and Peru, and Indonesia to upscale and adapt the arrangements and initiatives to | 2021 - Available a decision support tool based on a comparative analysis of select cases of costs, benefits and trade-offs of improved natural forest management practices vis-À - vis planted forests and tree crops, and strengthened | Completed | Spatial planning tools and guidelines were made available in the Guaviare jurisdiction of Colombia. | https://www.cirad.fr/en/news/all-news-items/press-releases/2020/spatial-planning-for-stakeholders |

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| | | capture by producers <ul style="list-style-type: none"> • Land, water and forest degradation (Including deforestation) minimized and reversed • Gender-equitable control of productive assets and resources • Increased capacity for innovation in partner development organizations and in poor and vulnerable communities | other jurisdictions of the six selected countries where it has been working. The team participated in international seminars to diffuse the results and approaches to Jurisdictional performance monitoring systems and certification. The efforts helped to demonstrate that private sustainability initiatives, in conjunction with supportive public policy, can foster improved management and business practices with | capacities for co-developing the most appropriate practices and models | | | |

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| | | | enhanced socio-environmental performance. | | | | |
| | FP3 Outcome: Five business platforms and 20 businesses and service providers develop and implement business models that are more inclusive, economically viable and environmentally sustainable. | | Activities in 2021 built on the knowledge base created from previous primary data collection of more than 50 businesses in oil palm, cocoa, tea, coffee, sugarcane, avocado, and timber sectors, and surveys of 1,450 inclusive business participants of 12 agribusiness models in Peru, Ghana and Tanzania. The knowledge base was further disseminated and repackaged results, as well | 2021 - 3 business platforms and 10 businesses informed on best practice guidelines, tools and metrics for the design, implementation and assessment of business models that are more socially inclusive, economically viable, environmentally sustainable and have the potential to produce greater impact at scale | Completed | A knowledge base was created using data from more than 50 businesses in oil palm, cocoa, tea, coffee, sugarcane, avocado, and timber sectors, and surveys of 1,450 inclusive business participants of 12 agribusiness models in Peru, Ghana and Tanzania, was used to design a business online platform. The platform was incorporated in a successfully initiated 2022 project by CIFOR-ICRAF on Transformative Land Investment (funded by the Swiss Agency for Development and Cooperation). | https://www.inclusivebusiness.net/clued-in/19/article/5483 |

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| | | | as engagement broadened with business, civil and state actors. This involved establishing an inclusive and sustainable business online platform that serves as a vehicle for future dissemination and engagement and consolidation, and give visibility to major inclusive business knowledge, innovations and national and international champions. | | | | |
| | FP3 Outcome: At least 30% of financial service providers lending to | | Work on innovating finance for sustainable | 2020 extended to 2021 - Available metrics and | Completed | We developed a tool to evaluate risks for participating in, and barriers for accessing financial value chains for all stakeholders | https://www.tropenbos.org/resources/publications/finance+for+integrated+landscape+ma |

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| | timber, tree and agricultural crops adopt ESG criteria, and increase in 25% the lending to models that integrate smallholders and SMEs. | | landscapes resulted in additional case studies, broadening the range of different mechanisms analysed. This further influenced financial institutions to adopt environmental, social and governance (ESG) criteria when lending to timber, trees and select agricultural crops. A panel session was successfully completed at the November 2021 Global Landscapes Forum | tools that enable FSPs to better evaluate the social and environmental performance of their financial portfolios | | involved, from source to final beneficiary. We used the tool for our case studies. | nagement:+processes+that+support+integrated+landscape+initiatives+and+make+access+to+finance+more+inclusive |

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| | | | <p>Conference on Climate: Forests, Food, Finance – Frontiers of Change, during which an investment case was discussed for inclusive food system transformation. A whitepaper was prepared on how international finance can better meet local needs and aspirations.</p> | | | | |
| | | | | <p>2021 - Assessment of financial mechanisms providing improved access of finance to smallholders and SMEs with</p> | <p>Completed</p> | <p>Evidence includes: Landscapes analysis (LAFF) article describing methodology for prioritization of financial flows with greatest positive impact on landscape sustainability, case study reports identifying strategies used to increase access to finance for</p> | <p>https://www.globallandscapesforum.org/wp-content/uploads/2021/11/7-White-Paper_GLF-Climate-Investment-cases-for-inclusive-food-system_En.pdf</p> |

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| | | | | evaluation of their livelihoods and land use impacts | | smallholders and communities, whitepaper summarizing main results of three exemplary case studies, video of panel session discussing whitepaper with impact investors and broader audience. | https://doi.org/10.3390/land10111261 https://bit.ly/3GOWMJ_e https://bit.ly/3m6NNts https://www.tropenbos.org/resources/publications/financing+gender+empowering+green+growth+in+indonesia https://www.tropenbos.org/resources/publications/the+future+of+smallholders+in+forest+frontier+areas.+a+compilation+of+perspectives https://www.tropenbos.org/resources/publications/financiamiento+para+la+gestión+integrada+del+paisaje.+fondo+rotatorio+de+la+asociación+forestal+indonesia |

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| | | | | | | | %C3%ADgena+ https://www.youtube.com/watch?v=s-fCx6QRGo8 |
| FP4 | FP4 Outcome: (Sub)national governance systems in at least 10 countries use contextualized theories of change to guide transitions to integral achievement of sustainable development goals through restoration, conservation and management of landscape multi-functionality, using similarity domains based on patterns and intensities of forest and tree cover change in space and time in sentinel landscapes | <ul style="list-style-type: none"> • Increased livelihood opportunities • Increased access to productive assets, including natural resources • Gender-equitable control of productive assets and resources • Increased access to diverse | FP4 work impacted governance systems in Sri Lanka, Kenya, Vietnam, in multiple ways including strategy guidelines and multiple mechanisms as indicated on the evidence provided. | 2021 - Scenario studies and participatory development planning results for at least 6 sentinel landscapes that make use of rounds 1 + 2 results, aligned with national goals and international commitments (incl. Aichi targets of CBD, UNCCD and UNFCCC modalities) | Completed | Several studies indicating scenarios and green growth plans from several landscapes have been carried out. Including Central Highlands of Sri Lanka, Ghana,, E Kalimantan in Indonesia, Ethiopia, and 7 landscapes in Benin. | https://doi.org/10.3390/su13158269 https://doi.org/10.3390/su131910945 https://doi.org/10.3390/su131910939 https://doi.org/10.1002/fee.2345 http://doi.org/10.3390/and10080856 https://doi.org/10.1080/14735903.2021.1907108 |

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| | understood on the basis of 'drivers' that operate at larger scales. | nutrient-rich foods <ul style="list-style-type: none"> • Enhanced institutional capacity of partner research organization • Land, water and forest degradation (Including deforestation) minimized and reversed • Improved capacity of women and young people to participate in decision-making • Increased resilience of agro- | | | | | |

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| | | ecosystems and communities, especially those including smallholders <ul style="list-style-type: none"> • Improved water quality | | | | | |
| | FP4 Outcome: (Sub)national governance systems in landscapes covering 100 M ha and inhabited by 70 M people use quantified and valued functions of FT&A for biodiversity, full hydrological cycle and ecosystem services analyzed across knowledge domains and available for policy- | | Many landscapes in the Gambia, Cameroon, and other countries have adopted and benefited from rolling out FTA approaches to biodiversity, hydrology and ecosystem services management. | 2021 - Impact study of shifts in gender-equitable control of productive FTA assets and resources. Policy options to favor sustainable restoration of tree-based ecosystems adopted by at least 3 countries that have made pledges to meet | Completed | Evidence has been assembled on gender impacts on Fuelwood value chains in DRC and Kenya. Also numerous gender sensitive impact analysis has been done in more than 7 landscapes including Tanzania, Cameroon, Borneo in Indonesia, Niarragua Honduras. | https://hdl.handle.net/10568/113383 https://doi.org/10.3390/su131910939 http://doi.org/10.5716/WP20049.PDF https://www.mdpi.com/1999-4907/12/4/493 http://doi.org/10.3390/and10080770 https://www.mdpi.com/2073-445X/10/7/699 |

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| | level synthesis and planning. | | | international agreements | | | https://doi.org/10.1080/14735903.2021.1907108 https://doi.org/10.1016/j.biocon.2021.109024 |
| | FP4 Outcome: Diverse diets from tree cover in mosaic landscapes recognized and enhanced as contributions to balanced diets through Increase of availability, and access to, nutrient-rich wild and cultivated food products from these landscapes (10 sentinel landscapes 10 M people). | | Evidence from Zambia, Kenya, Ethiopia, Cameroon and Indonesia demonstrate contributions to Nutrition and diet diversity in forests and agroforests.. | 2021 - In at least 5 countries: Increased dietary diversity of low-income rural and urban consumers using a variety of nutrient-rich wild and cultivated nutrient-rich food available during economic, social and/or environmental shocks | Completed | Evidence has been provided for countries such as Zambia, Kenya, Ethiopia, Cameroon and Indonesia. | http://doi.org/10.3389/fufs.2021.608868 https://doi.org/10.17528/cifor/008086 https://doi.org/10.1016/j.biocon.2021.109024 |
| | FP4 Outcome: Adaptive landscape institutions empowered and supported on 6 M | | Enhanced and empowered institutions at landscape level has been | 2021 - Documented investment action of development | Completed | Documentation is produced showing investments across a wide portfolio in FTA key countries. Ranging from investments in policy processes, | http://doi.org/10.5716/WP20049.PDF |

| FP | FP Outcomes 2022 | Sub-IDs | Summary narrative on progress against each FP outcome this year | Milestone | 2021 milestones status | Brief Explanation <i>Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed</i> | Link to evidence |
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| | ha inhabited by 4 M people to manage changing landscape mosaics towards more balanced and adaptive multifunctionality and successful 'forest landscape restoration' through 'action research' and inclusive, participatory learning. This is aligned with efforts in PIM.5.2 -oe6 million hectares of shared landscapes under more productive and equitable management. | | documented in Tanzania, Cameroon and many others as presented in the evidence. | support partners on the basis of the shared learning that links issues to places and action perspectives | | action on the ground and technical capacity building | http://doi.org/10.3390/and10080770 https://www.cifor.org/publications/pdf_files/FTA/WPapers/FTA-WP-5.pdf https://www.cifor.org/publications/pdf_files/FTA/WPapers/FTA-WP-3.pdf https://www.cifor.org/publications/pdf_files/FTA/WPapers/FTA-WP-2.pdf |
| FP5 | FP5 Outcome: Efficient, effective and equitable climate national and international mitigation policies and funding, aligned | <ul style="list-style-type: none"> Reduced net greenhouse gas emissions from agriculture, | | 2020 extended to 2021 - Analysis available to increase effectiveness and efficiency of | Completed | | https://doi.org/10.17528/cifor/008028 https://doi.org/10.17528/cifor/008008 |

| FP | FP Outcomes 2022 | Sub-IDOs | Summary narrative on progress against each FP outcome this year | Milestone | 2021 milestones status | Brief Explanation <i>Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed</i> | Link to evidence |
|----|--|--|---|---|------------------------|---|--|
| | with development objectives (3E+ goals). | forests and other forms of land-use (Mitigation and adaptation achieved) <ul style="list-style-type: none"> • Enhanced adaptive capacity to climate risks (More sustainably managed agro-ecosystems) • Increased livelihood opportunities • Gender-equitable control of productive assets and resources | | results-based climate finance and used (e.g. by Green Climate Fund) | | | https://www2.cifor.org/wp-content/uploads/sites/14/2021/06/GCS-Part-1-Final-Evaluation-Report-2021.pdf https://www2.cifor.org/wp-content/uploads/sites/14/2021/06/CIFOR-management-letter_GCS-REDD-final-evaluation-report.pdf https://doi.org/10.17528/cifor/008049 https://doi.org/10.17528/cifor/008048 |

| FP | FP Outcomes 2022 | Sub-IDs | Summary narrative on progress against each FP outcome this year | Milestone | 2021 milestones status | Brief Explanation <i>Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed</i> | Link to evidence |
|----|------------------|--|---|--|------------------------|--|--|
| | | <ul style="list-style-type: none"> Enhanced individual capacity in partner research organizations through training and exchange | | | | | |
| | | | | 2021 - Options for enabling policy architecture and public-private partnership mechanisms defined and used to shape corporate zero-deforestation commitments | Completed | GCS REDD research and policy support has indirectly contributed to realization of REDD+ results-based payments (RBP): this work could reduce deforestation by 10–30% and yearly avoid emissions of 0.2–0.6 Gt CO ₂ (5–15% of total annual land-use emissions of 3.3 Gt CO ₂); 20 countries are entering the RBP phase in the Forest Carbon Partnership Facility; there is the Norway-Indonesia REDD+ agreement (although recently rejected by Indonesia); and over 400 REDD+ projects exist globally. Work will continue during the next 3 years with | https://www2.cifor.org/wp-content/uploads/sites/14/2021/06/GCS-Part-1-Final-Evaluation-Report-2021.pdf https://www2.cifor.org/wp-content/uploads/sites/14/2021/06/CIFOR-management-letter_GCS-REDD-final-evaluation-report.pdf |

| FP | FP Outcomes 2022 | Sub-IDs | Summary narrative on progress against each FP outcome this year | Milestone | 2021 milestones status | Brief Explanation <i>Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed</i> | Link to evidence |
|----|--|---------|---|---|------------------------|---|--|
| | | | | | | funding from Norad, to further up- and outscale results and provide support to their ART/TREES framework and Paris Agreement Article 6 | https://doi.org/10.17528/cifor/008049 https://doi.org/10.17528/cifor/008048 https://doi.org/10.17528/cifor/008028 https://doi.org/10.17528/cifor/008008 |
| | FP5 Outcome: Risk-assessed ecosystem-based adaptation (EbA) policy and practice in place including joint mitigation and adaptation approaches. | | | 2021 - Approaches to develop, measure and monitor effectiveness and efficiency of EbA actions are developed (for example, NAMAs and NAPs) and are available for testing | Completed | In Gambia, Ecosystem-Based Adaptation protocols were developed and implemented on 250 farms and 50 community forests. | |
| | FP5 Outcome: Food and bioenergy production policy | | | 2021 - Case studies on producing | Partially Complete | In Indonesia, 50 farmers expressed interest in our agrosilvofisheries model; limited | |

| FP | FP Outcomes 2022 | Sub-IDs | Summary narrative on progress against each FP outcome this year | Milestone | 2021 milestones status | Brief Explanation <i>Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed</i> | Link to evidence |
|----|---|---------|---|---|------------------------|---|---|
| | and practice integrated more visibly in the intervention areas. | | | biofuels on marginal land are available. | | resources allow work with 10 farmers / 10 ha land. □□In the Balkans, where we only started in 2020, we established proof-of-concept for short-rotation biomass plantations on 10 ha land, as a first step in establishing our landscape approach to sustainability, restoration and a just, green transition for coal miners, and that involves agroforestry and forest restoration | |
| | FP5 Outcome: Performance assessment of mitigation and adaptation policy and practice widely implemented following good evaluation practice. | | | 2020 extended to 2021 - First round of impact assessment of REDD+ policy and practice concluded | Extended | | |
| | | | | 2021 - REDD+ project performance has been re-assessed. Global capacity | Completed | A final evaluation review of Phase 3 (2016-2020) of the Norad funded CIFOR led Global Comparative Study for achieving effective, efficient and equitable REDD+ results (GCS REDD+) | https://www2.cifor.org/wp-content/uploads/sites/14/2021/06/GCS-Part-1-Final-Evaluation-Report-2021.pdf |

| FP | FP Outcomes 2022 | Sub-IDs | Summary narrative on progress against each FP outcome this year | Milestone | 2021 milestones status | Brief Explanation <i>Provide evidence for completed milestones (refer back to means of verification, and link to evidence wherever possible) or explanation for extended, cancelled or changed</i> | Link to evidence |
|----|------------------|---------|---|---|------------------------|---|------------------|
| | | | | for national forest monitoring capacity has been assessed | | was finalized and published in 2021. | |

