CRP Annual Plan of Work and Budget (POWB) for 2017

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CGIAR Research Program on Forests, Trees Agroforestry

RESEARCH PROGRAM ON Forests, Trees and Agroforestry

CGIAR

Led by CIFOR

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Contents

A. CRP LEVEL[1]

A1. Delivery

A1.1 Adjustments/ changes to Theories of Change

The Theory of Change (ToC) at inception of phase 2 is the one that is contained in the full revised proposal (31st July, section 1.0.3). The ToC specifically builds on learning from FTA's phase 1.

A1.2 Highlight expected Outcomes and Outputs

Key expected, most telling highlights of new research in 2017 are:

- New operational inclusive business models developed for process innovation combining genomic and traditional approaches in tree domestication for 5 tree species and an analytical framework to assess the inclusivity of business models associating smallholders for forests, tree crops and agroforestry.
- New knowledge on the applicability of a range of novel tree management, commodity tree crop diversification and market-based agroforestry options for food security and land restoration in 11 countries in Africa, Asia and Latin America.
- A scoping study on existing schemes and demand for responsible finance investment.
- Informing sustainable forests and tree crops value chains mechanisms and platforms (FLEGT VPA, ISPO, RSPO) on options to reinforce sustainability, to address illegality and to mainstream gender.
- New knowledge, within a new phase of the Global Comparative Study on REDD+, on multi-level landscapes governance informing at least 4 countries; work on technical solutions (terra-I, informing 3 countries), standards and approaches for transparent monitoring of performance (MRV) globally;
- Work on technical and policy options for the responsible integration of biofuel production in multifunctional landscapes in Indonesia.
- Leveraging the FTA Sentinel Landscape portfolio to define land-use systems typologies and 'theories of place', delineating extrapolation domains to generate IPGs from FTA placed-based research.
- An online learning module for researchers, policy-makers and practitioners, to promote uptake of research findings on gender and forests, and a gender-responsive youth engagement strategy.

A.1.3 Use of different Funding Sources

This POWB has been constructed with an expectation of 8.8 M USD CGIAR W1+2 (Table 1). This figure makes FTA, in 2017, an outlier in the portfolio with the lowest percentage of W1+2 funding (11.0 percent) despite it being one of the biggest CRP, with 79.9 M USD of bilateral grants secured in 2017. W1+2, sole program-level resources are essential to FTA producing IPGs. Without W1+2 funds, FTA can only produce an array of disconnected outputs. W1+2 funds enable a triple integration: *horizontally* for results that feed into other flagships and research areas and for bringing coherence in methodological approaches, such as enabling the creation of extrapolation domains; *vertically,* to promote continuity of action along the research to development continuum in FTA's impact pathways; and *through time*, for programmatic learning, extending projects' scientific and development relevance beyond their completion.

Destination and use of different sources of funds in FTA can be broadly separated between 3 categories:

- **Program leadership, management and support**, including communication (which in the proposal was presented in FPs). Only W1+2 funds are available for this category.
- **Program supporting research**: Support platform (SP) on delivering impact and inclusion[2], with W1+2 supporting the integrative part of the activities, and bilaterals funding case-study research.

[1] The withdrawal of W1+2 for FP 2 as per decisions by the CGIAR SC in Nov. 2016 has resulted in a number of changes that FTA felt it should explain, making it impossible to strictly respect the page limit given for part A.

[2] The SP has four cross-cutting themes/CCT: (i) Monitoring, Evaluation, Learning and Impact Assessment (MELIA); (ii) gender and youth; (iii) data for impact and (iv) capacity development/CapDev. Each CCT works across flagships, with the MSU and with the other CCTs, as well as into flagships.

- **Flagship research portfolio,** dominantly funded by bilaterals.

Strategic application of W1+2 funds across FTA, and within FPs, given resource constraints, is decided as per a **priority-setting scheme** decided in January 2017 by the FTA Management Team (MT): (i) activities making FTA function as a programme (programme management, data, MELIA); (ii) Cross-cutting work and flagship works that feeds into other FPs; (iii) work that lead to the generation of IPGs; (iv) work promoting uptake and impact potential; (v) work that can strengthen partnerships or generate new ones, (vi) work that can generate additional development opportunities and resources, (vii) high quality research that challenges the established theories, exploring early leads on where new ideas may emerge.

Table 1: CRP planned budget by flagship for 2017

	Planned Budget 2017		
	W1+2	W3/bilateral	Total
Flagship 1. Tree genetic resources to bridge production gaps and promote resilience	1 280 000	10 950 712	12 230 712
Flagship 2. Enhancing how trees and forests contribute to smallholder livelihoods	0	21 063 455	21 063 455
Flagship 3. Sustainable value chains and investments	1 140 000	9 342 826	10 482 826
Flagship 4. Landscape dynamics, productivity and resilience	1 330 000	12 091 939	13 421 939
Flagship 5. Forests, trees and agroforestry for climate change adaptation and mitigation	1 250 000	12 394 375	13 664 375
Program leadership, management and support	2 250 000	0	2 250 000
Program supporting research	1 550 000	5 270 517	6,820,517
Total	**8 800 000**	**71,113,824**	**79,913,824**

A1.4 Planned Revisions to the Program of Work

Program-level delivery is significantly impacted by the 20 percent reduction of W1+2 funding (2.2M) compared to the proposal. As per FTA-ISC guidance, and applying the priority scheme described above, *Programme leadership and management and support*[3] and *Program supporting research*[4] activities are safeguarded in FTA at an overall level of 3.8M[5]. This is in line with former ISPC comments[6] to serve strategic coherence, research design and prioritization in FTA.

[3] This category now includes also FTA-MEL system, knowledge management, communication, and outreach costs, for a total of 484kUSD previously accounted (as for the whole support platform) under Flagship budgets.

[4] This new category of *Program Supporting Research* covers the MELIA, CapDev, Gender and Data clusters of activities, respectively at a level of 400, 300, 700 and 150kUSD W1+2, all remapped from the Flagships' budgets. It was created to provide increased transparency, accountability and consistency with the internal organization mode of the support platform (see A1.3 and A3.1). 52% of the *Program Supporting research* W1+2 supports cross-cutting work and 48% is specifically directed to a FPs (this latter resp. 69%, 29% and 54% of MELIA, CapDev and Gender W1+2 budgets, see part B for details). Data is entirely W1+2 funded and cross-cutting.