Table 6. Numbers of peer-reviewed publications from current reporting period (Sphere of control)

| | Number | Percent |
|----------------------------|--------|---------|
| Peer-Reviewed publications | 212 | 100.0% |
| Open Access | 164 | 77.36% |
| ISI | 196 | 92.45% |

Table 7. Participants in CapDev Activities

| Number of trainees | Female | Male |
|---|--------|------|
| In short-term programs facilitated by CRP/PTF | 21455 | 9441 |
| In long-term programs facilitated by CRP/PTF | 267 | 83 |
| PhDs | 13 | 12 |

Table 8. Key external partnerships

| Col.1 | Col. 2 | Col. 3 | Col. 4 |
|----------------|--|---|--|
| Lead FP | Brief description of partnership aims (max. 30 words) | List of key partners in partnership. <i>Do not use acronyms.</i> | Main area of partnership (may choose multiple) <i>Dropdown: Research/Delivery/Policy/Capacity Development/Other, please specify _____</i> |
| FP1 | Trees on Farms for Biodiversity is a partnership that supports agriculture and livelihoods through conservation by incorporating trees in managed and productive ecosystems to generate both ecological and societal benefits. | IUCN, Tanjungpura University, Pontianak, The International Union for Conservation of Nature | Research, Policy, Delivery |
| FP1 | Sequencing for African Orphan Crops Consortium (AOCC). AOCC's goal is to sequence, assemble and annotate the genomes of 101 traditional African food crops, to facilitate their genetic improvement. The collaboration will introduce new infrastructure and methods of sequencing genomes of the AOCC priority species. | Oxford Nanopore Technologies | Delivery Policy Capacity Development Research |
| FP1 | Food and Nutrition Security. Partner in new project: Piloting incentive-based agricultural portfolios for nutrition and resilience in Zambia | Humboldt University - Berlin | Research Capacity Development |
| FP1 | Strengthening rural-urban linkages for fruit and vegetable consumption in new proposal development. | TMG - ThinkTank for Sustainability GmbH | Capacity Development, Policy |

| Col.1 | Col. 2 | Col. 3 | Col. 4 |
|----------------|---|---|--|
| Lead FP | Brief description of partnership aims (max. 30 words) | List of key partners in partnership. <i>Do not use acronyms.</i> | Main area of partnership (may choose multiple) <i>Dropdown: Research/Delivery/Policy/Capacity Development/Other, please specify _____</i> |
| FP1 | Transforming the Quality of Tree Planting (TQTP). BGCI and KG will be important partners in the development of a Transformative Partnership Platform (TPP) on TQTP. | Royal Botanic Gardens/Kew BGCI - Botanic Gardens Conservation International | Research Policy Capacity Development Delivery |
| FP1 | Food and Nutrition Security. Analysis and generation of new data around rural-urban linkages for fruit and vegetable consumption | BOKU - University of Natural Resources and Life Sciences | Research Policy Capacity Development |
| FP2 | FTA launched Agroecology Transformative Partnership Platform (TPP), a partnership for more sustainable and equitable food systems. | ICRAF, CIRAD, Biovision, CIFOR, Food and Agriculture Organization (FAO), TMG Think Tank for Sustainability and UNEP | Research, development, delivery |
| FP3 | Partnership in collaboration with the UNEP Finance Initiative and the Collaborative Partnership on Forests led by the FAO. Based on this collaboration, a panel session was successfully completed at the November 2021 Global Landscapes Forum Conference on Climate: Forests, Food, Finance – Frontiers of Change . | UNEP Finance Initiative, FAO Collaborative Partnership on Forests | Delivery |

| Col.1 | Col. 2 | Col. 3 | Col. 4 |
|----------------|---|--|--|
| Lead FP | Brief description of partnership aims (max. 30 words) | List of key partners in partnership. <i>Do not use acronyms.</i> | Main area of partnership (may choose multiple) <i>Dropdown: Research/Delivery/Policy/Capacity Development/Other, please specify _____</i> |
| FP3 | Collaboration with the Forest Stewardship Council (FSC) to include an additional focus on how the new Conversion Remedy Procedure could also be applied to a remedy framework, which could be applied to the FSC Policy of Association . | Forest Stewardship Council (FSC) | Policy |
| FP3 | FTA collaborated with the Global Shea Alliance, a non-profit industry association with members from 35 countries, to address the challenges and opportunities to empower women shea producers in Burkina Faso. | Global Shea Alliance | Research, Capacity Development |
| FP4 | FP4 worked with Ministries of Environment (Sri Lanka), Ministry of Environment, Natural Resources and Climate Change (Gambia) and Ministry of Environment and Livelihood (Benin), and with provincial governments and associations in these countries, on various policy level issues ranging from cross-sectoral collaboration, developing manuals, programme priorities and green growth plans. FP4 also engaged with the United Nations Environment Programme on EbA in various countries. | Ministry of Environment Sri Lanka; Ministry of Environment, Natural Resources and Climate Change, Gambia; and Ministry of Environment and Livelihood, Benin, and provincial governments and associations in Sri Lanka, Gambia and Benin. | Policy |

| Col.1 | Col. 2 | Col. 3 | Col. 4 |
|--------------------|---|---|--|
| Lead FP | Brief description of partnership aims (max. 30 words) | List of key partners in partnership. <i>Do not use acronyms.</i> | Main area of partnership (may choose multiple) <i>Dropdown: Research/Delivery/Policy/Capacity Development/Other, please specify _____</i> |
| FP5 | Sustainable Land, Livelihoods, and Energy Initiative (SLEEI) for Serbia. to achieve large-scale land restoration and the creation of 'green' jobs in support of Serbia's green and just transition from coal to renewable energy sources (RES). | E3 International | Research |
| FP5 | Research collaboration with Wageningen University | Wageningen University | Research and Capacity Development (for PhD student) |
| Gender Team | Gender Team <u>collaborated with the CBD</u> preparing guidance on gender and inclusion to support the finalization of the Gender Plan of Action by COP 15, and its implementation in the coming years. | CBD- Convention on Biological Diversity, UN Women | Policy, Other |
| PMU | Partnership with Google Arts & Culture, that features the main elements of the legacy of the program, its action and impact, through 8 online exhibits. | Google Arts & Culture | Delivery, Other |
| PMU | Together with Chinese partners FTA organized a major global conference: The FTA Kunming Conference 2021 to look at concrete options to explore the role of forests, trees and agroforestry in enhancing diverse and sustainable landscapes, | The Chinese Academy on Forestry, Chinese Academy of Sciences, the Kunming Institute of Botany | Delivery, other |

| Col.1 | Col. 2 | Col. 3 | Col. 4 |
|----------------|---|--|--|
| Lead FP | Brief description of partnership aims (max. 30 words) | List of key partners in partnership. <i>Do not use acronyms.</i> | Main area of partnership (may choose multiple) <i>Dropdown: Research/Delivery/Policy/Capacity Development/Other, please specify _____</i> |
| | to a green circular economy and to healthy, diversified diets, and making recommendations for the agenda on biodiversity and the upcoming CBD COP 15. | | |
| PMU | Led the working group 4 of the CGIAR Covid-hub, and undertake several studies on "building back better" | Wageningen University (Food systems and Nutrition) | Research/Policy |
| PMU | Joint publications with FAO on : : the Asia-Pacific Roadmaps on forest technologies and on primary forests conservation, an FAO forestry paper on "Mainstreaming Biodiversity in Forest management", and contributed to the State of the Worlds Forest (SOFO) . | Food and Agriculture Organization of the UN | Research/Policy/Capacity building |
| PMU | Policy brief on Rubber and climate change | International Rubber Study Group, International Rubber Research and Development Board, CIRAD | Research/Policy |
| PMU | Contributions to the work of the hub | Global Hub on Indigenous Food Systems (hosted by FAO) | Research/Policy |

Table 9. Internal cross-CGIAR collaborations

| Col. 1 | Col. 2 | Col. 3 |
|--|--|---|
| Brief description of the collaboration | Name(s) of collaborating CRP(s), Platform(s), or Center(s) | Optional: Value added, in a few words e.g., scientific or efficiency benefits |
| FTA co-organized and supported a workshop on Measuring the Impact of Integrated Systems Research , with PIM and WLE . The workshop focused on tacking stock of recent experiences and reviewing existing and new tools and approaches with the potential to overcome challenges faced when assessing the impact of integrated systems research. | PIM, WLE | |
| FTA collaborated with the Gene Bank Platform , contributing knowledge that supports diversification of food systems through integrating nutrient rich orphan crops into current food systems with a range of outputs: Characterization of genotypes and phenotypes, and cultivar development of trees and crops, including African Orphan Crops with enhancement using genomics and business model development focusing on food trees but also including other functional uses. | Gene Bank Platform | |
| Contributions to Resource Center of the CGIAR Gender Platform | Gender platform | Enhancing visibility of FTA research |
| FTA Director was nominated as member of the management team of the CGIAR COVID-19 Hub leading Working Group 4 of the hub on “addressing food systems fragility and build back better”, which is preparing a study on the impacts of COVID-19 on food systems and their actors, using available sources. | A4NH, IFPRI, ILRI | |
| FTA produced together with PIM a global review of agroecologically conducive policies . It was then discussed in a webinar for which >1600 people registered. | PIM | |

Table 10. Monitoring, Evaluation, Learning and Impact Assessment (MELIA)

| Studies/learning exercises planned for this year (from POWB) | Status | Type of study or activity | Description of activity / study | Links to MELIA publications |
|--|-----------|--|---|---|
| S3352 - Ex-Ante Impact Assessment of the project Provision of Adequate Tree Seed Portfolios in Ethiopia (PATSP0) | Completed | Ex-ante, baseline and/or foresight study | The project Provision of Adequate Tree Seed Portfolios in Ethiopia (PATSP0) supports the tree seed sector in Ethiopia to produce quality seeds, as a service to a range of follow-up projects that realize the national Climate-Resilient Green Economy Strategy, and the commitment to restore 20 million ha of degraded land. ICRAF commissioned an Ex-Ante Impact Assessment of PATSP0 with the intent to project the impact of improving tree genetics in order to help demonstrating this value to relevant stakeholders. The methodology entailed generating and comparing scenarios for plantation of Business-As-Usual and High-Quality Tree Genetic resources by the mentioned follow-up projects. | https://doi.org/10.1016/j.dib.2021.107073 https://doi.org/10.1007/s11027-021-09954-5 |
| S3742 - Assessment of the socioeconomic impact of applying appropriate diversity of selected species for relevant land restoration options in Ethiopia and other areas of Africa | Completed | Synthesis (secondary) study | Based on the review of flagship outcomes 2017-2019(20), and the ex-ante impact assessment of PATSP0, the potential impact of applying appropriate diversity of selected species for relevant land restoration options in Ethiopia and other areas of Africa, will be assessed by identifying the possible deployment of the portfolios in environmentally stratified land restoration options across the study area; and by overlaying with demographic data to estimate the potential reach of end-users implementing land restoration. The assessments consider mitigation (including environmental values like carbon sequestration, and soil and water conservation), as well as adaptation-related impacts (including (bio)diversification, climate suitability, and biodiversity concerns) and social and economic returns. | https://www.researchgate.net/publication/357182663_Priority_landscapes_for_tree-based_restoration_in_Ethiopia |
| S3753 - Final evaluation of the Global | Completed | Program/project evaluation/review | This final evaluation review covered Phase 3 (2016-2020) of the Norad funded CIFOR led Global | https://www2.cifor.org/wp-content/uploads/sites/14/2021/06/GCS- |

| Studies/learning exercises planned for this year (from POWB) | Status | Type of study or activity | Description of activity / study | Links to MELIA publications |
|--|-----------|---------------------------------|--|---|
| Comparative Study (GCS) of REDD+, phase 3 | | | Comparative Study for achieving effective, efficient and equitable REDD+ results (GCS REDD+), including priority setting, research design, implementation, and ongoing engagement processes. Phase 3 focused on eight priority countries, each with different focuses. Half of the countries in Phase 3 (DRC, Ethiopia, Guyana and Myanmar) were new to the project. | Part-1-Final-Evaluation-Report-2021.pdf |
| S3756 - Are behavioral-informed interventions cost-effective in inducing more impactful agroforestry adaption? | On-going | Other MELIA activity | This effectiveness study, carried out under the Shrubs for Change project, is testing whether a sliding subsidy mechanism is cost-effective in supporting farmers uptake significant numbers of fodder shrubs on their farms. | |
| S3757 - Trees for Food Security Programme (T4FS) Impact assessment | On-going | EPIA: Ex-post Impact Assessment | This is an impact assessment of T4FS's community level interventions in Rwanda. | |
| S3758 - Assessing the impacts of improved fruit trees on food security, nutrition and incomes of smallholder farmers in Malawi | On-going | EPIA: Ex-post Impact Assessment | Multiple FTA projects have supported smallholder farmers in Malawi to establish fruit tree orchards, with the aim of diversifying their production systems income streams and bolstering food and nutritional security. This quasi-experimental impact evaluation will compare households with fruit tree orchards and similar households without to assess differences in food security and income related variables. | |
| S3762 - Evaluating the restoration of the commons in India | Completed | EPIA: Ex-post Impact Assessment | Quasi-experimental impact evaluation of a CGIAR research informed intervention model focusing on the tenets of collective action and property right implemented by the Foundation for Ecological Security in India. | http://www.indiaenvironmentportal.org.in/files/file/Can%20restoration%20of%20the%20commons%20foster%20resilience.pdf |

| Studies/learning exercises planned for this year (from POWB) | Status | Type of study or activity | Description of activity / study | Links to MELIA publications |
|--|-----------|---|--|---|
| S3773 - Integration Study to assess FTA Contribution to the protection of forests and reduction of deforestation | Completed | Qualitative Outcome Study: (mainly to substantiate contribution to policy or similar) | In 2020, FTA launched five studies to assess the extent to which the program has contributed to solving five key global challenges since its inception in 2011: 1: Accelerating rates of deforestation and forest degradation; 2: High prevalence of degraded land and ecosystem services; 3: Unsustainable land use practices widespread; 4: Persistent rural poverty with increasing levels of vulnerability; and 5: Rising demand and need for nutritious food for both current and future generations. This report addresses FTA contributions to Challenge 1. | https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-1_Final-Report.pdf |
| S3774 - Integration Study to assess FTA Contribution to the improvement of food security and nutrition through forests, trees and agroforestry | Completed | Qualitative Outcome Study: (mainly to substantiate contribution to policy or similar) | In 2020, FTA launched five studies to assess the extent to which the program has contributed to solving five key global challenges since its inception in 2011: 1: Accelerating rates of deforestation and forest degradation; 2: High prevalence of degraded land and ecosystem services; 3: Unsustainable land use practices widespread; 4: Persistent rural poverty with increasing levels of vulnerability; and 5: Rising demand and need for nutritious food for both current and future generations. This report addresses FTA contributions to Challenge 5, Rising demand and need for nutritious food for both current and future generations. | https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-5_Final-Report.pdf |
| S3775 - Impact of COVID on Community forest enterprises | Completed | Correlates of adoption/impact study | Many rural businesses have been impacted by COVID in developing countries. Impact has been severe particularly on small enterprises. The ongoing study explores the impact of COVID on community forest enterprises in Southern Cameroon. It examines the impact of COVID on about 10 enterprises (about 9 months after the onset of the COVID pandemic) from a business, social and environmental perspective .. Attention is also given to the impacts on women and youth in the communities. | https://worldagroforestry.org/publication/effect-covid-19-rural-community-enterprises-case-community-forest-enterprises-cameroon |

| Studies/learning exercises planned for this year (from POWB) | Status | Type of study or activity | Description of activity / study | Links to MELIA publications |
|--|-----------|---|--|---|
| S3777 - Integration Study to assess FTA Contribution to the reduction of rural poverty, and improved livelihoods | Completed | Qualitative Outcome Study: (mainly to substantiate contribution to policy or similar) | In 2020, FTA launched five studies to assess the extent to which the program has contributed to solving five key global challenges since its inception in 2011: 1: Accelerating rates of deforestation and forest degradation; 2: High prevalence of degraded land and ecosystem services; 3: Unsustainable land use practices widespread; 4: Persistent rural poverty with increasing levels of vulnerability; and 5: Rising demand and need for nutritious food for both current and future generations. This report addresses FTA contributions to Challenge 4, Persistent rural poverty with increasing levels of vulnerability. | https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-4_Final-Report.pdf |
| S3778 - Integration Study to assess FTA Contribution to the restoration of degraded lands | Completed | Qualitative Outcome Study: (mainly to substantiate contribution to policy or similar) | In 2020, FTA launched five studies to assess the extent to which the program has contributed to solving five key global challenges since its inception in 2011: 1: Accelerating rates of deforestation and forest degradation; 2: High prevalence of degraded land and ecosystem services; 3: Unsustainable land use practices widespread; 4: Persistent rural poverty with increasing levels of vulnerability; and 5: Rising demand and need for nutritious food for both current and future generations. This report addresses FTA contributions to Challenge 2, High prevalence of degraded land and ecosystem services. | https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-2_Final-Report.pdf |
| S3779 - Integration Study to assess FTA Contribution to the sustainable management of land and natural resources for productive and resilient landscapes | Completed | Qualitative Outcome Study: (mainly to substantiate contribution to policy or similar) | In 2020, FTA launched five studies to assess the extent to which the program has contributed to solving five key global challenges since its inception in 2011: 1: Accelerating rates of deforestation and forest degradation; 2: High prevalence of degraded land and ecosystem services; 3: Unsustainable land use practices widespread; 4: Persistent rural poverty with increasing levels of vulnerability; and 5: Rising demand and need for | https://www.cifor.org/publications/pdf_files/FTA/FTA-Integrative-Studies_Challenge-3_Final-Report.pdf |

| Studies/learning exercises planned for this year (from POWB) | Status | Type of study or activity | Description of activity / study | Links to MELIA publications |
|---|-----------|-----------------------------------|---|---|
| | | | nutritious food for both current and future generations. This report addresses FTA contributions to Challenge 3, Unsustainable land use practices widespread. | |
| S3780 - Forest Law Enforcement, Government and Trade – Voluntary Partnership Agreement (FLEGT – VPA) Impact Studies: Global and Country-Level results to date | On-going | Program/project evaluation/review | Forest Law Enforcement, Government and Trade – Voluntary Partnership Agreement (FLEGT – VPA) Impact Studies: Global and Country-Level results to date | |
| S3782 - Series of Stories of Change demonstrating the Global Comparative Study (GCS) REDD+ (phase 3) results at national level | Completed | Other MELIA activity | Series of Stories of Change demonstrating the Global Comparative Study (GCS) REDD+ (phase 3) results at national level | https://www2.cifor.org/gcs/publications/stories-of-change/ |

Table 11. Update on Actions Taken in Response to Relevant Evaluations

| Name of the evaluation | Rec N. | Recommendation | Status of response | Concrete actions taken | By whom | By when | Evidence |
|---|--------|--|--------------------|------------------------|---------|---------|----------|
| CGIAR Research Program 2020 Reviews: Forests, Trees and Agroforestry. | 1 | FTA should ensure that current overall high scientific productivity and implementation performance continues until the end of 2021 by taking measures to keep program-level staff and program partners informed, motivated, and involved. | | | | | |
| CGIAR Research Program 2020 Reviews: Forests, Trees and Agroforestry. | 2 | FTA should continue its scientific contributions to emerging and important global issues at the policy and project design levels as well as development implementation levels. These issues include gender, food security, agroecology, climate change, climate finance, value chains, and biodiversity conservation. | | | | | |
| CGIAR Research Program 2020 Reviews: Forests, Trees and Agroforestry. | 3 | FTA should do more targeted communication and dissemination of research findings to different audiences especially in developing countries. FTA should go beyond global communications via Twitter, blogs, and news outlets to more focused dissemination in different relevant regional and national platforms and networks. Let more development practitioners, NGOs, decision-makers, and researchers from developing countries know that most of FTA's publications are open access. | | | | | |

| Name of the evaluation | Rec N. | Recommendation | Status of response | Concrete actions taken | By whom | By when | Evidence |
|---|--------|--|--------------------|--|---------|---------|---|
| CGIAR Research Program 2020 Reviews: Forests, Trees and Agroforestry. | 4 | FTA should find ways to conserve and protect the significant value-added it has built as a program beyond 2021, within or outside One CGIAR. This includes key staff currently financed from W1/W2 resources, FTA governance and management arrangements and related lessons learned, and the important personal and institutional relationships between FTA partners and their staff. | | | | | |
| CGIAR Research Program 2020 Reviews: Forests, Trees and Agroforestry. | 5 | FTA should ensure timely synthesis and continued availability of its legacy in terms of knowledge and tools from phases I and II. | Addressed | FTA published a Highlights series showcasing the main findings, results and achievements of FTA, from 2011 to 2021 and featuring the work undertaken as part of the FTA program, by the strategic partners of FTA and/or with other international and national partners, across a range of projects and initiatives, organized around a set of operational priorities. | | | https://www.foreststreesagroforestry.org/fta-highlights-of-a-decade-2011-2021/ |
| CGIAR Research Program 2020 Reviews: Forests, Trees | 6 | FTA should continue the ongoing end-of-program impact estimation work in a pragmatic and end-product-oriented manner that ensures that relevant findings will be available and can be effectively | Addressed | A set of 5 impact studies was completed in 2021. The studies focused on documenting progress | | | https://www.foreststreesagroforestry.org/fta-integrative-studies/ |

| Name of the evaluation | Rec N. | Recommendation | Status of response | Concrete actions taken | By whom | By when | Evidence |
|---|--------|---|--------------------|---|------------------------|----------|----------|
| and Agroforestry. | | communicated before the program ends in 2021. In addition to the current approach based on building estimates from the bottom up using specific but mostly project-level evidence, qualitative evaluation approaches could be useful for triangulation because of their ability to directly estimate progress made at a more aggregated level. To this end, a broad FTA boundary partner survey and qualitative self-assessments by FTA staff such as those conducted for this review could be options. | | of the program's contribution in addressing key global challenges. | | | |
| Evaluation of Capacity Development (CapDev) activities of CGIAR | 4 | Centers and CRPs should build on successful partnership approaches, such as the facilitation of collaborative multi-stakeholder networks and multi-donor programs and platforms, to ensure that CapDev has the required long-term perspective and is relevant to and owned by the stakeholders and entities that strengthen their capacities | Ongoing | Being considered in the implementation of CapDev activities. | CapDev thematic lead | Dec 2021 | |
| Evaluation of Gender in Research and in CGIAR workplace | 10 | CRPs should individually and jointly invest in improving and institutionalizing systems for monitoring outputs, as well as effectiveness and outcomes of gender research. | ongoing | FTA has commissioned an evaluation of its gender research which is currently being finalized. This recommendation is being addressed in that context. | MT, MELIA, gender lead | Dec 2021 | |

| Name of the evaluation | Rec N. | Recommendation | Status of response | Concrete actions taken | By whom | By when | Evidence |
|--|--------|---|--------------------|--|------------------|----------|----------|
| CRP evaluation of Forests, Trees, and Agroforestry | 4 | The Evaluation Team recommends that FTA further develops its results framework and impact pathways into a comprehensive theory of change, and a framework for results-based management that explicitly acknowledges windows for opportunistic and blue-sky research. Based on this framework, FTA must then initiate active management of its entire research portfolio, including increased selectivity with regard to mapping bilaterally funded projects to the program. | Ongoing | FTA is currently revisiting its impact pathways and end of program outcomes. A workshop on impact assessment was organized with the ISC reviewing impact pathways and end of program outcomes. The results of the workshop have been taken into account in the preparation of the POWB. | FTA Director, MT | Dec 2021 | |
| | 5 | As part of the preparations for FTA's second phase proposal, the Evaluation Team recommends that the FTA Steering Committee re-assesses the relevance and the financial sustainability of the current set of Sentinel Landscapes, and adapt the entire approach to Sentinel Landscapes in the FTA Phase II Proposal accordingly. | Ongoing | Science workshop on Sentinel Landscapes was held in Dec 2017. In 2018 a special workshop was held to decide the way forward for Sentinel Landscapes. Three stocktake studies have been finalized. Their results are being integrated in the adaptation of the Sentinel Landscapes towards collocation of research. | MT | Dec 2021 | |
| | 7 | The Evaluation Team recommends that FTA increases and makes more systematic | Ongoing | FTA has strengthened institutional relations | FTA Director | Dec 2021 | |

| Name of the evaluation | Rec N. | Recommendation | Status of response | Concrete actions taken | By whom | By when | Evidence |
|------------------------|--------|--|--------------------|---|-------------------------|---------|----------|
| | | <p>its efforts to reach out to and involve partners on all levels: program donors, relevant actors of strategic importance for FTA, and boundary partners. FTA must further increase its efforts to include boundary partners into research priority setting, design, and implementation, develop their capacity, and ensure that FTA results targets respond to concrete needs of development partners.</p> | | <p>with key policy partners such as FAO, key international NGOs such as WWF, as well as with upstream research organizations such as IUFRO. This takes the form of joint scientific work and also joint engagement work. Examples include joint organization of events, co-publications, etc. FTA will seek to engage strategic national partners and consult them on options for post 2021</p> | <p>FP Leaders , ISC</p> | | |

Table 12. Examples of W1/2 use in this reporting period (2021)

Remark: the Table below list a few examples, and is not exhaustive of all activities and outputs funded by W1W2. A full list of the activities and outputs funded by W1W2 in 2021 (close to 300 individual items) is available from the lead center.

| Col. 1 | Col. 2 |
|--|---|
| <p>Please give specific examples, one per row (including the setting aside of strategic research funds or partner funds)</p> <p>Max. 50 words/example, but please aim for 30</p> | <p>Select the broad area of use of W1/2 from the categories below - (drop down)</p> <p>Select only one category</p> |
| Diversity for Restoration methodology rolled out across multiple countries. Data and decision-support tools for species conservation and restoration. | Research |
| A species selection tool for selection of suitable species of bamboo and rattan for land restoration and product development | Delivery |
| Sequencing and genome mapping of orphan crops with applications for breeding. A new pipeline to suit genome sequencing on NovaSeq equipment, sequencing of Shea, a QTL linkage map for economic traits of Solanum aethiopicum, and 2 genome sequence databases and publications. | Research |
| Contributions to the UN Food Systems Summit Event and the WorldForestry Congress | Policy |
| Development of market-based agroforestry options | Delivery |
| Developing livelihood trajectory modelling capacity and tools | Research |
| Developing diversification options for tree-crop commodity production systems | Research and delivery |
| Case study Innovative finance mechanisms for landscape-oriented investments | Research |
| Rubber resilience study - Analysis of the current situation and price crisis on natural rubber value chains and their actors in Indonesia | Research |

| Col. 1 | Col. 2 |
|--|---|
| <p>Please give specific examples, one per row (including the setting aside of strategic research funds or partner funds)</p> <p>Max. 50 words/example, but please aim for 30</p> | <p>Select the broad area of use of W1/2 from the categories below - (drop down)</p> <p>Select only one category</p> |
| Impact of the socio-economical contexts of Costa Rica and Nicaragua on their secondary forest dynamics technical publication and policy briefs, | Research and Policy |
| Analysis on Land Tenure, rights and equity | Research |
| Impact assessment of global jurisdictional approaches | Policy |
| Circular Bioeconomy TPP- a transformative partnership platform to convene the CBA: | Partnership |
| Bioenergy from degraded land | Research and delivery |
| The nexus between restoration and bioenergy supply in Africa: Reaching out to policy makers and practitioners | Capacity Development |
| Publishing a journal special issue containing 6 scientific articles focusing on the interactions between people, ecosystems and resilience from an ecosystem-based adaptation | Research |
| Generation of a series of gender specific communication products for a diverse audience: blogs, audio-visual products, infographics, printed materials; newsletters | Cross-Cutting_Gender |
| Gender analysis of women's land rights in targeted countries | Cross-Cutting_Gender |
| Training of trainers for gender-responsive design and implementation of agroforestry concessions in Peru | Capacity development |
| WLE/PIM/FTA Workshop on Landscape/system level impact assessment methodologies | MELIA |
| Integration Study to assess FTA Contribution to the sustainable management of land and natural resources for productive and resilient landscapes | MELIA |

| Col. 1 | Col. 2 |
|--|---|
| <p>Please give specific examples, one per row (including the setting aside of strategic research funds or partner funds)</p> <p>Max. 50 words/example, but please aim for 30</p> | <p>Select the broad area of use of W1/2 from the categories below - (drop down)</p> <p>Select only one category</p> |
| FTA highlights of a decade series: 18 volumes to synthesize key results and achievements of 10 years of FTA research for development | Research and MELIA |
| Asia-Pacific Roadmaps for primary forests and for innovative forest technologies | Research and Policy |
| Mainstreaming biodiversity into forest management | Policy |

Note on Column 2: Explanation and some examples to help with categorization:

While understanding that some activities fall into several categories, it is still convenient for system-level presentation to divide the results by main category.