[5] Note that this operation included a double remapping of costs previously mainstreamed equally within the five FPs: 484k towards *Programme leadership, management and support* and 1550k towards *Program Supporting Research.* The total remapped is 2.034M (404,800 USD per FP), without implication on the activities supported by these funds.

[6] Regarding the Support Platform, the ISPC wrote "*The opportunities to leverage additional funds may be limited for this key component program, and in those respects, the budget for this FP may be too small and it also probably merits priority for W1+2 funds going to FTA*".

The remaining 5M are allocated to FPs. This represents a 2.2M reduction of W1+2 FPs research budgets, or -31%[7]. With no support for FP2 to comply with SC decisions, research within FPs 1, 3, 4 and 5 was decided according to the priority scheme above, and safeguarding works at the interface of flagships (see part B for details on the Program of work of FPs). The resulting change on individual FPs 1-5 research budget[8] is respectively of -11%, -100%, -21%, -8% and -13%.

For FP2, dropped activities include:

- New research and global strategic synthesis and review on silvo-pastoral systems as planned in the proposal and recommended by IEA.
- A synthesis amongst variants for the 'options by context' approach across countries and regions.
- Impact assessments on i) the role of trees in dairy development in East Africa and ii) sediment control and livelihood resilience in the Lake Tanganyika basin.
- Applying genomic approaches to profiling soil biota to understand beneficial impacts of trees to tackle the urgent problem of non-responsiveness of a growing proportion of African soils.
- Interfacing with other CRPs (see A 2.2 below).

Regarding bilateral resources, new funds have been raised under FP2 (a 42% of increase over the bilateral funding as per proposal) from several sources (IFAD/GEF, IFAD/EU, ACIAR, USAID, Mars and the African Development Bank) for restoration, resilience and food-security oriented works in Africa and for works on commodity tree crop value chains in Africa, on market-based agroforestry in Vietnam and Indonesia, and on oil palm, cocoa and coffee diversification in Brazil and Peru (and the latter funded by USAID through a public private partnership with Natura). Also additional to the proposal, the EU-funded project FORETS, will gather FTA FP 2, 3 and the CapDev cross-cutting theme with the University of Kisangani, to support capacity development in DRC.

A2. Collaboration and Integration

A2.1 Contribution to and from Platforms

FTA and **the Genebank Platform** will coordinate efforts and share resources for *ex situ* collections of TGR. In 2017, FTA will contribute to the **Excellence in Breeding Platform** by offering its experience of breeding perennial plants: develop systems for capturing breeding program targets and matrices, help in baseline study about existing resources and labs capacities, develop a strategy for applied breeding of perennial crops species, assessing applicability of existing analytical tools.

In 2017, FTA will liaise with the **Big Data Platform** and its "organize" module, expecting a contribution to support compliance with OADMP through a range of support mechanisms from capacity building, through targeted technical support to generation of new tools, services, portals and web platforms.

FTA will contribute research findings, tools and methodologies to the CGIAR **Gender Platform**. In 2017, the Platform will facilitate FTA's research collaboration with other CRPs, such as by supporting the global comparative study GENNOVATE and FTA-PIM-WLE work on gender and agribusiness expansion co-funded by the CGIAR gender postdoctoral Fellowship scheme.

A2.2 Cross-CRP interactions

All five FTA Flagships (FPs) and the Supporting Platform (SP) have links with other CRPs that are described in Annex 3.7 of the FTA proposal.

Some highlights on Cross-CRP interactions and joint research in 2017 include:

[7] In the proposal each FP had 1.44M W1+2 allocated for its research plans on a perimeter that excludes the now remapped funds (that were not directly contributing to FP research), hence a total of 7.2M across FPs. The 2.2M reduction represents 31% of the budget on this perimeter.

[8] On the same perimeter as above, now adopted for FPs.

- CCAFS: publications on tools and approaches across scales on climate change adaptation and mitigation; on technical and policy options to scale up finance and investments for more sustainable beef production in the Amazon, in low emission production systems and for forest conservation; and on forest-related offset opportunities for dairy sector emissions in Kenya and Tanzania;
- CCAFS: recommendations on gender, agroforestry and climate change based on demand by Nicaragua, based on combination of data from CCAFS climate-smart villages and FTA's Nicaragua-Honduras Sentinel Landscape;
- PIM: a tool for gender-responsive value chain development, which will be piloted to enhance gender equity in cocoa landscapes;
- PIM: assessing business models that support greater participation of smallholders in forest and tree-crop products, and financial schemes with potential for scaling, enhancing value capture by smallholders and SMEs. This takes advantage of PIM's frameworks for assessing inclusive value chains;
- WLE and CCAFS: The encompassing work on "what to plant where" under climate change and globalization, addressed by all three clusters of FP1
- A4NH: joint research on nutritional value of tree food crops and on their domestication for better nutritional outputs.

In 2017, new connections with Agri-food systems CRPs, that were to happen through FP2 at FTA's initiative and uniquely funded by W1+2 resources will be put on hold, such as the development of a cross CRP platform on tree-crop interactions with Maize, Wheat and Rice, and a joint workshop amongst the four CRPs to synthesise knowledge, prioritise research and develop proposals for bilateral funds. Similarly plans to set up a series of joint PhD studentships on tree-crop commodities (with RTB and CCAFS) and tree fodder (with Livestock and PIM) will be downscaled due to the impossibility for FTA to match the funding.

A2.3 Expected Efforts on Country Coordination

FTA will implement the plan described in the proposal, aligning it with the recommendations from the System Management Board working group, as they become available. In 2017, FTA will review modalities of its participation in the Burkina Faso and Cameroon teams coordinated by CIFOR and ICRAF, as well as in DRC, Ethiopia, India, Nepal, Nicaragua, Vietnam and Uganda. To do so, the FTA representative in each country coordination team will be exploring (i) how communication and planning can be improved; (ii) how joint engagement with national stakeholders and alignment with national priorities can be improved, and (iii) how to leverage the works and information within the portfolio of Sentinel Landscapes (SL) to support the country coordination processes. The work will be mostly funded through bilateral projects.