If a choice must be made, it is usually preferable to select a more specific category (towards the top of the list) rather than a phase of research (bottom of list).

- **Policy:** Sole or partial funding source for dissemination of findings, learning from evidence etc. For example, policy workshops, contracts with partners working on policy etc.
- **Partnerships:** Start-up and maintenance of partnerships.
- **Capacity development:** Any activities reported under the capdev indicator.
- **Other cross-cutting issues:** Gender, youth, climate change, e.g., funding research projects tagged as 'principal' for one of these; funding cross-cutting work by the Program Management Unit; funding specific gender/youth/Climate Action 'add ons' to other projects. *In each case, it should be obvious from the title of the activity what the cross-cutting issue is.*
- **Other monitoring, learning, evaluation and impact assessment (MELIA) activities:** Activities covered under the MELIA section of this reporting template.
- **Contingency/emergency:** E.g. immediate unplanned response to a new virulent disease, or moving germplasm collections as a result of conflict.
- **Pre-start up:** Conceptualization, design, ex-ante analysis before research start-up; For example: foresight, ex-ante studies, building theories of change, proof of concept studies for novel areas of work. However, start-up meetings with partners should normally be tagged as 'partnerships'.
- **Research:** Sole or partial funding source for a research line or significant research activity.
- **Delivery:** Funding for any specific gender/youth/Climate Action 'add ons' to other projects.
- **Other, please specify _____**

etc.)

Table 13. CRP Financial Report

| Expenses by Natural Classification | FTA 2021 |
|---|-----------------|
| Personnel Costs | 2,226 |
| CGIAR Collaboration Costs | 6,443 |
| Other Collaboration Costs | 2,743 |
| Supplies and Services | 3,063 |
| Operational Travel | 80 |
| Depreciation/Amortization | - |
| Cost Sharing Percentage | - |
| Sub-total Direct Costs | 14,555 |
| Indirect Costs | 411 |
| Total Costs | 14,966 |
| Deferred depreciation | - |
| Grand Total - All Costs | 14,966 |

Annexes

Annex 1. End-of-Program Outcome Assessment

In 2021, FTA completed a set of studies focused on documenting progress of the program's contribution in addressing key global challenges.⁷ The results of these studies provided an opportunity to carry out an end of program outcome assessment. Using the four end-of-program outcomes laid out in FTA's Phase II proposal (FTA, 2016) as a basis for the assessment, the MELIA team looked at the extent to which FTA's intended contributions were realized through projects conducted across the five thematic challenges. While the challenges were identified and framed for the purpose of this evaluation and were not conceptualized at the time when FTA's end-of-program outcomes were decided in 2016, the end-of-program outcomes were considered useful target indicators to assess against.⁸ The end-of-program outcomes qualify what changes should be observable at this point in time and are expected to lead to potential impacts. The results of the assessment are included in Table 14 below and can be summarized as follows.

Contributions to the Realization of End-of-Program Outcome #1: *25 countries improve governance mechanisms, institutions & tools for a) safeguarding forests/tree diversity and b) equitably managing forests & trees within mosaic landscapes*

FTA exceeded its first end-of-program outcome target, contributing to over 475 policies, strategies, frameworks, guidelines, action plans, development plans, land use plans, agreements, and governance arrangements at multiple levels (i.e., international, regional, national, sub-national) to address deforestation and protect forested lands, support restoration and conservation of ecosystem services, govern more sustainable landscape management, reduce poverty and support forest and agroforestry-based value chains, and enhance food security and nutrition across 34 countries. The majority of FTA's policy influence was achieved in Africa (>290 policies) and Asia (>160 policies). Some notable examples include contributions to:

- The UNFCCC's strategy for wetland management
- 25 national policies and strategies for REDD+ in 11 countries (Peru, Brazil, Ghana, DRC, Cameroon, Ethiopia, Tanzania, Indonesia, Vietnam, Laos, Philippines)
- The integration of incentive schemes (e.g., PFES, RES) into 24 national and sub-national policies, directives, protocols, governance arrangements, and/or land use plans in 4 countries (Indonesia, Philippines, Vietnam, China)

⁷ <https://www.foreststreesagroforestry.org/fta-integrative-studies/>

⁸ Even though these were originally designed with the understanding that the program would finish in 2022 while FTA, and all other CGIAR Research Programs ended in 2021.

- >100 community action plans, sub-catchment plans, and national policies for dryland management in 5 countries (Ethiopia, Kenya, Mali, Niger, Burkina Faso)
- National and sub-national policies for fire and haze prevention (Indonesia)
- Green Growth Action Plan (Vietnam)
- Revised forest policy, regulations for legal timber, and timber sector industrialization plan (Cameroon)
- National strategies for bamboo market development and restoration of degraded land in 4 countries (Ghana, Kenya, Madagascar, Uganda)
- The integration of agroforestry in cross-sectoral national, sub-national, and local policies and strategies for livelihoods and trade in 7 countries (Ethiopia, Ghana, Indonesia, Kenya, Madagascar, Uganda, Vietnam)
- 5 national agroforestry policies and strategies to support rural development and livelihoods in 4 countries (Ethiopia, Rwanda, India, Nepal)
- 13 ASEAN policies, strategies, guidelines, and tools for agroforestry-based climate change management
- 14 national forest laws, policies, and guidelines for agroforestry management in 8 ASEAN member states (Indonesia, Philippines, Thailand, Vietnam, Cambodia, Myanmar, Laos, Malaysia)
- Agroforestry concession implementation (Peru)
- Revised technical norms for community forest concession renewal (Guatemala)

FTA researchers were able to channel research findings into policy processes through active participation in policy dialogues, technical working groups, and policy development and implementation processes. FTA's technical inputs, data, and evidence-based recommendations were valuable contributions to support context-appropriate decision-making, develop new policies, and reform or revise existing governance mechanisms. International bodies and government actors adopted FTA tools (e.g., step-wise approach, MMRV, LUWES, vegetationmap4africa, integrated watershed management approach, Borneo/Papua Atlases, etc.) to guide decision-making and monitoring practices to safeguard forest and tree diversity and manage diverse landscapes. In addition, many FTA researchers were invited to join or were involved in upwards of 20 working groups, task forces, and/or governance platforms. FTA also helped to establish and facilitate many of these platforms to enhance governance and strengthen institutions. FTA also played a crucial role in convening government staff and other diverse stakeholder groups in workshops, multi-stakeholder fora, and South-South exchanges to share knowledge and research findings, co-generate solutions and recommendations, and build coalitions and partnerships. The diverse training FTA provided to policy-makers and governments staff strengthened institutional capacities for MMRV and carbon accounting, tenure reform, integrated landscape planning, policy implementation, and forest monitoring, among others.

Contributions to the Realization of End-of-Program Outcome #2: *About 20 multinational companies and 500 private sector actors pursue models & investments for a) improved management. & safeguarding of forest & tree resources and b) enhancement of inclusive landscape-based livelihoods & ecosystem services*

FTA achieved over 200 percent of its second end-of-program outcome target, influencing the decision-making, investments, pilots, and/or practices of at least 44 companies, 4,271 SMEs, and over nearly 8,500 private sector actors to better manage and monitor natural resources, safeguard ecosystem services, and support inclusive, equitable, and sustainable livelihoods. Most of FTA's influence on companies and SMEs is concentrated in Africa, while the majority of other types of private actors (e.g., farmer/producer groups) were localized in Asia. Influence through private sector certification bodies (e.g., RSPO), private sector platforms, and farmer/producer associations supported far-reaching knowledge-sharing, capacity-building, and practice change for more environmental commitments, sustainable business models, and natural resources management (NRM). There is growing interest within the private sector, both at the industrial and small-scale, to uphold zero-deforestation commitments, promote gender and inclusion and pursue green value chains, but actions are slow to manifest (Reed et al., 2020)

Contributions to the Realization of End-of-Program Outcome #3: *National and sub-national public & private sector actors in 25 countries deliver more effective & equitable tree related breeding, delivery, extension & pedagogical services*

FTA also exceeded its third end-of-project outcome target, equipping public and private sector actors to provide tree-related breeding support and deliver more effective extension and pedagogical services to support the sustainable management of landscapes and natural resources across 29 countries. Through capacity-building and technical support, FTA trained over 40,000 government officers, extensionists, and NGO staff to build new and enhance existing skills in participatory governance and tenure reform, rewards scheme implementation, land use planning, conservation, NRM, SFM, dryland management, wetland management, management of trees on farms, and/or landscape monitoring, among others. These supports translated to enhanced practice and extension delivery. FTA also helped establish or influence over 800 nurseries and/or farmer learning groups in order to provide better access to seeds and climate-resilient tree species and extension. This outcome was also supported by the implementation and expansion of governmental programmes; for example, five national restoration programmes across Peru, Colombia, Madagascar, Cameroon, and Kenya adopted and applied Diversity for Restoration (D4R) tool to inform locally-appropriate restoration decisions. FTA also helped equip governments and NGOs to implement and maintain pilots, farm demonstration trials (FDT), and exemplar landscapes (EL) in the long-term. In Cameroon and the DRC, FTA collaborated with governments and NGOs to provide pedagogical supports to the wider public on

community forestry arrangements, SFM, tree-planting for restoration, agroforestry, timber legality, and NTFPs via different public outreach strategies. Collectively, these outreach strategies, which included educational programmes in schools, learning centres, and public campaigns reached over 400,000 students, community members, and/or the general public to share knowledge and build awareness.

Contributions to the Realization of End-of-Program Outcome #4:

At least 40 million smallholders & other users access more productive tree planting material & uptake higher performing, context appropriate & inclusive AF & small-scale forestry management. options

FTA did not meet yet its fourth end-of-program outcome through the efforts addressing the five challenges. Evidence indicates that at least 2,970,672 people and/or households across 30 countries are better equipped to access, take up, and apply more productive tree-planting material and/or higher performing context-appropriate agroforestry and other landscape management practices as a result of FTA's training and engagements. The majority of this capacity-building was concentrated in Africa (1.2 million people/households) and Asia (1.75 million people/households). Projects with participatory and experiential learning activities, tailored knowledge-sharing and engagement, and dedicated capacity-building for communities increased the likelihood for adoption and sustainable practice change. Pilots, FDT, and EL were particularly effective means to support community learning; showcase the viability of different technologies, landscape approaches, as well as management and practice options that could be applied to the local context; build the necessary skills or support the conditions needed for adoption and uptake by farmers and producers. In some cases, FTA's training served to equip farmers for farmer-to-farmer extension or spread their learning and transfer their skills to other farmers or producers. Ongoing support and commitment of NGO partners in the target communities were key, and increased the potential for scaling in nearby communities and other regions. While these strategies worked well, overall, FTA fell well below its intended target of 40 million people. Many of the pilots, FDT, and EL were implemented on a small-scale (e.g., several 10 ha plots in Cameroon and the DRC for SFM; six 50 ha plots in Vietnam for son tra), which were insufficient to broaden reach for uptake of FTA's technologies or innovations into the millions. While the challenge-level reports present the potential for future uptake and scaling of FTA's contributions, these potentials have not been realized by the end of the program. There were some success stories, such as the larger-scale Drylands Development Programme implemented across Ethiopia, Kenya, Mali, Niger, and Burkina Faso which reached and led to the adoption of locally-relevant technologies and practices in dryland areas by almost 220,000 people.

Table 14. Extent to which the five challenges contributed to the realization of FTA’s end-of-program outcomes

| | |
|---|--|
| <p>End-of-Program Outcome #1</p> <p>25 countries improve governance mechanisms, institutions & tools for a) safeguarding forests/tree diversity and b) equitably managing forests & trees within mosaic landscapes</p> | |
| <p>Contributions to Outcome Realization</p> | <p>Global</p> |
| | <ul style="list-style-type: none"> • Convention on Biodiversity COP12 decision to consider genetics in restoration to safeguard tree diversity (implications for 196 countries) (Challenge 2) • Informed international climate negotiations for a global REDD+ agreement (Challenge 1, Challenge 2, Challenge 3) • Inclusion of tenure in UN-REDD Strategy Framework (Challenge 1, Challenge 2, Challenge 3) • UNFCCC adopts FTA’s step-wise approach to set, measure, and report REL (implications for 197 signatory countries; uptake in Guyana, Ethiopia, and Indonesia) (Challenge 1, Challenge 2, Challenge 3) • Established south-to-south knowledge exchange platforms for tenure reform (Peru, Uganda, Indonesia) (Challenge 3, Challenge 4) • Enhanced horizontal and vertical interactions between stakeholders for decision-making (Challenge 1, Challenge 2, Challenge 3, Challenge 4) • Better representation and empowerment of women, youth, and indigenous groups in landscape governance and use of natural resources (Challenge 1, Challenge 3, Challenge 4) • Advanced global research agenda on environmental income for livelihoods (Challenge 4) • Influenced multilateral strategies on environmental income for livelihoods (World Bank, UNEP, IFAD, FAO) (Challenge 4) • Inclusion of forests’ contributions to livelihoods into multi-lateral policy and practice (World Bank) (Challenge 4) • Supported development of the Green Climate Fund’s (GCF) sectoral guidance for ecosystems, land use and forestry and Learning-Oriented Real-Time Impact Assessment (LORTA) initiative (Challenge 1, Challenge 2, Challenge 3) • Informed the UNFCCC strategy for sustainable wetland management (Challenge 1) • Contributed to the Task Force on National Greenhouse Gas Inventories (Challenge 1) • Informed the Wetland Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Emissions (Challenge 1) |
| | <p>Latin America (5 countries)</p> |
| | <ul style="list-style-type: none"> • Supported 7 national and sub-national policies, strategies, and plans for REDD+ (Peru, Brazil) (Challenge 1, Challenge 2, Challenge 3) • Enhanced institutional capacity for MMRV (Peru) (Challenge 1, Challenge 2, Challenge 3) • Supported tenure reform processes (Peru) (Challenge 3, Challenge 4) • Enhanced institutional capacity for AFC implementation (Peru) (Challenge 1, Challenge 2, Challenge 3, Challenge 4) • Revised regulations for timber and Brazil nut management (Peru) (Challenge 3) • Supported legislative proposal and guidelines on forest plantations and policy (Peru) (Challenge 2) • MOU signed between ICRAF and MINAM during COP20 to enhance commitments for preservation of forest lands and ecosystems from degradation (Peru) (Challenge 2) • Adoption of LUWES for land use planning (Peru) (Challenge 1, Challenge 2, Challenge 3) |