A3. Management, Governance and Monitoring, Evaluation, Learning

A3.1 Relevant Changes in Management and Governance

The governance and management structure for FTA II will remain as described in the proposal. FTA has a new director, Dr Vincent Gitz, appointed 1st November 2016. He reports to the ISC and its Chair for all programmatic activities, and administratively to the Director General of CIFOR

The linkages between FTA's management support unit (MSU, responsible for the first category of activities as described in A.1.3) and its Support platform (SP, organized around 4 cross-cutting themes/CCT) have been clarified, with each CCT operating under the responsibility of a leader programmatically reporting to the Director.

There is no structural change of the CRP, but an alignment of the way the budget is now presented to the effective structure of the CRP, which includes the MSU (covered by the *Leadership, management and support* budget), the SP (covered by the *Program supporting research* budget) and 5 FPs (covered by their own budget).

A3.2 Monitoring, Evaluation, Impact Assessment and Learning Plans

MELIA (monitoring, evaluation, learning and impact assessment) is a core research and support unit with team members from each of the participating Centers. MELIA work is organized in four main clusters of activities, supported by 0.4M of W1+2, and 0.7M of bilateral resources:

1. Foresight/ex ante impact assessment. This is a new area for FTA. In 2017 MELIA will develop our approach in collaboration with RTB and PIM. This will feed into FTA's research priority setting process.
2. Ex-post impact assessment. MELIA will undertake in 2017 an ex-post impact assessment of the Agroforestry for Food Security Program (Malawi) with SPIA support.
3. Outcome evaluation, with four studies completed and four new launched in 2017, including one a project on women's participation in forest management in Uganda, that will help improve the gender sensitivity of MELIA tools and strengthen FTA's theory of gender-transformative change.
4. Indicators, monitoring & reporting. In 2017, MELIA will revise the set of FTA indicators and milestones, which currently, as submitted in this POWB, are under design. This work will also serve to align them within the context of a CG-wide integrated performance monitoring system for the CRPs. Because of this, the set of indicators and milestones in this POWB is provisional[9].

Key outcomes of MELIA's work in 2017 will be: (i) improved capacity and improved design, monitoring, evaluation and learning; (ii) strengthened impact culture within FTA; (iii) stronger empirical evidence of the effects of FTA research and (iv) better, more transparent estimates of potential impact leading to improved donor confidence.

[9] During 2017, FTA will also investigate how these indicators and milestones relate to worldwide coverage with respect to areas, people and economic returns, in order to better document how they concur to FTA's aspirational targets.

B. FLAGSHIP LEVEL

Flagship 1

B.1 Delivery

B.1.1 Expected Annual Milestones towards Outcomes 2022

The planned milestones of FP1 in 2017, formulated to contribute to end of program outcomes (EPOs), are listed in Table 3a.

Concerning outcome 1.1 (safeguarding), 2017 focus of FP1 will be on development and application of statistical and molecular tools for measuring diversity distribution and suitability under global change, assessing levels of threat to this diversity, and provide relevant conservation options in this context.

With respect to outcome 1.2 (domestication), FP1 will in 2017 provide the first results of genome sequencing of both crop and tree species under the African Orphan Crops Consortium (AOCC) and give new guidance on systematic prioritization of species for further domestication at both global and local levels.

Central works in 2017 contributing to outcome 1.3 (delivery) will be an analysis of why institutional environments for agroforestry seed systems matter, and a global survey of tree seed selection and its importance in forest and landscape restoration; both considered in the context of agricultural intensification and diversification.

Among the principal partners of the work in 2017 are ICRAF, Bioversity, FAO, CBD, IUCN, WRI, BGC, AOCC (private-public consortium of 13 partners including i.a. MARS Inc.), UC Davis, CONCERN, VI, World Vision, JHI and UCPH, as well as the genebank and breeding platforms and the many national partners and advanced research institutions engaged in the bilateral project portfolio (see further in the proposal, section 2.1.1.7, page 74).

The estimated contributions of FP1 to the sub-IDOs, with related indicators and targets for 2017 are presented in Table 2a[10]. The indicators identified will be re-assessed during 2017 in the context of the Global Plan of Action for the Conservation, Sustainable Use and Development of Forest Genetic Resources (FAO) and revised accordingly in collaboration with FAO to provide a common baseline and indicators of progress for the whole period up to 2022.

B.1.2 Output towards Outcomes 2022

Planned outputs of FP1 in 2017 are described in Table 4a, directly linked to the milestones in Table 3a, with 'quantification' in terms of number of planned research outputs, and 'qualification' in terms of narrative detail linking to the 'deliverables' of the FP1 program proposal.

At present a total of between 60 and 100 research outputs have been defined and planned for 2017 to contribute in meeting the outcome targets of FP1. Results from studies of fruit production and consumption related to domestication will be of particular gender sensitive relevance and performed in collaboration with FP4.

The gender cluster from the Support Platform will work in 2017 with FP1 on gender and tree-seed systems within the context of a Fellowship Programme to enhance scientist capacities to conduct gender-responsive research and produce empirically informed recommendations for policy makers and development practitioners regarding gender responsive tree-seed delivery systems. The publication of a

[10] FP1's overall contribution to the CGIAR Strategic Results Framework (SRF) (CGIAR SRF May 2015) and the universal Sustainable Development Goals (SDGs) (UN 2015) is described in the FTA program document of July 2016 with annexes (FTA July 2016). SRF, FTA and FP1's aspirational targets for 2022 are presented in the FTA proposal in Table 1 (p 9), Annex 3.12 and the FP1 narrative (p 50).

number of technical fact sheets and guidelines will contribute to capacity development efforts in all regions.

B.1.3 Contribution of W1+2 Funds

The total budget of FP1 for 2017 is 12 million USD (cf. Table 1), with W1+2 contributing 10.7 percent. The W1+2 contribution is planned to 1) ensure the production of 'global public goods' from the programme as a whole (enhance results of several bilateral projects and go beyond the individual projects geographic scope and time frame), and 2) to support development of proposals to secure resources needed to achieve milestones and outcomes beyond 2017.

In the FP1 proposal, the share of W1+2 was estimated to be 19 %. The reduced share of W1+2 will weaken the ability to produce such 'global public goods' on the basis of the total programme and shift the balance between the two purposes of W1+2 support. W1+2 reductions led FP1 to postpone the plan to work with UC Davis to characterize nutrients and general phenotypes of almost 1000 indigenous tree foods, as well as joint activities with new FTA partners. The work on public-private partnership models and the development of quality standards has similarly been postponed.

W1+2 Funds are allocated across the programme in accordance with production of outputs that are considered of highest importance for the purpose of contributing to the outcomes and the impact of the programme (Table 3a).

W1-2 funds will in cluster 1.1 be used to develop and test the application of molecular characterization tools and threat analysis combined with suitability modelling work to optimize efforts of conservation of tree genetic resources in practice to be applied in landscape restoration with FP4.

In cluster 1.2, W1-2 is allocated to apply and test genomic tools to enhance breeding processes leading to more efficient establishment of seed production orchards and clonal mother blocs, which will connect to use of reproductive material in FP2, FP3 and FP4.

In cluster 1.3, W1-2 will be used in a collaborative study with PIM on making seed systems and markets for vegetatively propagated crops work for the poor; on improving monitoring of seed source quality with genomic tools; and on provision of recommendation domains based on suitability modelling under climate change in liaison with FP5.

The FTA support platform will contribute to FP1 work with W1+2 resources under Program supporting research, respectively 53k, 6k and 93k for MELIA, Capdev and gender work.

Table 2a FTA FP1 Preliminary indicators[11] and targets for contribution to the SRF.

FP 1	**Mapped and contributing to Sub-IDO**	**Relevant CRP sub-IDO indicators***	**2017 Target****
FP1 CoA1	Sub-IDO 1.4.4 Increased conservation and use of genetic resources. Sub-IDO 3.1.2 Enhanced conservation of habitats and resources. Sub-IDO C.1.1 Increased capacity of beneficiaries to adopt research outputs.	# of national institutions and international organisations engaged in tree genetic resource conservation adopting tools and indicators (threat analysis) in developing tree genetic resource conservation plans.	3-5 institutions in three regions

[11] As explained in Part A, in 2017, FTA will revise its set of indicators and milestones, which currently, as submitted in this POWB, are under design. This work will also serve to align them within the context of a CG-wide integrated performance monitoring system for the CRPs. Because of this, the set of indicators and milestones in this Table is provisional.

FP1 CoA 2	Sub-IDO 1.4.3 Enhanced genetic gain. Sub-IDO 3.3.2 Enhanced adaptive capacity to climate risks. Sub-IDO C.1.3 Conducive agricultural policy environment.	# of national (private or public) tree breeding institutions or entities adopting 'genetic business plans' applying diversity, adaptation and economic returns in their breeding strategy.	3-5 institutions in three regions
FP1 CoA 3	Sub-IDO 1.3.4 More efficient use of inputs. Sub-IDO A.1.3 Improved forecasting of impacts of climate change and targeted technology development Sub-IDO D.1.1 Enhanced institutional capacity of partner research organizations	# of national (private or public) tree germplasm supplying institutions or entities adopting 'genetic business plans' applying diversity, adaptation and economic returns in their deployment strategy.	3-5 institutions in three regions

Table 3a: Expected Annual Milestones (progress markers) towards Outcomes 2022

FP No.	FP Outcome 2022	Milestone 2017 Max. of 3 milestones per FP outcome 2022	Mapped budget request for 2017	
			W1/ W2 USD	W3/ bilateral USD
FP1	**Outcome 1.1** Managers and policy-makers adopt effective monitoring methods, tools and practices to mitigate threats to valuable TGR, 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	Milestone 1.1.1 methods, tools and practices developed for at least two countries	400,000	3,500,000
		Milestone 1.1.2 characterization methods and indicators for monitoring status and trends of TGR including ABS applied in at least two cases		
		Milestone 1.1.3 tree genetic resource networks provide strategies for safeguarding in at least one region		

	Conservation and Use of Cacao Genetic Resources			
	Outcome 1.2 Agricultural and horticultural research and development partners adopt cost-effective domestication approaches for priority tree species, based on impacts and maximizing efficiency, and considering trade-offs involved in intensification, while paying attention to smallholder breeders' rights	Milestone 1.2.1 Rank of priority species identified, evidence based tool kit (web portal) on tree genetic resources designed and actors participating in the construction with respect to gender-responsive guidelines, and decision-support and practical tools for tree domestication in one major geographical region	400,000	3,300,000
		Milestone 1.2.2 Business models and alliances including IP and ABS developed for up to 5 species in 1-2 countries		
		Milestone 1.2.3 Mobilisation of tree genetic resources (including specific clones) and evaluation of at least 3 domesticated species from at least 2 countries and generation of genomic information for domestication for at least 5 species		
	Outcome 1.3 National governments, extension services and private partners adopt cost-effective and equitable tree-planting material delivery approaches, with attention to appropriate international and national policies governing material transfer/use agreements and using the most appropriate decision support tools, to supply high-quality site-appropriate	Milestone 1.3.1 Generic and case specific delivery pipeline models, and production and delivery enterprises developed in at least 2 countries.	480,000	4,150,712
		Milestone 1.3.2 Quality standards identified, for later development and promotion to actors in the germplasm production and delivery sector; and measures suggested for subsequent provision for implementation by policy makers, extension services and the private sector		
		Milestone 1.3.3 Generic and case specific decision support tools, and indicators being developed to monitor the performance of delivery pathways with regard to models, to standards including the performance and viability of planting, and to evaluate quality and		

	tree-planting material to smallholders and other growers	the needs for management (including enrichment) of natural regeneration		
Total FP1			**1,280,000**	**10,720,000**

Table 4a: Expected Key Output 2017 towards Outcomes 2022

			Tagging of expected outputs 2017		
FP 1	**FP Outcome 2022**	**CoA Output**	**G**	**Y**	**CD**
FP1	**Outcome 1.1** Managers and policy-makers adopt effective monitoring methods, tools and practices to mitigate threats to valuable TGR, 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	1. At least 10 articles reports, or communication tools on effective and affordable methods and decision-support tools, including status and threat assessment maps and appropriate option value methods for the prioritization of safeguarding actions, which consider TGR availability and the value of genetic diversity for products and ecosystem services.	0	0	1
		2. At least 8 research outputs (peer review articles, research reports, and communication tools), covering user-friendly characterization methods and indicators with practical guidelines for their application in monitoring the status and trends of TGR and associated threats, with case study applications (including ABS).	1	1	1
		3. At least 6 research outputs (peer review articles, research reports, and communication tools), covering national and regional strategies and guidelines for appropriate targeting and safeguarding of TGR in various political, socioeconomic and environmental contexts, at different scales, and based on the biology of the species concerned.	1	1	1
	Outcome 1.2	4. At least 10 research outputs (peer review articles, research reports, and communication	1	0	1