| |
|--|
| <ul style="list-style-type: none"> • Revised technical norms for community forest concession renewal (Guatemala) (Challenge 1, Challenge 3, Challenge 4) • Integration of TonF in National Biodiversity Strategy (Honduras) (Challenge 3) • Established multi-stakeholder platforms for TonF (Nicaragua, Honduras) (Challenge 3) |
| <p>Africa (18 countries)</p> |
| <ul style="list-style-type: none"> • Vegetationmap4africa tool scoped as official map of recommendation domains for tree planting (Kenya) (Challenge 2) • Advised technical working group for OECD Scheme for Certification of Forest Reproductive Material Moving in International Trade (Kenya, Uganda) (Challenge 2) • Supported 9 national policies, plans, and programmes for REDD+ (Ghana, DRC, Cameroon, Ethiopia, Tanzania) (Challenge 1, Challenge 2, Challenge 3) • Established national MRV and safeguards information systems (Ethiopia) (Challenge 1, Challenge 2, Challenge 3) • Enhanced institutional capacity for MMRV (Cameroon, Ethiopia, Guyana) (Challenge 1, Challenge 2, Challenge 3) • Supported tenure reform processes (Uganda) (Challenge 3, Challenge 4) • Informed National Niassa Reserve Community Development and Management Strategy (Mozambique) (Challenge 1, Challenge 3) • Informed integrated development plan for Yangambi Biosphere Reserve and preparation of local development plans (DRC) (Challenge 1, Challenge 3) • Supported revisions of Ministerial Order for forest governance (DRC) (Challenge 1) • Informed national forestry laws and implementation of regulations (Cameroon, Gabon, DRC) (Challenge 1) • Co-developed 110 community action plans and sub-catchment plans for dryland management (Ethiopia, Kenya, Mali, Niger, Burkina Faso) (Challenge 2, Challenge 3, Challenge 4) • Adoption of sub-catchment approach in national watershed management plan (Ethiopia) (Challenge 2, Challenge 3, Challenge 4) • Informed dryland management decisions in 3 national policies and programmes (e.g., Irrigation Act in Kenya; Land Act in Mali; National Regreening Programme in Ethiopia) (Challenge 2, Challenge 3, Challenge 4) • Ratified 3 agreements with national agencies (DRC, Congo, Gabon) to establish a regional forest monitoring framework (Challenge 1, Challenge 3) • Informed roadmap and cooperation framework for Congo Basin Forest Partnership (Challenge 1, Challenge 3) • Informed FLEGT-VPA negotiations with European Commission (Cameroon) (Challenge 1, Challenge 3, Challenge 4) • Informed timber sector industrialization plan (Cameroon) (Challenge 1, Challenge 3) • Revised forest law to include regulations for domestic markets (Cameroon) (Challenge 1, Challenge 3) • Informed conjoint decree for use of legal timber in public contracts (Cameroon) (Challenge 1, Challenge 3, Challenge 4) • Revised national forest control strategy to prevent illegal logging (Gabon) (Challenge 1, Challenge 3, Challenge 4) • Established Atewa Landscape platform and influenced mandate for SFM (Ghana) (Challenge 3) • Informed national climate change strategy and 2 national programmes for SFM (Ghana) (Challenge 3) |

| |
|---|
| <ul style="list-style-type: none"> • Informed national forestry and agroforestry policy and charcoal sector roadmap (Kenya) (Challenge 3, Challenge 4) • Integration of sustainable wood-fuel value chain options into county plans (Kenya) (Challenge 3, Challenge 4) • Informed National Charcoal Indaba on charcoal production and trade (Zambia) (Challenge 3, Challenge 4) • Inclusion of CFEs in national definition of social enterprises (Cameroon) (Challenge 1, Challenge 3, Challenge 4) • Threat maps for food tree species developed to support decisions for tree genetic resource safeguarding and management (Burkina Faso) (Challenge 2) • Supported establishment of National Agroforestry Platform (Ethiopia) (Challenge 3, Challenge 4) • Established National Watershed and Agroforestry Multi-Stakeholder Platform (Ethiopia) (Challenge 2, Challenge 3, Challenge 4) • Established Sustainable Grazing Platform for integration of sustainable grazing management options within agroforestry policies at local and national levels (Ethiopia) (Challenge 4) • Enhanced multi-stakeholder collaboration for sustainable management and development of bamboo for renewable bioenergy production and livelihoods (Ghana, Kenya, Madagascar, Uganda) (Challenge 4) • Supported inclusion of bamboo into 12 national policies, strategies, action plans, and regulations (Ethiopia, Ghana, Madagascar, Kenya, Uganda) (Challenge 4) • Supported inclusion of agroforestry seed in national tree seed proclamation (Ethiopia) (Challenge 2) • Enhanced multi-stakeholder collaboration on the bamboo sector development via Bamboo and Rattan Development Programme (BARADEP) (Ghana) (Challenge 4) • Informed agroforestry Strategy (Kenya) (Challenge 2) • District councils formulate by-laws to curb bushfires and reduce livestock damage to the agroforestry trees (Malawi) (Challenge 4) • Supported 120 community-based management plans for sustainable natural resources use and shared accountability (Malawi) (Challenge 4) • Informed National Agroforestry Strategy (2018–2027) (Rwanda) (Challenge 4) • Integrated forest contributions to livelihoods into National Bureau of Statistics forestry survey (Tanzania) (Challenge 4) • Informed national roadmaps for greening and design support tools (Ethiopia, Ghana, Kenya, Mali, Niger, Rwanda, Senegal) (Challenge 2, Challenge 4) |
| <p>Asia (11 countries)</p> |
| <ul style="list-style-type: none"> • Supported 9 national policies and strategies for REDD+ (Indonesia, Vietnam, Laos, Philippines) (Challenge 1, Challenge 2, Challenge 3) • Established national carbon accounting systems and safeguard information systems for REDD+ (Indonesia, Laos) (Challenge 1, Challenge 2, Challenge 3) • Enhanced institutional capacity for MMRV (Indonesia, Vietnam) (Challenge 1, Challenge 2, Challenge 3) • Supported tenure reform processes and establishment of a working group on social forestry (Indonesia) (Challenge 3) • Integration of incentive schemes (e.g., PFES, RES) into 24 national and sub-national policies, directives, protocols, governance arrangements, and/or land use plans (Indonesia, Philippines, Vietnam, China) (Challenge 1, Challenge 2, Challenge 3, Challenge 4) |

| |
|--|
| <ul style="list-style-type: none"> • Implementation of a monitoring and evaluation system for PFES (Vietnam) (Challenge 1, Challenge 3, Challenge 4) • Co-development of Strategy and Action Plan for Forest Landscape Restoration in Sarawak, outlining directives, levies, and certification requirements (Malaysia) (Challenge 2, Challenge 3) • Informed priority-setting of national Grand Strategy and 9 local strategies for integrated NTFP management (Indonesia) (Challenge 3, Challenge 4) • Supported 4 district strategies for sustainable livelihoods and conservation in Sulawesi (Indonesia) (Challenge 3) • Informed strategic district planning for environmental management in Sumbawa (Indonesia) (Challenge 3) • Revised 2 decrees for management of village forest licenses (Indonesia) (Challenge 3) • Co-developed 9 village forest management plans (Indonesia) (Challenge 3) • Informed 23 multi-level low-emissions development plans, local mitigation action plans, and/or green growth plans across several provinces for climate management (Indonesia) (Challenge 3) • National Planning Board for Development adopted LUWES tool; applied by 33 provincial governments to plan actions to reduce greenhouse gas emissions (Indonesia) (Challenge 2, Challenge 3) • 3 district-level working groups on low-emissions strategies established (Indonesia) (Challenge 3) • Government adopts integrated watershed management approach (Indonesia) (Challenge 2, Challenge 3, Challenge 4) • Supported 4 sub-national policies and/or governance arrangements for watershed management (Indonesia) (Challenge 2, Challenge 3, Challenge 4) • Established multi-stakeholder forum to manage the Rejoso Watershed (Indonesia) (Challenge 2, Challenge 3, Challenge 4) • Informed Grand Design for Fire Prevention and multiple sub-national standards, strategies, and regulations for fire management and peatland restoration (Indonesia) (Challenge 1, Challenge 2, Challenge 3) • Established multi-stakeholder forum on fire and haze (Indonesia) (Challenge 1, Challenge 2, Challenge 3) • Informed 2 sub-national regulations to manage high conservation areas in East Kalimantan (Indonesia) (Challenge 1, Challenge 3) • Informed spatial planning in West Kotawaringin (Indonesia) (Challenge 1, Challenge 3) • Uptake of FTA methods and tools by the government to inform policies for peatlands and conduct carbon inventories (e.g., below ground biomass, BRG emissions estimation from drained/burned peatland) (Indonesia) (Challenge 1) • Supported 29 indigenous peoples plans and development plans for watershed management (Philippines) (Challenge 2, Challenge 3, Challenge 4) • Informed 3 national policies for agroforestry and fruit tree solutions and 3 provincial policies for son tra (H'mong apple) development and subsidies (Vietnam) (Challenge 3, Challenge 4) • Co-developed provincial green growth action plan (Vietnam) (Challenge 2, Challenge 3, Challenge 4) • Provincial government integrates economic incentives for environmental conservation for wetlands' management (India) (Challenge 4) • Supported development of National Agroforestry Policy (India) (Challenge 4) • Informed Kathmandu Declaration on Agroforestry and National Agroforestry Policy (Nepal) (Challenge 3) |
|--|

| | |
|--|--|
| | <ul style="list-style-type: none"> • Co-developed 13 ASEAN policies, strategies, guidelines, and tools for agroforestry-based climate change management (Challenge 3) • Established working groups for social forestry, community forestry, and/or village forestry in 5 ASEAN member states (Cambodia, Laos, Myanmar, Philippines, Vietnam) (Challenge 3) • Supported 14 national forest laws, policies, and guidelines in 8 ASEAN member states (Indonesia, Philippines, Thailand, Vietnam, Cambodia, Myanmar, Laos, Malaysia) (Challenge 3) • Co-developed Guidelines for Sustainable Development of Natural Rubber (China) (Challenge 2) • Informed 2 provincial-level policy decisions for climate-smart agriculture (Vietnam) (Challenge 2, Challenge 4) • Integrated climate-smart approach on Green Agricultural Development plan at national level (Vietnam) (Challenge 4) • Integrated forest contributions into National Bureau of Statistics new forestry survey module (Indonesia) (Challenge 4) • Integrated NTFP and timber sustainable production and trade into provincial and district levels policy, strategies, and budget (Vietnam) (Challenge 4) |
|--|--|

| | |
|---|--|
| <p>End-of-Program Outcome #2</p> <p>About 20 multinational companies and 500 private sector actors pursue models & investments for a) improved mgt. & safeguarding of forest & tree resources and b) enhancement of inclusive landscape-based livelihoods & ecosystem services</p> | |
| <p>Contributions to Outcome Realization</p> | <p>Global (1 private sector certification body)</p> |
| | <ul style="list-style-type: none"> • Integration of gender considerations in RSPO Principles and Criteria (implications for all RSPO-certified companies) (Challenge 1, Challenge 3, Challenge 4) |
| | <p>Latin America (1 company, 1 producer association, 1 private sector platform)</p> |
| | <ul style="list-style-type: none"> • Trained 1 water supply company on ecosystem services and watershed management (Peru) (Challenge 3) • Adoption of live fences (TonF) in NAMA-Livestock Initiative by national livestock platform (Honduras) (Challenge 3) • Enhanced processing capacity of 1 producer association for macaúba value chain (Brazil) (Challenge 4) |
| | <p>Africa (33 companies, 3,926 SMEs, >1,570 private sector actors)</p> |
| | <ul style="list-style-type: none"> • Initiated engagement for public-private partnership for Yangambi Landscape; 2 investment funds interested to join (DRC) (Challenge 1, Challenge 3) • Established 1 business incubator for SFM (DRC) (Challenge 1, Challenge 3) • 4 public institutions and 4 construction companies commit to source legal timber supplies (DRC, Cameroon) (Challenge 1, Challenge 3) • 17 construction companies informed on legal timber supply (Cameroon) (Challenge 1, Challenge 3, Challenge 4) • 2 supply chain management companies monitor informal producers and traders in public traceability contracts (Cameroon) (Challenge 1, Challenge 3) |

- Established 34 CFEs (84 additional business cases ready for investment) equipped to self-monitor (Cameroon) (Challenge 1, Challenge 3, Challenge 4)
- 3 companies pilot business models and independent monitoring and traceability systems (Ghana) (Challenge 1, Challenge 3, Challenge 4)
- Established 3 farmer/producer associations (DRC) (Challenge 3)
- Supported formalization of 1,566 farmer groups (Ethiopia, Ghana, Kenya, Mali, Niger, Burkina Faso, Tanzania, Uganda, Zambia) (Challenge 2, Challenge 3, Challenge 4)
- CBOs support equitable and sustainable bioenergy production (Cameroon, Ghana, Kenya, Uganda) (Challenge 4)
- SMEs diversify production, develop and improve industrial bioenergy value chains to benefit women and youth (Ethiopia, Ghana, Uganda) (Challenge 4)
- Established 24 charcoal enterprises (Cameroon, Ethiopia, Ghana, Kenya, Madagascar, Tanzania, Uganda) (Challenge 4)
- Established 480 community enterprises/SMEs (Ethiopia, Ghana, Madagascar, Malawi, Tanzania, Zambia) (Challenge 4)
- Developed 43 agroforestry value chains (Burkina Faso, Ethiopia, Kenya, Mali, Niger) (Challenge 4)
- 3,384 bamboo micro-nurseries established by women (Ethiopia, Madagascar, Tanzania) (Challenge 2, Challenge 4)
- 2 SMEs adopted technology for energy-saving stoves (Ethiopia, Ghana) (Challenge 4)
- Acquired ISO TC 296 membership to supports bamboo trade to EU (Kenya, Uganda) (Challenge 4)
- 1 private company supports QPM supply (Ethiopia) (Challenge 4)
- 2 private companies reinforce local bamboo value chains (Ethiopia) (Challenge 4)
- 1 SME provided training and employment opportunities for 10,000 households in local bamboo bioenergy value chain (Ghana) (Challenge 4)
- Enhanced capacities of charcoal SMEs for processing and value-addition (Kenya) (Challenge 4)
- 1 private company supports off-grid pro-poor bioenergy production (Madagascar) (Challenge 4)
- 1 private company adopted production of industrial charcoal from invasive species (Zambia) (Challenge 4)
- 1 SME developed mobile tool for rain forecast and drought prediction (Zambia) (Challenge 4)

Asia (10 companies, 345 SMEs, 1 private sector platform, >6,900 private sector actors)

- Co-developed Guidelines for Sustainable Development of Natural Rubber have implications for 6,300 member enterprises of Chamber of Commerce of Metals, Minerals, and Chemicals Importers and Exporters (China) (Challenge 2, Challenge 4)
- 250 smallholders joined tree-farmer learning groups and have been involved in replication of FTA promoted co-investment RES schemes (Indonesia, Philippines, Vietnam) (Challenge 2)
- Established 30 SMEs for NTFP collection and new business ventures (India) (Challenge 2, Challenge 3)
- 1 national power company committed to co-finance rehabilitation and management of watershed in Lantapan (Philippines) (Challenge 2, Challenge 3, Challenge 4)
- 6 multi-national oil palm companies develop company commitments for women's rights, establish gender committees, and/or support equitable supply chain initiative (Indonesia) (Challenge 1, Challenge 3, Challenge 4)
- 1 company defined mitigation actions in annual work plan using FTA's REL calculations (Indonesia) (Challenge 1, Challenge 2, Challenge 3)