	Agricultural and horticultural research and development partners adopt cost-effective domestication approaches for priority tree species, based on impacts and maximizing efficiency, and considering trade-offs involved in intensification, while paying attention to smallholder breeders' rights	tools), covering dynamic (producer- and consumer-sensitive) lists of priority tree species for domestication, with key traits for production, including those that support positive agroecosystem interactions, identified; including gender-responsive guidelines, and decision-support and practical tools, for tree domestication.			
		5. One report covering public-private consortia engaged in tree domestication; and appropriate ABS models for farmer-developed tree varieties.	0	0	1
		6. At least 20 research outputs (peer review articles, research reports, and communication tools), covering improved material (eventually 'varieties') of priority tree foods and for other tree products, with value visible for growers in comparative demonstration plots/trials; and genotyping of appropriately assembled germplasm. Collections, combined with public databases	1	0	1
	Outcome 1.3 National governments, extension services and private partners adopt cost-effective and equitable tree-planting material delivery approaches, with attention to appropriate international and national policies governing material transfer/use agreements and using the most appropriate decision support	7. At least 5 research outputs (peer review articles, research reports, and communication tools), covering gender-responsive and socially inclusive delivery pipeline models for tree-planting material that support different users (including for landscape restoration); and community-based and entrepreneurial production and delivery enterprises e.g. seed orchards, rural resources centres, private tree nurseries, etc. Fellowship Program on gender and tree seed systems	2	1	2
		8. At least 1 article covering quality standards developed and promoted to actors in the germplasm production and delivery sector; and measures to ensure that appropriate quality standards are mainstreamed by policy makers, extension services and the private sector.	1	1	1
		9. At least 4 articles covering user-friendly decision-support tools to inform planting choices where relevant in conjunction with	1	1	1

	tools, to supply high-quality site-appropriate tree-planting material to smallholders and other growers	market information services; and indicators to monitor the performance of delivery pathways with regard to models, to standards including the performance and viability of planting, and to evaluate quality and the needs for management (including enrichment) of natural regeneration.			

Flagship 2

B.1 Delivery

B.1.1 Expected Annual Milestones towards Outcomes 2022

FP2 is solely funded through a portfolio of bilateral projects in 2017, managed by six partners (CIFOR, ICRAF, CIRAD, CATIE, INBAR, Tropenbos), encompassing projects at all stages of completion (inception, mid-term, end) and covering discovery, proof of concept and scaling up. As progress towards milestones is the result of a cumulative investment since the beginning of phase 1, the ban on W1+2 funding in 2017 has only limited impact on 2017 milestones towards outcomes (Table 3c), or on the set of indicators (Table 3b). However, should this situation continue, the impact will be more severe and intensify across years, requiring FP2 to revise its targets.

FP2 is on target to reach 2017 milestones except on milestone 2.5.1 on silvopastoral systems (Table 3b), which was a new strategic thrust recommended by the IEA review of FTA, but which is impacted by W1+2 ban in 2017. Through bilateral funding FP2 has secured resources for major research on the use of trees in restoring land productivity, improving food security (CoA 2.4) and sustainable intensification of cocoa, coffee, oil palm and cashew (CoA 2.3) in East, West and Southern Africa; diversification of cocoa and coffee systems in Peru and oil palm diversification in Brazil (CoA 2.3), as well as for novel development of market based agroforestry in East and Southern Africa (Uganda and Zambia) and in Vietnam and Indonesia (CoA 2.2). The work on food security includes development of the APSIM tree-crop interactions model with CSIRO so that it can be used in global agricultural sector models (CoA 2.1). This whole body of research operationalises the *options by context* approach conceptualized in Phase 1 (CoA 2.1). In 2017, this approach is embraced by NARS (in nine countries, five in Africa, two in Southeast Asia and two in Latin America), NGOs (e.g. WWF, WV, Dahari) and private sector partners (e.g. Natura, Mars) working with FP2, and FP2 is in discussion with additional partners interested in adopting it (e.g. the One Acre Fund, Africa Harvest). `

Important areas of FP2 research in 2017 will be conducted in close collaboration with other FPs. FP2 will work with FP1 on how to ensure the development and use of appropriate tree generic resources at farm, landscape and regional scales. FP2 will contribute to the development of schemes that reward the maintenance and enhancement of ecosystem services (done in FP4), by providing fine scale resolution methods and tools to map impacts of tree cover change at field and farm scale on ecosystem service provision at local landscape scales. Research on marketing of coffee, cocoa, oil palm and rubber and novel work on beef certification, is jointly conceived and implemented with FP3, with FP2 working on innovations in the production system and FP3 concentrating on the global value chain aspects. Work on value chain innovation for more localised agroforestry and NTFP products, not covered by the selected value chains in FP3, is done within FP2 but informed by innovative approaches developed in FP3'sr selected value chains. Finally, FP2 will provide FP5 with knowledge on the use of trees for locally adaptive strategies to climate change.

With respect to the proposal, FP2 has secured additional bilateral resources in 2017 to invest in three new initiatives that will strengthen delivery towards 2022 outcomes: i) FP2 has been asked to coordinate scientific underpinning of the IFAD implemented GEF integrated approach programme on fostering resilient food security across 12 countries in sub-Saharan Africa in collaboration with UNEP, UNDP, AGRA and FAO (CoA 2.4); ii) the African Development Bank has asked FP2 to lead development of research and technology transfer for sustainable intensification of tree crop commodities across sub-Saharan Africa (CoA 2.3); and, iii) FAO has asked FP2 to support national agroforestry policy development in Rwanda (CoA 2.1). These initiatives consolidate FTA's partnership strategy and provide funding to strengthen the use of outputs and the emergence of outcomes along FP2's impact pathways.

B.1.2 Output towards Outcomes 2022

Major FP2 outputs in 2017 provide a foundation for meeting our 2022 outcome targets and naturally fall into categories defined by the five clusters of research activity (Table 4b). Within systems synthesis and scaling (CoA 2.1), the development of strategic priorities for scientific underpinning of initiatives to foster resilient food security across sub-Saharan Africa (new investment), identification of policy gaps acting as barriers to adoption of sustainable agricultural intensification in three countries, and an analysis of how different knowledge and inclusion according to gender, impacts success in land restoration put FP2 on track to inform the development of livelihood options at scale required to meet our target with respect to Sub-IDOs 3.2, 5.2, 8.1, 9.1 and 10.1 (Table 2b).