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| | <ul style="list-style-type: none"> • Established contractual arrangements between communities and ecosystem services investors (i.e., parastatal water companies) (Indonesia) (Challenge 2) • Progress for fire prevention via private sector-led Fire Free Alliance (Indonesia) (Challenge 1, Challenge 2, Challenge 3) • Integration of SWAMP-informed sustainable practices by the private sector for coastal infrastructure and development (Indonesia) (Challenge 1) • Established 114 community-based agroforestry enterprises (Indonesia) (Challenge 3, Challenge 4) • Uptake of ASEAN Guidelines for Agroforestry Development by companies, private investors, and international financing institutions across the region (Challenge 3) • 348 group or individual nurseries established with market links (Indonesia) (Challenge 4) • 133 agroforestry-based value chains established through farmer-trader partnerships (Indonesia) (Challenge 4) • 1 private company co-invest in PFES scheme at district level (Indonesia) (Challenge 4) • >200 SMEs adopt SVLK certification in Jepara (Indonesia) (Challenge 4) • 1 community-based enterprise adopt new business practices (Philippines) (Challenge 4) • Royalties from hydro power sector supports PFES implementation (Nepal) (Challenge 4) • 1 private company adopted and advanced processing technologies for indigenous species (Vietnam) (Challenge 4) • Private sector supports and co-invests in pro-poor PFES schemes (Vietnam) (Challenge 4) |
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| End-of-Program Outcome #3 | |
| National and sub-national public & private sector actors in 25 countries deliver more effective & equitable tree related breeding, delivery, extension & pedagogical services | |
| Contributions to Outcome Realization | Global |
| | <ul style="list-style-type: none"> • Application of D4R tool in national restoration programs (Peru, Colombia, Madagascar, Cameroon, Kenya) (Challenge 2) • Patent issued for coconut cryopreservation protocol (Challenge 2) • COGENT (39 country members) applied standardized methodology to collect, identify, characterize, and register new accessions of coconut (Challenge 2) |
| | Latin America (6 countries) |
| | <ul style="list-style-type: none"> • Enhanced capacities of government staff in forest monitoring, forest area assessment, biomass estimation, and carbon measurement (Guyana) (Challenge 1) • Implementation of socio-environmental monitoring systems for 2 jurisdictional programmes (Brazil) (Challenge 1, Challenge 2, Challenge 3) • Enhanced capacity of 500 government and NGO staff in tenure reform, tenure rights and governance, gender reporting, and conflict management (Peru) (Challenge 3) • Supporting institutional capacities for implementation of technical guidelines and extension services for AFC (Peru) (Challenge 1, Challenge 2, Challenge 3, Challenge 4) • Government, NGO, and FTA pilots for AFC (Peru) (Challenge 1, Challenge 2, Challenge 3, Challenge 4) • Enhanced multi-management practices of regentes and extensionists (Peru) (Challenge 3) • Enhanced capacity of 400 government staff in forest monitoring (Nicaragua) (Challenge 3) • Enhanced capacity of 595 extensionists in FTA tools and TonF management (Nicaragua, Honduras) (Challenge 3) |

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| <ul style="list-style-type: none"> • National livestock platform implementing a 5-year pilot across 1,200 farms (Honduras) (Challenge 3) • Enhanced NGO commitment for climate-smart extension services to cocoa farmers (Colombia) (Challenge 4) |
| <p>Africa (17 countries)</p> |
| <ul style="list-style-type: none"> • Supported establishment of 30 breeding seedling orchards (Ethiopia) (Challenge 2) • Enhanced capacity for conservation, hive management, and monitoring in National Niassa Reserve (Mozambique) (Challenge 1, Challenge 3) • Uptake of lessons on traditional honey harvesting and tree conservation in local educational materials (Mozambique) (Challenge 1, Challenge 3) • Established 2 nurseries and 2 pilot farms (DRC) (Challenge 1, Challenge 3, Challenge 4) • Enhanced capacity of nurseries for seedling production (DRC) (Challenge 2) • Enhanced capacities of 600 government, private sector, and extension staff in forest conservation and management (DRC) (Challenge 1, Challenge 2, Challenge 3) • Operationalization of 19 village management committees and brigadier units (DRC) (Challenge 1, Challenge 3) • Government and CSO partners support outreach on community forestry arrangements to 15,000 people (DRC) (Challenge 1, Challenge 3) • Implementation of Environmental Education and Awareness Programme on forest conservation and management in 63 local schools, reaching 8,650 students (DRC) (Challenge 1, Challenge 3) • Enhanced capacity of 3,650 government staff, technical experts, and extensionists in agricultural extension services for improved dryland management (Ethiopia, Kenya, Mali, Niger, Burkina Faso) (Challenge 2, Challenge 3, Challenge 4) • 8,500 government and NGO stakeholders engaged to support adoption and scaling of dryland management practices post-project (Ethiopia, Kenya, Mali, Niger, Burkina Faso) (Challenge 2, Challenge 3, Challenge 4) • 500 stakeholders engaged to strategize and collaborate on SFM in Congo Basin (Challenge 1, Challenge 2, Challenge 3) • Implemented fixed and mobile forest patrols to prevent illegal logging (Gabon) (Challenge 1, Challenge 3, Challenge 4) • Sensitization campaigns for legal timber reach 380,000 people (Cameroon) (Challenge 1, Challenge 3, Challenge 4) • Reforestation tree-planting campaign (100,000 trees) (Cameroon) (Challenge 1, Challenge 3, Challenge 4) • Government assists CFEs to obtain environmental impact notice certificates (Cameroon) (Challenge 1, Challenge 3, Challenge 4) • Enhanced capacity of 150 charcoal producers on green charcoal and regulations (Zambia) (Challenge 1, Challenge 4) • Extension agents (including farmer-to-farmer extension workers) provide enhanced extension services to farmers and scaling locally-relevant greening options (Burkina Faso, Ethiopia, Ghana, Kenya, Mali, Malawi, Niger, Rwanda, Senegal, Somalia, Tanzania, Uganda, Zambia) (Challenge 2, Challenge 3, Challenge 4) • Established tree nursery infrastructure, Farmer Field Schools, and Common Production and Treatment Centers for capacity-building (Cameroon, Ethiopia, Ghana, Kenya, Madagascar, Niger, Rwanda, Tanzania, Uganda) (Challenge 4) • NGO adopted integrated agroforestry and nutrition programme approach in schools (Kenya) (Challenge 4) • Established 243 Community Agroforestry Tree Seed Banks (Malawi) (Challenge 4) |

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| <ul style="list-style-type: none"> • Influenced integration of large-scale fodder production and conservation in Operation Wealth Creation program (Uganda) (Challenge 4) • Integration of bamboo into the Forestry of Research Institute of Ghana's sustainable development programs (Ghana) (Challenge 4) • 2 private cotton companies provide enhanced extension services to farmers (Zambia) (Challenge 4) |
| <p>Asia (6 countries)</p> |
| <ul style="list-style-type: none"> • Co-developed Standard Operating Procedure for monitoring biodiversity and ecosystem standards (Indonesia, Thailand) (Challenge 2) • Extension agents (including farmer-to-farmer extension workers) provide enhanced extension services to farmers (India, Indonesia, Vietnam) (Challenge 4) • Sub-national government adopted community-based forest monitoring systems (India) (Challenge 2, Challenge 3) • National Bank for Agriculture and Rural Development and government support scaling of food-energy agroforestry models in Maharashtra and other states (India) (Challenge 4) • Expansion of rewards schemes via Lantapan Incentive-based Policy Programme (Philippines) (Challenge 2, Challenge 3, Challenge 4) • Enhanced capacities of 500 NGO staff in community-based monitoring tool (Philippines) (Challenge 2, Challenge 3, Challenge 4) • 307 community groups established 321 initiatives for improved use of natural resources for livelihoods and income (Philippines) (Challenge 4) • Enhanced capacities of 400 forest officers on RES and ecosystem service decision-making tools (Bhutan) (Challenge 2, Challenge 3) • Supported Bhutan Ecological Society's one million tree campaign (Bhutan) (Challenge 2) • Established 6 exemplar landscapes and demonstration trails (Vietnam) (Challenge 3, Challenge 4) • Enhanced capacities of 100 government staff and extensionists in land use planning tools and son tra management (Vietnam) (Challenge 3, Challenge 4) • Enhanced capacities of 8,500 people (195 institutions) in participatory governance (Indonesia) (Challenge 3, Challenge 4) • Enhanced capacities of 15,250 government and NGO staff in geomatics, land use planning tools, carbon and biodiversity monitoring, forest law, RES, and/or IWMA (Indonesia) (Challenge 1, Challenge 2, Challenge 3, Challenge 4) • Enhanced capacities of 18 extensionists and partners on agroforestry and FMNR, with commitment to test intercropping practices (Indonesia) (Challenge 2, Challenge 4) • Enhanced government capacities to verify/monitor licenses and oil palm expansion (Indonesia) (Challenge 1, Challenge 3) • Implementation of collaborative mechanism for management of Nipa-Nipa Forest Watershed (Indonesia) (Challenge 2, Challenge 3, Challenge 4) • Sub-national government pilot participatory land use planning approach (Indonesia) (Challenge 3) • Local governments pilot a PFES scheme for watershed management (Indonesia) (Challenge 2, Challenge 3, Challenge 4) • Local governments pilot monitoring schemes in 3 village forests (Indonesia) (Challenge 3) • Regency governments pilot monitoring indicators for climate-related ecological and social change (Indonesia) (Challenge 3) • NGOs support fire prevention activities with communities (Indonesia) (Challenge 1, Challenge 2, Challenge 3) |

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| | <ul style="list-style-type: none"> • University partner launched a student volunteer programme for fire prevention in 4 districts (Indonesia) (Challenge 1, Challenge 2, Challenge 3) • Established apiculture learning centre in Sumbawa (Indonesia) (Challenge 3, Challenge 4) • Established 598 FDT for CFM and agroforestry development (Indonesia) (Challenge 3, Challenge 4) • 348 group or individual nurseries established (Indonesia) (Challenge 4) • 139 farmers' groups established for knowledge exchange (Indonesia) (Challenge 4) |
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End-of-Program Outcome #4

At least 40 million smallholders & other users access more productive tree planting material & uptake higher performing, context appropriate & inclusive AF & small-scale forestry mgt. option

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| Contributions to Outcome Realization | Latin America (2,443 people and/or households across 4 countries) |
| | <ul style="list-style-type: none"> • Enhanced capacities of 200 farmers in sustainable agroforestry practices (Peru) (Challenge 1, Challenge 2, Challenge 3, Challenge 4) • 33 households granted concession contracts (Peru) (Challenge 1, Challenge 2, Challenge 3, Challenge 4) • Enhanced capacities of 180 farmers on forest governance and management (Guatemala) (Challenge 1, Challenge 3, Challenge 4) • Cruce a la Colorada community developed a planting scheme to restore forest land (Guatemala) (Challenge 1, Challenge 4) • 380 households adopt forestry management at Carmelita concession (Guatemala) (Challenge 3, Challenge 4) • Enhanced capacities of 650 farmers in FTA tools for TonF (Honduras) (Challenge 3) • Established farmer field school programme for 1,000 farms (Nicaragua, Honduras) (Challenge 3) |
| | Africa (1,218,149 people and/or households across 17 countries) |
| | <ul style="list-style-type: none"> • Enhanced capacities of 191,839 people in the production and management of tree seedlings (Malawi) (Challenge 4) • Enhanced capacities of 21,815 households to operate forest-based enterprises (Malawi) (Challenge 2, Challenge 4) • 11,524 farmers adopted improved agroforestry practices and have enhanced market linkages for agroforestry seed trade (Malawi) (Challenge 2, Challenge 4) • 4,233 households adopted Fertilizer Tree Systems (Malawi) (Challenge 2, Challenge 4) • 65 people from 9 honey gathering groups adopt traditional harvesting practices (Mozambique) (Challenge 1, Challenge 3) • Enhanced capacities of 46,046 farmers on improved feed and fodder technologies and adoption of silage practices (Ethiopia, Kenya, Tanzania, Uganda) (Challenge 4) • 153,128 farmers adopted enhanced fodder production and conservation practices (Ethiopia, Kenya, Tanzania, Uganda) (Challenge 4) • Enhanced capacities of 8,500 smallholders on prioritized food tree and crop cultivation and nursery management (453 households adopted food tree portfolios) (Kenya, Uganda) (Challenge 4) • Enhanced capacities of 185 individuals (67% women) for enterprise development (Kenya, Uganda) (Challenge 4) |

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| <ul style="list-style-type: none"> • Enhanced capacities of 26,256 farmers in integrated soil fertility management practices (adopted by 18,116 farmers) (Zambia) (Challenge 4) • Enhanced capacities of 23,068 farmers on rainwater harvesting practices (adopted by 424 smallholders and 980 households) (Uganda) (Challenge 4) • Enhanced capacities of 250 farmers in tree grafting, tree planting assessment, micro-finance schemes, and Adaptive Collaborative Management approach (Uganda) (Challenge 3, Challenge 4) • 279 people (54% women) in six community groups increasingly participated in tenure governance (Uganda) (Challenge 3, Challenge 4) • 873 households adopted agroforestry practices in FTA trials (Kenya, Ghana, Niger, Rwanda) (Challenge 4) • 16 people accessed financial aid from CRVC timber and Njangsang enterprises (Cameroon) (Challenge 4) • 487 people (46% women and 44% being youth) employed in CFEs (Cameroon) (Challenge 4) • Enhanced capacities of 2,000 people from SMEs and producer associations in agricultural techniques, business management, forest governance, and monitoring (Cameroon) (Challenge 1, Challenge 2, Challenge 3, Challenge 4) • Enhanced capacities of 150 charcoal producers in efficient carbonization (Cameroon, DRC, Kenya, Zambia) (Challenge 1, Challenge 4) • 270 households adopted community agroforestry systems and carbonization techniques (DRC, Cameroon) (Challenge 3) • Enhanced capacities of 800 farmers and producers in timber harvesting, processing, and marketing (DRC) (Challenge 1, Challenge 2, Challenge 3) • 600 farmers adopt cocoa management models (DRC) (Challenge 2, Challenge 3) • Enhanced capacities of 220,000 farmers in dryland management, technologies, and sustainable farming practices; adoption of agroforestry and irrigation practices; and participation in local value chains (Ethiopia, Kenya, Mali, Niger, Burkina Faso) (Challenge 2, Challenge 3, Challenge 4) • Enhanced capacities of 125,432 farmers to market agroforestry produce (Burkina Faso, Ethiopia, Kenya, Mali, Niger, Tanzania, Uganda) (Challenge 4) • Enhanced capacities of 179,000 farming families to market on-farm production via dairy associations (Ethiopia, Kenya, Tanzania, Uganda) (Challenge 4) • Enhanced capacities of farmers in FMNR, SFM, and charcoal production (Kenya, DRC) (Challenge 3, Challenge 4) • Enhanced capacities of 144,181 households in FMNR and other restoration practices (Ethiopia, Ghana, Kenya, Mali, Niger, Rwanda, Senegal, Somalia) (Challenge 2, Challenge 4) • Enhanced capacities of 10,000 farmers in bamboo cultivation, management, and primary processing of bamboo charcoal (Ghana) (Challenge 2, Challenge 4) • Enhanced capacities of 5,072 women to produce high-quality bamboo-based charcoal for clean household energy (Cameroon, Ghana) (Challenge 2, Challenge 4) • Enhanced capacities of 5,000 individuals on bamboo cultivation and community nursery management (Cameroon, Ghana, Kenya, Madagascar, Tanzania, Uganda) (Challenge 2, Challenge 4) • Enhanced capacities of 22,172 individuals on bamboo-planting and use for bioenergy (Cameroon, Ethiopia, Ghana, Madagascar, Tanzania) (Challenge 2, Challenge 4) • 2,686 households adopted bamboo plants for feed, fodder, and biomass (Cameroon, Ghana, Ethiopia, Madagascar) (Challenge 2, Challenge 4) • 173 rural households accessed reliable energy via bamboo gasifiers (Madagascar) (Challenge 4) |
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- 3,384 households adopted bamboo micro-nurseries (Ethiopia, Madagascar, Tanzania) (Challenge 2, Challenge 4)
- 1,363 youth secured employment through 49 forestry enterprises (Ethiopia, Tanzania, Madagascar) (Challenge 4)
- 5,000 individuals participated in bamboo charcoal value chains (Ethiopia, Ghana, Tanzania) (Challenge 4)
- 686 individuals (45% women) participated in bioenergy value chains through SMEs associations (Ethiopia, Ghana, Kenya, Uganda) (Challenge 4)
- 5,000 croton collectors participated in biofuel value chains (Kenya) (Challenge 4)