Bilaterally funded work on gender, migration and multi-local livelihoods will document the impact of gender differences in patterns of migration and mobility on women's voice and influence in forest governance in six countries. It will identify which types of policies, institutional arrangements and interventions foster enabling environments for women and men to benefit from migration and multi-local livelihoods in forested landscapes.

Investments from ACIAR and IFAD for market based agroforestry (Zambia, Uganda, Vietnam, and Indonesia) the latter two new in 2017 and contributions of the farm-forest interface to livelihoods (Burkina Faso and Ghana) will produce new insights on which market and policy interventions are most likely to increase income in different contexts, with a focus on opportunities for young people and women (CoA 2.2) contributing to meeting our contributions to sub-IDOs 3.3, 9.2 and B1 (Table 2b). The development of new research and technology transfer priorities for sustainable intensification of cocoa, coffee, oil palm and cashew for the African Development Bank, coupled with strategies to address the emerging CSSVD (cocoa swollen shoot virus disease) in Cote d'Ivoire and options for diversification of oil palm in Brazil and cocoa and coffee in Peru and Indonesia are key steps towards diversified and more intensive tree-crop commodity production systems (CoA2.3) contributing to meeting targets related to sub-IDOs 3.3 and 9.2 (Table 2b). The largest new investments from IFAD, ACIAR, USAID and DfID amongst others, have been in the role of trees in supporting sustainable intensification of agriculture through system intensification and the maintenance and improvement of soil health (CoA 2.4) contributing to meeting targets with respect to Sub-IDOs 8.1 and 9.2 (Table 2b). This enables the establishment of extensive farmer trial networks and co-learning communities of practice across Africa and Southeast Asia (sub-IDO targets D3 and D4 – Table 2b) producing novel data on how contextual factors condition the suitability of different interventions that will inform policy (Sub-IDO target C3 – Table 2b) and practice. FP2 has captured bilateral resources for parts of the research agenda on silvopastoral systems planned in the phase 2 proposal to start in 2017 on utilisation of bamboo and a range of other tree species as fodder, developing governance models for control of livestock in relation to tree establishment in Ethiopia and climate mitigation and adaptation in Central America (CoA 2.5). Lack of W1+2 has led to postponing research on global synthesis of silvopastoral systems research across countries and regions and the associated development of global, regional and national research priorities for which replacement funding in 2017 or 2018 W1+2 need to be secured.

B.1.3 Contribution of W1+2 Funds

FP2 will receive no W1+2 funds in 2017. Likewise, the Support Platform will not support FP2 in 2017 with W1+2 resources. However, FP2 has been successful in obtaining a higher bilateral investment than budgeted in the proposal. The bilateral funding is not substitutive of W1+2, as it is by nature tied to specific regional, national or local deliverables. The lack of W1+2 has led FP2 to cancel or postpone activities in the key areas of IPG generation, global synthesis across projects, impact evaluation, inter CRP collaboration, and initiation of novel research (see part A). Some outputs for which a combination of bilateral and W1+2 funding was foreseen will be impacted as shown in Table 4b.

Table 2b FP2 Preliminary indicators[12] and targets for contribution to the SRF

FP No.	Mapped and contributing to Sub-IDO	Relevant CRP sub-IDO indicators*	2017 Target**
FP2	3.2 Increased livelihood opportunities	Cumulative number of people *reached* by development partners *using* FTA-related options or *affected by* policy changes that enable adoption of FTA-related livelihood opportunities.	10 million people (roughly 2 million households)
	3.3 Increased value capture by producers	Cumulative number of people with *access to* FTA-related technologies, market interventions and/or policy or institutional innovations that can demonstrably enable an income increase by at least 25%	500K people (roughly 100K households)
	5.2 Increased access to diverse, nutrient-rich food	Cumulative number of people in smallholder households with *access to* FTA-related innovations that can demonstrably improve food production (quantity and availability seasonally) and dietary diversity (minimum dietary energy requirements and an adequate number of food groups).	1.75M people (roughly 350K households)
	8.1 Land degradation minimized and reversed	Cumulative number of ha *reached by* FTA innovations that can demonstrably avoid degradation or restore productivity of degraded land.	500K ha
	9.1 More productive and equitable management of natural resources	Cumulative number of ha of land *reached by* FTA innovations in natural resource governance that can demonstrably improve productivity or equity.	1M ha
	9.2 Agricultural systems intensified and diversified in ways that protect soils and water	Cumulative number of ha of land *reached by* FTA innovations involving improved tree cover management that can demonstrably protect soils and water.	250K ha
	10.1 Increased resilience of agroecosystems and communities	Cumulative number of people residing in communities reached by FTA innovations that demonstrably increase livelihood resilience	1 M people
		Cumulative number of ha of land *reached by* FTA innovations that demonstrably increase agroecosystem resilience.	500K ha

[12] As explained in Part A, in 2017, FTA will revise its set of indicators and milestones, which currently, as submitted in this POWB, are under design. This work will also serve to align them within the context of a CG-wide integrated performance monitoring system for the CRPs. Because of this, the set of indicators and milestones in this Table is provisional.