Asia (1,750,080 people and/or households across 9 countries)

- Enhanced capacities of 300 farmers in soil, water, and crop management (Kyrgyzstan, Uzbekistan) (Challenge 2)
- 700 farmers/producers adopted sustainable harvesting and fuelwood management (India) (Challenge 2, Challenge 3)
- 29,583 households adopted agroforestry practices to diversify agricultural production (India) (Challenge 4)
- 373,214 household adopted nutri-gardens (India) (Challenge 4)
- 6,000 farmers adopted high-quality planting material of native or locally adapted oilseed trees (India) (Challenge 4)
- 10,080 households accessed clean energy products (India) (Challenge 4)
- Communities established 26 nutri-gardens with enhanced water infiltration systems (India) (Challenge 4)
- 242,983 smallholders participated in PFES incentive mechanism (Vietnam) (Challenge 1, Challenge 4)
- 400 households (34% women) adopted intercropping practices for rubber production (Vietnam, Philippines, Indonesia) (Challenge 4)
- Enhanced capacities of 2,112 farmers to implement agroforestry (Vietnam) (Challenge 2, Challenge 3, Challenge 4)
- 50 households adopted intercropping of pomelo and orange with maize (Vietnam) (Challenge 2, Challenge 4)
- 341 households adopted agroforestry systems for on-farm savings and/or diversification of cash income (Vietnam) (Challenge 4)
- 348,715 households participated in forestry value chains (Vietnam) (Challenge 4)
- 428 partner CBOs implemented NRM practices in 1,281 sub-projects (Philippines) (Challenge 2, Challenge 3, Challenge 4)
- 476 individuals adopted NTFP processing techniques (Philippines) (Challenge 4)
- Enhanced capacities of 53,850 farmers in agroforestry and NRM, silviculture, apiculture, nursery management, tree propagation, and NTFP value chains (Indonesia) (Challenge 3, Challenge 4)
- Enhanced capacities of 1,618 farmers (40% women) in good agricultural practices for enhanced on-farm production (adopted by 148 farmers) (Indonesia) (Challenge 4)
- 7 community groups support fire prevention and peatland restoration (Indonesia) (Challenge 1, Challenge 2, Challenge 3)
- 110 farmers committed to not use fire (Indonesia) (Challenge 1, Challenge 2, Challenge 3)
- 1 community implemented participatory monitoring system for fire and haze (Indonesia) (Challenge 1, Challenge 2, Challenge 3)
- 1,200 rural households accessed reliable energy via bamboo power plant (Indonesia) (Challenge 2, Challenge 4)

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| | <ul style="list-style-type: none"> • 120 households adopted SFM practices to comply with SVLK certification (Indonesia) (Challenge 4) • 90 households adopted tree farming post-project (Indonesia) (Challenge 4) • Enhanced capacities of 1,618 farmers in FMNR (Indonesia) (Challenge 2) • 90 smallholders participated in tree-farm learning groups to restore degraded land (Indonesia) (Challenge 2) • Enhanced capacities of 30,070 individuals for income generation through nurseries and agroforestry systems (Indonesia) (Challenge 4) • 636,972 people (52% women) participated in agroforestry and forestry systems and related enterprises to enhance incomes (Indonesia) (Challenge 4) • 5,135 households increased incomes from adoption of FTA-promoted technologies (Indonesia) (Challenge 4) • Enhanced capacity of 600 smallholders on RES and ecosystem service decision-making tools (Bhutan) (Challenge 2, Challenge 3) • 3,225 individuals participated in PFES/RES schemes (China, India, Indonesia, Nepal, Philippines, Vietnam) (Challenge 2, Challenge 4) |
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Annex 2. Detailed description of FPs progress

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

In the final year of FTA, FP 1 has at the time of reporting produced some 50 outputs (as evident from the Traffic Light per October 2021) thereby progressing satisfactorily towards the final program outcomes. The outputs produced contribute as in previous years directly to one or more of the FTA priorities (Restoration (1), Biodiversity and Safe-guarding Diversity (4), Orphan crops (19), Nutrition (3), and Seed Delivery (25)), while of indirect importance for most priorities.

Among the achievement targeting the **outcome on adoption of methods, tools and practices** to mitigate threats to valuable TGR and a primary focus on the **FTA priorities of Biodiversity and Restoration** but also **Nutrition and Seed delivery** were: [work on local knowledge to guide tree species selection in tropical dry forest of Ecuador and Peru](#), [dynamic seed zones for seed sourcing in Columbia](#), the [Diversity For Restoration species and seed selection tool](#), [priority setting for rosewood species in Asia](#), and the [safeguarding and using fruit and vegetable diversity](#). FP1 led the preparation of the FTA Highlight on Conservation of Tree Biodiversity and Sustainable Forest Management (FTA Highlights of a Decade No. 3).

To address the **outcome of implementing cost-effective domestication** approaches for priority tree species for agriculture and horticulture, deliverables from collaborations between AOCC, the Gene Bank Platform and the **Nutrition and Orphan crops priorities** of FTA continued to contribute knowledge that supports diversification of food systems through integrating nutrient rich orphan crops into current food systems with a range of outputs: Characterisation of genotypes and phenotypes, and cultivar development of trees and crops, including African Orphan Crops with enhancement using genomics and business model development focusing on food trees but also including other functional uses. Domestication studies of > 100 species in > 15 countries with a diversity of partners, including *Sclerocarya birrea* descriptors (ISBN: 978-9966-108-48-7) and [variation](#), *Calotropis procera* [environment](#) and [bioaccumulation](#), *Strychnos cocculoides* (ISBN: 978-9966-108-45-6), *Dacryodes edulis* (ISBN: 978-9966-108-42-5), [poplar cultivars](#), [baobab](#), *Canarium tramdenum* (in press), various [indigenous fruit trees of West and Central Africa](#), *Uapaca kirkiana*, [fodders](#) in Mosop, [traditional food plants](#) in Northern Uganda, and [Moringa](#); as well as [local tree value chains](#), [food system diversification](#), [food security and nutrition](#), [mainstreaming into food systems](#), [delivery of diversified diets](#), [consumer behaviour](#) and [healthy diets](#). FP1 led the preparation of the FTA Highlight on Food Security and Nutrition (FTA Highlights of a Decade No. 5). Genomic studies on [yam](#) and [shea](#) were published, as was an overview of field and genomic resources for diversifying food systems in the [Agropolis papers](#).

To support national governments, extension services and private partners with the **outcome of adopting cost-effective and equitable tree-planting material delivery** approaches various outputs have been produced within the frame of the **FTA priorities on Restoration and Tree Seed Delivery** with emphasis on climate suitability. The high economic value of applying quality planting material was demonstrated in a [costing study](#) and a [policy brief on quality seed](#), while several other papers on impact are still in process. A diagnostic tool for [analysis of tree seed systems](#) was developed in Latin America. Various effects of seed collection and exchange practices and tree planting practices on aspects of [viability](#), [spread of pests](#), [growth performance](#) and [survival](#) were documented in different studies. A [systems approach to plant breeding](#) was published in Trends in Plant Sciences backed by the publication of a series of practical tools including a [climate change atlas](#) and a [species and seed source selection](#) tool for Ethiopia; and the [global tree knowledge platform](#) and [the resources for tree planting platform](#) as entry points for enhancing the quality of tree planting, natural resources management and biodiversity conservation. New and updated support tools for the work have been provided for the Worldflora (for [Global Tree Search](#) and [the Mammal Species Database](#)) and AlleleShift (on [allele frequencies and climate change](#) and [surface diagrams](#)). [Tree species distribution](#) were mapped in support of China's integrated tree livestock-crop system; and a global study published on the top [one hundred tree species](#) for tropical tree planting. An array of technical reports on tree seed sources came out under [PATSPQ](#), and extension material on [simple tree seed collection](#), and [rural resource centres](#) were also published. FP1 led the preparation of the FTA Highlight on Seed and Seedling Systems for Resilience and Productivity (FTA Highlights of a Decade No. 2) and made contributions to the highlights on restoration (No.4) as well as climate change adaptation (No. 12). Finally, important steps were taken towards the establishment of a transformative partnership platform (TPP) on transforming the quality of tree planting ([TQTP](#)).

FP2 Livelihood systems

FP2 led six research priorities for each of which progress is summarised below.

In the agroecology priority, the [Transformative Partnership Platform on Agroecology](#) (TPP) established by FP2 was [launched at the UN Committee on World Food Security \(CFS\) 48th Session](#) that adopted [policy recommendations](#) resulting from the CFS High Level Panel of Experts (HLPE) report on agroecology that FP2 led. The TPP now has a project portfolio of >150M USD for research to address knowledge and implementation gaps constraining agroecological transitions identified by FTA. The TPP incubated a [coalition to transform food systems through agroecology](#) (based on CFS, HLPE agroecological principles articulated by FP2), emerging as a significant outcome of the UN Food Systems Summit (UNFSS), following inclusion of plenary and parallel [sessions on agroecology](#) evidence in the presummit and an FP2-produced [video](#) screened during the summit plenary. So far 27 countries and 35 organisations

have signed the coalition's declaration of commitment which was showcased by the Chair of CFS and the President of Sri Lanka, during an FP2 [side-event at the UN Framework Convention on Climate Change \(UNFCCC\) COP26](#), that [included agroecology in draft text of the Koronivia Joint Work on Agriculture](#) mirroring a call for agroecological practices to be promoted in [resolution E/CN.9/2021/L.5](#) of the UN Commission on Population and Development based on FP2 evidence.

In the market-based agroforestry priority. [Networked experiments across Andhra Pradesh demonstrated context specific performance of packages of agroecological practices](#) already adopted by over 700,000 farm households, indicating no overall yield penalty in the first year of transition (which with lower input costs increases economic efficiency). It was also evident that comparative yield from agroecological transition compared to conventional agriculture was better in drier areas associated with water retention promoted by mulching. A synthesis of the suitability of a diverse range of agroforestry practices for contexts across Vietnam (including [analysis of preferences due to ethnicity in the Northwest](#)) was produced and made available both as a [book](#) and a [spatially explicit database with an interactive map](#).

In the livelihood trajectory assessment and modelling priority, [analysis of performance of planting basins](#) and tree planting, as climate resilient food security strategies across Kenya and Ethiopia revealed how context conditioned performance of both [tree survival](#) and contributions of planting basins to food security with ecological (aridity, soil type) and [social \(gender, labour availability\) factors](#) determining suitability of practices and informing their adaptation for specific contexts. Performance assessment with 1,743 farm households over three years showed that planting basins increased maize yields by up to 3.07 t/ha. Median extra days of food availability was 18, with 25% of farmers with more than 30 extra days. In the driest year use of basins reduced crop failure from 30% to 11% and adoption of large basins resulted in a median increase of 0.51 to 1.27 \$/person/day across locations, with 50% by more than 1 \$/person/day and 25% by more than 2 \$/person/day. [Modelling](#) revealed that 216 medium sized basins would be required to achieve an extra month of food availability, and while some farmers maintained large numbers (over 2,000) the median was 49, indicating that many farmers were using basins as a food security safety net rather than to increase their overall productivity.

In the farm-forest interface policy priority, a global review of [agroecologically conducive policies](#) was produced together with PIM and discussed in a webinar for which >1600 people registered. [A policy brief for GIZ presented the hourglass procedure](#): a five step process that addresses climate change effects through promoting agroecological practices to achieve ecosystem-based adaptation in agricultural landscapes at scale. The white paper setting it out was [presented and discussed at the Global Landscapes Forum](#) on the sidelines of COP26 in Glasgow.

In the diversified tree-crop commodity production priority, a synthesis of [how to match cocoa rehabilitation and renovation options to contexts](#) was published setting out how to facilitate rejuvenation of existing cocoa farms (rather than causing further deforestation by expanding agricultural area) and [a tool to facilitate decisions by farmers and extension staff](#) deployed across Latin America. A [synthesis of coffee diversification options across Latin America](#) was published together with progress in [modelling impacts of age and pruning on yield of arabica coffee](#). Implications of smallholder livelihoods for scaling oil palm agroforestry in the Brazilian Eastern Amazon was produced alongside synthesis of recommendations for growth and nutrition of young oil palm in agroforestry contexts.

In the silvopastoral systems priority. A [review of carbon capture in silvopastoral systems in Latin America](#) was produced alongside context-specific [policy recommendations for bamboo-based silvopasture in Colombia](#). [Control of otherwise free grazing livestock was identified as a crucial governance mechanism](#) at both national level (in respect of seasonal migration of animals) and village level (in respect of local control of livestock movement) in Ethiopia.

FP3 Sustainable value chains and investments

P16: Inclusive business models

Activities in 2021 built on the knowledge base created from previous primary data collection of more than [50 businesses](#) in oil palm, cocoa, tea, coffee, sugarcane, avocado, and timber sectors, and surveys of 1,450 inclusive business participants of [12 agribusiness models](#) in Peru, Ghana and Tanzania. The knowledge base was further disseminated and results repackaged, as well as engagement broadened with business, civil and state actors. This involved establishing an inclusive and sustainable business [online platform](#) that serves as a vehicle for future dissemination and engagement and consolidation, and give visibility to major inclusive business knowledge, innovations and national and international champions. With these results business platforms, major bilateral and multilateral donors, businesses, and service providers in selected global commodity value chains have the resources to develop and implement business models that are more inclusive, gender-responsive, economically viable and environmentally sustainable. The work from P16 was used as a basis for developing a strategy to facilitate business model innovation and business ecosystem development – articulated in a [100+ page document](#) – that enabled P16 and partners to attract 9.7 million USD in funding for the next 3 years. This will see it continue the P16 legacy beyond FTA, putting the ideas generated into practice. This will involve working with 22 agribusinesses, ASEAN and the governments of Myanmar, Laos, Ethiopia, Ghana and Mozambique to help scale more transformative business initiatives in agriculture and forestry. Some of these approaches are also featured in scientific products conceptualizing the [inclusive business concept](#), key [inclusive](#)

[business components](#) and how inclusive businesses can contribute to [food systems transformation](#). These also recently featured in an interview for the [Business Call to Action magazine](#) and will soon be incorporated in the Inclusive Business Action Network strategy document supporting the ASEAN Inclusive Business Framework.

P17: Innovating finance for sustainable landscapes

In 2021 activities strengthened influence on financial institutions to adopt environmental, social and governance (ESG) criteria when lending to timber, trees and select agricultural crops. Work continued to improve the [understanding of financing landscape initiatives](#), approaches and modes of operations, and key organizations and networks engaging on inclusive landscape financing. Efforts included additional case studies on [risk management and barriers to innovative finance](#). Outreach on results involved participation in international forums and sponsoring an international workshop on risk management and innovative finance strategies. This work also significantly contributed to consultations by the Dutch ministry of agriculture, nature and food security on the implementation of the international component of their forest strategy, drawing attention to the need for inclusiveness in forest related investments, and it provided contributions to the FAO State of the World Forests publication for 2022. Two new initiatives to link farmers, SMEs and communities to financial institutions and impact investors build on the analysis of the case studies ([Green Finance for Sustainable Landscapes](#), and Green Finance for SMEs). Based on this work, a panel session was successfully completed at the November 2021 Global Landscapes Forum Conference on Climate: Forests, Food, Finance – Frontiers of Change, during which an investment case was discussed for [inclusive food system transformation](#). A whitepaper was prepared on [how international finance can better meet local needs and aspirations](#). These efforts provide support to financial service providers lending to timber, tree and agricultural crops in the targeted jurisdictional landscapes to adopt ESG criteria.

P18: Public and private commitments to zero deforestation

Significant progress was made at sites in Brazil, Colombia, Ecuador, Peru, and Indonesia to upscale and adapt the arrangements and initiatives to other jurisdictions of the six selected countries where FTA has been working. The team participated in international seminars to diffuse the results and approaches to Jurisdictional performance monitoring systems and certification. The efforts helped to demonstrate that private sustainability initiatives, in conjunction with supportive public policy, can foster improved management and business practices with enhanced socio-environmental performance.

P02: Plantations and tree crop commodities

The priority on Plantations and tree-crop commodities, undertaken in collaboration with FP4, addressed productivity, environmental and social challenges faced by timber and high-value tree-crop plantations. Building on the assessment of the synthesis papers drafted in 2019 on timber, oil palm and rubber plantations, the priority analysed approaches to manage synergies and trade-offs between plantation productivity, socio-economic and environmental outcomes in selected “hotspots” and landscapes. For timber plantations in Southeast Asia, Africa and Latin America, the landscape impact assessment reports were completed. For oil palm plantations in Indonesia, Malaysia, Brazil, and Ghana, 7 MSc internships were underway to evaluate how companies face labour shortages and the synergies and impacts of combined oil palm plantations and other land uses. For rubber plantations, the Rubberway system was evaluated in its effectiveness to map sustainability practices in the supply chain of natural rubber in Ivory Coast. [Rubber Agroforestry systems evolution was also reviewed](#) from 1994 to 2019 in [West Kalimantan](#) province, Indonesia. CIRAD and CIFOR were regular contributors to [GPSNR working groups on Capacity Building, and Strategy and Objectives](#), whose programs of work will be presented for approval at the GPSNR General Assembly in December 2021. The work of the Priority supports the outcome that the commodities be produced under internationally recognized sustainability and legality standards, frameworks or commitments in producing countries.

P20: Effectiveness of approaches to sustainable supply

Work was completed on public and private sustainability standards in Cameroon for timber and for cocoa in Cameroon, Côte d'Ivoire and Burkina Faso. In Cameroon, an article was completed on the governance of [cocoa certification schemes](#). As well, the impact was assessed of the FLEGT process on the [domestic demands for legal timber](#). Two [media campaigns](#) at national scale promoted timber and chocolate with sustainable origin. For the work in Côte d'Ivoire a report was completed on the governance of the legality of cocoa production by comparing the "private certification" approach and the creation of gazetted agroforests. As well, a scientific article was prepared on the production of legal and [sustainable cocoa around the Bossematie forest](#). Also on certification, FP3 continued work in the FSC global working group on conversion policy for remedying past conversion. The [second version of the remedy procedure](#) successfully underwent public consultation in July 2021 and is expected to be endorsed at the General Assembly in 2022. For the work in Burkina Faso two briefs promoted the continuity and change in governance of shea value chains and developing local action plans to [sustainably manage shea parklands](#) as an integral part of state-approved forest management units (chantiers d'aménagement).

The expected outcome of the combined work was that supplies of the commodities are produced under internationally recognized sustainability and legality standards, frameworks or commitments in producing countries.

FP4 Landscape dynamics, productivity and resilience

FP4 continued to make progress towards attaining the vision of effective multifunctional landscapes with trees in 2021, focusing on a number of key research areas. Work on landscape **restoration (priority 1)** delivered a number of interesting landmark knowledge products. First a special issue on **Social Ecology, Climate Resilience and Sustainability in the Tropics** in the Land Journal featuring 6 articles focusing on restoration, climate and other ecosystem services. Noteworthy papers include a Monitoring framework for restoration of ecosystem services and climate change adaptation paper with a very innovative information platform at national level in the Gambia; a paper on the evolution of and the role of local institutions in restoration; and linking Bioenergy and restoration through charcoal production. A policy brief was also published highlighting the “missing middle” – i.e. meso level actors and capacity in the current global restoration actor landscape. In terms of direct impacts, The ecosystems-based adaptation project in the Gambia helped enhance restoration in 1369 ha of community forests and 610 ha of farmland by integrating 51 000 trees into community forests and farms with the involvement of 1100 farmers and community members. The EbA project in the Gambia also delivered a comprehensive monitoring platform for EbA at national level. Through work with UNEP and the Government of Benin, FTA also helped deliver EbA based community forests management plans for 7 Forests areas covering around 70000 Ha. Through sustained efforts from project activities 1474 Ha of land have been conserved in the Pasuruan District in Indonesia.

In terms of **tree commodities (priority 2)** a **set of very useful publications were done**. A book was also published on Tree Commodities and Green economies in Africa with 30 chapters covering the production, economic and environmental dynamics of key tree commodities in Africa including chiefly, cocoa, coffee, oil palm, cashew nuts, timber and others. The book focuses on a number of key pathways for enhancing the contributions of tree commodities to green growth in Africa,- production quality enhancement through diversification and sustainable production, value addition through processing and marketing, strengthening linkages to industries such a bio-energy and others; and development of coherent policies and incentives. Other noteworthy publications include an overview of the potential impacts of interventions on diverse coffee agroforestry system to gender dynamics in Pagar Alam District, South Sumatra; A Review of the Trade-Offs across Different Cocoa Production Systems in Ghana; and Oil Palm Contract Farming in Brazil: Labour Constraints and Inclusivity Challenges.

Within the **nutrition and food security priority (priority 3)**, the **special issue on Impacts of Tropical Landscape Change on Human Diet and Local Food Systems** was finalized with an editorial and a few more articles. The team also published an important brief on the **Contribution of forests and trees to food security**

[and nutrition](#). Further work was done in Indonesia focusing on dietary diversity and linking food, nutrition and the environment. In Zambia research focused on the collection and consumption of wild forest fruits. Some work was also done on understanding the roles of and how to mainstream neglected, underutilized and “orphan” trees and crops into the food system.

In the area of **landscape governance (priority 9)** emphasis has been on policy support and subnational level landscape governance mechanisms. We supported the development of strategies at national level in Sri Lanka for accessing Green Climate Finance. Through work with the Ministry of Environment in Sri Lanka we contributed to the development of a Country Programme, a manual of procedures and a Stakeholder Engagement, a manual of procedures for project development and access to finance from the Green Climate Fund. As part of the same GCF Readiness project, we also delivered technical support and capacity building towards accreditation of five potential direct access entities within the GCF. At sub-national level, the programme helped deliver three green growth strategies for Sabaragamuwa and Uwa provinces in Sri Lanka. The programme also led and contributed to two important articles published on [hot topics in the governance of forests and natural resources](#) in Forest Policy and Economics and another on [six modes of co-production for sustainability](#) published in Nature Sustainability, with both bringing important new dimensions to global governance discourses. An important technical guide on ***Forest tenure pathways to gender equality was also published.***

For **Sentinel Landscapes work (priority 22)** a synthesis report on the stocktake from three sentinel landscapes was also completed, teasing out lessons related to positive co-location of projects triggered by FTA sentinel landscape approach. Secondly, an exploratory study report on a potential portfolio approach to sentinel and learning landscapes post FTA was also done. It lays out a process for advancing sentinel landscapes via a portfolio management approach; the approach advocates decision-making that is based on an analysis of a project portfolio in a given landscapes and how to leverage the portfolio in advancing sustainable landscapes and livelihoods.

FP5 Climate change mitigation and adaptation

In FP5, the Global Comparative Study of REDD+ was extended for another 3 years. We have advanced in particular on climate change mitigation efforts (FTA Priority 5 NDCs) under GCS-REDD+, in Brazil, Cameroon, DR Congo, Indonesia, Peru, and Vietnam (together covering 55% of global tropical forest area), and globally, e.g. with support to the Governor’s Climate and Forest Task Force. We have updated GCS REDD’s global dataset of REDD+ projects (ID-RECCO). We are concluding work on REDD+ finance, and we have worked on the Paris Agreement’s Article 6 and finalized our collaboration with FAO on Transformational Change, with an already much cited report. We are working on transparent monitoring of REDD+ across four countries and

exploring community-based monitoring in this context. Our work in Peru has contributed to Peru's national Forest Reference Emission Levels (FREL) reported to the UNFCCC, and to the formal recognition of peatlands in Amazonia and their environmental importance and climate change mitigation potential. Our work has also contributed to the refinement of Indonesia's FREL, to be submitted in 2022 to the UNFCCC. Vietnam's MARD adopted FTA recommendation to include incentives for policymakers and the private sector in the national programme to plant 1 billion trees till 2025. Four "Stories of Change" document policy impact in Indonesia, Vietnam and Peru.

FP5 work in The Gambia has led to The Banjul Multisectoral Integrated Livestock Management Resolution being adopted, attempting to solve the transhumance problem in the country. A participative vulnerability and adaptation assessment led to climate action priority plans in West Kalimantan, Indonesia, and West Northern Ghana. [Kenya's Bioenergy Strategy; a practical guide for improving charcoal production;](#) capacity development on sustainable charcoal for over 380 charcoal producers—through training of trainers and peer to peer outreach—and community action plans for sustainable woodfuel (charcoal and firewood) in two counties in Kenya, where we also supported application to the National Treasury for exception or zero rating of value added tax (VAT) for sustainable fuel briquettes, biogas and bioethanol. Our adaptation work in Indonesia has contributed to establishing the Strategic Coordination Team for Wetlands Management to achieve Sustainable Development Goals and Low Carbon Development in Indonesia.

The Transformative Partnership Platform on Circular Bioeconomy establishes 'overlooked' pathways to emission reduction. An Engagement Landscape on Green Just Transformation in the Western Balkans was established as result of our engagement in the region since 2020.

Activities in FP5 mainly address SLO4, sustainable management of natural resources. Improved mitigation policies based on full implementation – by national policy partners – of GCS REDD+ recommendations in Brazil, Cameroon, DR Congo, Indonesia, Peru, and Vietnam (together 55% of global tropical forest cover) could reduce deforestation by 10–30% and yearly avoid emissions of 0.2–0.6 Gt CO₂ (5–15% of total annual land-use emissions of 3.3 Gt CO₂). This has not been achieved in the FTA program lifetime, but it would address the lower bound of the SLO4 objective of reducing greenhouse gas emissions by 0.2 Gt CO₂-e yr⁻¹.

With a view on the objective to increase water and nutrient use efficiency in agro-ecosystems, including through recycling and reuse, we are developing – currently not quantifiable – concepts for bioeconomy implementation in Africa, Asia, Latin American and, in SE Europe, the Western Balkans.

Towards restoring 55 million hectares of degraded land, we expect that by 2030, with a landscape approach integrating biomass production and forest restoration in the Western Balkans, 10,000 hectares of forests could be saved. Our peatland work has made policy progress possible in Peru, protecting this important biome.

With full GCS REDD improvements in policies of the abovementioned countries, annually 0.5–1.6 million ha of forests could be saved, i.e. at least 5 M hectares of forests over the next decade, or twice the SLO goal to save 2.5 million ha of forest from deforestation.

FP5 also supports the other SLOs with exception of SLO3 (improving human nutrition and health). Regarding SLO1, reducing rural poverty, we have made progress in Africa, Asia, South-Eastern Europe; In the Gambia, by developing and implementing Ecosystem-Based Adaptation protocols on 250 farms and in 50 community forests; in Indonesia, by working with farmers on our agro-silvo-fisheries model; and in the Balkans, by establishing proof-of-concept for short-rotation biomass plantations on 10 ha land. Scaling expectations till 2030 are to expand, in Indonesia, to 1000 ha of biofuel crops with LCF (<https://livelihoods.eu/l3f/>), and in the Balkans, to 45,000 ha of short-rotation plantations and 10,000 ha of forests. These activities are also improving farmer's income, so far on over 250 farms and in 50 communities, with a 2030 target of 10,000 farmers. These same activities also support SLO2, increasing food security. Furthermore, full GCS REDD+ implementation would positively affect at least half a million forest-dependent people directly, and 1.5 million indirectly forest-dependent people.



Cover photo by Ricky Martin/CIFOR-ICRAF: Organic cabbage plantation in the mountain of Gede Pangrango Sukabumi, West Java, Indonesia.
 Back cover photo by Axel Fassio/CIFOR-ICRAF: Yangambi Engagement Landscape plantations at Bangala, Yangambi - DRC.

The CGIAR Research Program on Forests, Trees and Agroforestry (FTA) is the world's largest research for development program to enhance the role of forests, trees and agroforestry in sustainable development and food security and to address climate change. CIFOR leads FTA in partnership with ICRAF, the Alliance of Bioversity International and CIAT, CATIE, CIRAD, INBAR and TBI.

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