	B.1 Gender-equitable control of productive assets and resources	Cumulative number of women, and members of vulnerable groups, *affected by* decision making institutions governing the management of tree and forest resources, for which FTA innovations *are available* that can demonstrably increase numerical and substantive representation of these groups in decision making.	50K
	C.3 Conducive agricultural policy environment	Cumulative number of people *potentially affected by* policy changes with a demonstrable link to FTA innovation (evidenced by process tracing).	7M people (roughly 1.4 M households)
	D.3 Increased capacity for innovation in partner research organizations	Cumulative number of people in partner research organisations *engaged in* co-learning communities of practice involving FTA innovations	1000
	D.4 Increased capacity for innovation in partner development organizations and in poor and vulnerable communities	Cumulative number of development partner staff *engaged in* co-learning communities of practice involving FTA innovations	3000

Table 3b FP2 Milestones towards Outcomes 2022

FP No.	**FP Outcome 2022**	**Milestone 2017** **Max. of 3 milestones per FP outcome 2022**	**Mapped budget request for 2017**	
			W1/ W2 USD	**W3/ bilateral USD**
FP2	Outcome 2.1 Improved food security and livelihood opportunities for 100 million people in smallholder households 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.	Milestone 2.1.1 Comparative analysis of local knowledge, gender roles and policy options across at least three countries and regions	0	5,237,182

	Outcome 2.2 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	Milestone 2.2.1 Analysis of barriers to people benefiting from tree resources across at least six countries and three regions	0	3,188,201
	Outcome 2.3 Diversified tree-crop production systems covering 5 million ha and improving diets and livelihood opportunities for 20 million people in smallholder producer households	Milestone 2.3.1 Options by context matrices for diversified cocoa and oilpalm production practices in Peru and Brazil	0	4,212,691
	Outcome 2.4 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 livelihood	Milestone 2.4.1 Globally calibrated tree-crop interaction models that can reliably predict impacts of tree cover change on yields of at least three staple crops.	0	6,671,469
	Outcome 2.5 Closing 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	Milestone 2.5.1 Global systematic review of relationships between tree cover and pasture and animal productivity	0	1,753,914

Table 4b FP2 Outputs towards Outcomes 2022			**Tagging of expected outputs 2017**		
FP No. 2	FP Outcome 2022	CoA Output *(*) Denotes a co-funded output (W1+2 plus bilateral or with other CRPs) affected by absence of W1+2 funds, that have been retained in the POWB (instead of being removed) to reflect the partial contribution of bilateral donors or the other CRPs, but indicating that it may be delivered at a reduced level. The FP is currently assessing induced implications and delays occasioned by lack of W1+2 funds with partners.*	G	Y	CD
FP2	Outcome 2.1 Improved food security and livelihood opportunities for 100 million people in smallholder households 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.	1. Report on strategic priorities and plan for scientific underpinning of resilient food security initiatives across sub-Saharan Africa that reconcile sustainable increase in food production with maintaining global environmental benefits (Burkina Faso, Burundi, Ethiopia, Ghana, Kenya, Malawi, Niger, Nigeria, Senegal, Swaziland, Tanzania, and Uganda). This includes specifications for the development of science-policy platforms nationally and regionally. IFAD/GEF funded.	1	1	1
		2. Bringing evidence to bear on negotiating ecosystem service and livelihood trade-offs in sustainable agricultural intensification in Tanzania, Ethiopia and Zambia. Three reports highlighting national-level policy gaps; stakeholder mapping analysis; and participatory prioritization. DfID funded.	2	1	1
		3. Restoration of degraded land for food security and poverty reduction in East Africa and the Sahel (Ethiopia, Kenya, Mali and Niger). Review of gender Inclusion in land restoration initiatives, development of a national agroforestry scaling-up platform at the invitation of the Ministry of Agriculture in Ethiopia; guidelines for establishing and sustaining communities of practice; analysis and report on the use of planned comparisons and the open data kit to operationalize an options by context approach; and report on Lead Farmer Training. IFAD/EU funded.	2	0	1
		4. Report of analysis of trees on farms for livelihoods, carbon storage and conservation of biodiversity in North-Central Nicaragua.	0	0	0

		5. Capacity building report on agroecological approaches for sustainable agriculture and strengthening multi stakeholder cooperation in East and West Africa, including policy implications.	0	0	2
		6. Report on options for using agroforestry systems to restore “protected areas”, as defined under the new Brazilian Forest Code.	0	0	0
		7. Training guide for auto-appraisal methods for village level facilitators in Burkina Faso and Ghana. IFAD.	0	0	2
		(*) 8. Synthesis of experiences of the development of options by context approach as an emerging paradigm shift in agronomy for development.	1	1	0
		9. Analysis of the use of transects to increase the efficiency of adapting agronomic options to local contexts using examples from the Sahel	1	1	0
		10. Analysis of policy frameworks (agricultural, forestry, conservation, trade) influencing smallholder management of the forest-farm interface in Burkina Faso and Ghana. IFAD.	2	2	0
		11. National agroforestry policy developed for Rwanda. FAO	1	1	1
		12. Implications of the complexity of local knowledge about land degradation for the development of land restoration options in Ethiopia and Rwanda. ACIAR / IFAD	2	0	0
		13. Polarity of local knowledge about how trees affect soil health in Burkina Faso and its implications for promoting farmer managed natural regeneration in the Sahel. Biodev.	1	0	1
		(*) 14. Interfacing of agroforestry modelling capacity developed within APSIM to explore national, regional and global consequences and their implications for agricultural policy using the global IMPACT` model framework.	0	0	0
FP2	Outcome 2.2 Improved livelihood	15. Review of constraints and opportunities for enhancing the contribution of forest and tree management to livelihoods in Burkina Faso and Ghana. Two policy briefs.	1	0	0

	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	16. Assessment of the understanding of socio-economic effects of agroforestry programme engagement in Kenya (dataset and assessment report).	1	1	0
		17. Reports on the establishment of value chain innovation platforms for coffee, dairy and honey in Kapchorwa and Manafwa in Uganda and for solwezi bean, soybean and native chickens in Solwezi, Zambia including design of planned comparisons to test the effectiveness of different approaches to value chain enhancement and their policy implications.	2	2	0
		18. Analysis of value chain approaches to reduce pressure on the natural forest in Tana-Kipini-Laga Badana in Kenya and Somaliland.	1	0	0
		19. Report on engagement in new bamboo value chains and SMEs, including household charcoal production to cater for food, fodder, feed and bioenergy requirements in Eastern Africa	1	0	0
		20. Report on requirements for enabling incorporation of bamboo into farming systems in Eastern Africa as a boundary crop or a homestead plant, to conserve soil and water resources and provide an alternative source of woody biomass, as well as feed and fodder. This includes consideration of enabling policy measures.	1	0	0
		21. Generate evidence for development sector financing which are now investing in developing bamboo value chains as part of their respective investment financing portfolios.	0	0	0
		22. Three market feasibility studies in Ethiopia, Kenya and Uganda for the bamboo sector. These will be used to draft national policy recommendations for the three countries on how to support bamboo sector development and reduce barriers to smallholder farmer uptake.	1	1	1
		23. Priority timber species identified for on-farm planting across altitudinal gradients in Northwest Vietnam (in collaboration with FP1)	1	0	0
		24. Report on cultural, gender and age specific barriers to adoption of agroforestry across Northwest Vietnam including policy implications necessary to overcome them.	2	2	0

		25. Two sites selected and inventoried for demonstration of community based forest rehabilitation in Northwest Vietnam in association with provincial level forestry policy makers.	0	0	0
		26. Report to identify and address barriers to equitable participation in and benefits from value chains for women, young people, and other marginalized groups, improving gender-responsiveness of business models and service delivery, as well as promote policies and practices for securing and increasing equitable access to and control over productive resources.	2	2	0
		27. Policy Framework for Complementary Integrated Management of Timber and Non-timber Forest Products to Enhance Local Livelihoods in Indonesia.	1	1	0
		28. Assessment of gender disaggregated capacity development needs for promoting improved silvicultural management options amongst farmers and selection of product suitability for developing public-private partnerships to enhance value chains for timber and NTFPs in three provinces in Indonesia.	2	0	1
FP2	Outcome 2.3 Diversified tree-crop production systems covering 5 million ha and improving diets and livelihood opportunities for 20 million people in smallholder producer households	29. Report on oil palm diversification options for Brazil evaluated in relation to context, including explicit consideration according to gender, 90 farmers trained in trial plot establishment and a co-learning, knowledge management and dissemination platform established. Natura / USAID	2	0	1
		30. Report on strategic priorities for technology transfer to enable sustainable intensification of cocoa (Cote d'Ivoire, Ghana, Cameroun and Nigeria); coffee (Uganda, Ethiopia, Rwanda, Cote d'Ivoire and Cameroun); oil palm (Cote d'Ivoire, Ghana, Cameroun and Nigeria) and cashew (Ghana, Nigeria and Cote d'Ivoire) African Dev. Bank.	2	2	2
		31. Report on strategic priorities for research to underpin renovation of tree-crop plantations for cocoa (Cote d'Ivoire, Ghana, Cameroun and Nigeria); coffee (Uganda, Ethiopia, Rwanda, Cote d'Ivoire and Cameroun); oil palm (Cote d'Ivoire, Ghana, Cameroun and Nigeria) and cashew (Ghana, Nigeria and Cote d'Ivoire). African Dev. Bank.	2	2	2

		32. Report on design and implementation of CSSVD control and renovation strategies (including policy implications) for the cocoa sector in Ivory Coast (Mars)	0	0	0
		33. Report on development of options for sustainable intensification of coffee and cocoa, across regional scaling domains in Peru and associated training materials and policy engagement to enable their uptake.	1	0	2
		34. Priorities identified for research to underpin sustainability of coffee production in Vietnam	1	1	0
		35. Evaluation of sustainable intensification options for smallholder coffee and cocoa in Sulawesi.	1	0	0
		36. Research protocol to manage monilia in cocoa plantation developed and tree cover enhanced in Honduras.	0	0	0
		37. Analysis of the importance of ecosystem services provided by tank bromeliads in coffee and cocoa plantations in Nicaragua (including PhD student capacity development).	0	0	2
		38. Globally applicable shade motion model (version 4) developed to predict shade from different companion tree configurations and management practices (e.g. pruning) in coffee and cocoa plantations.	0	0	0
		39. Report in the establishment and monitoring of a network of experimental plots for the control of rust and other diseases in coffee plantations	0	0	0
FP2	Outcome 2.4 Increased access to diverse, nutrient-rich food for 20 million people by closing yield gaps by trees in agricultural systems, improving	40. Network of farmer trials established to test options for using trees to improve food security across contexts in Ethiopia, Rwanda and Uganda (1000 farms), together with training needs assessments on water management. ACIAR.	0	0	2
		41. Validation of tree-crop interaction model capability in APSIM (two journal papers). ACIAR.	0	0	0
		42. Analysis of first year performance of soil and water conservation, tree establishment and pest and disease management options across contexts in Kenya and Ethiopia (2500 farms); and the establishment of network trials on farmer managed natural regeneration in Mali and Niger. IFAD/EU	1	0	0

	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	43. Report on implications of gender differences in knowledge of land degradation for restoration options in Ethiopia	2	0	0
		44. Review of integrated soil fertility (ISFM) and water management: sustainable intensification options for out-scaling in East and West Africa.	0	0	0
		45. Assessment of land and soil health status in Ethiopia and Kenya (baselines).	0	0	0
		46. Identification of best-bet food producing practices for field testing and validation as well as evaluation of biomass sources, production and utilization options in case study sites in Tanzania	1	0	0
		47. Characterisation of biophysical and integrated soil fertility management options of selected yam growing basins in Cote d'Ivoire and Burkina Faso.	1	0	0
		48. Assessment of the understanding of land health effects of agroforestry programme engagement in Kenya `(Dataset and report).	0	0	0
		49. Assessment of land and soil health for the restoration of livelihoods in Northern Uganda.	1	0	0
		50. Consolidated report on capacity and skills strengthening of farmers and extension agents in agroforestry, and the development and implementation of agroforestry design principles, technology options and decision support tools for improved soil and water productivity in Malawi.	0	0	2
		51. Detailed report incorporating enhanced understanding of the costs, benefits, risks and trade-offs of agroforestry options under varying and changing conditions in the West African Sahel			
		52. Report of analysis of options for reducing vulnerability and mitigating risk scaled up and out within the Sudano-Sahelian Zone.	1	1	0
		53. Report on the implementation of new and/or strengthened village-based extension approaches for increased/wider use of context-specific climate-smart tree-	1	0	0

		crops systems and agroforestry practices within the Sudano-Sahelian zone.			
		54. Capacity building of at least 70 farmers and agricultural professionals in application of integrated soil fertility management (ISFM) in Uganda using the InPaC-S knowledge sharing tool. Embrapa.	1	0	2
		55. Analysis of climate analogues and species suitability for soil and water management in Central Africa.	0	0	0
		56. Scoping report on climate smart agriculture and natural resources management options (including enabling policy); and on local knowledge and stakeholder engagement around the Yangambi Biosphere Reserve in the Tshopo province, DRC	1	1	0
		57. Review of current understanding of impacts of trees on soil health and proprieties for research to tackle non-responsive soils in sub-Saharan Africa	0	0	0
		58. Map of suitable areas for outscaling different agroforestry practices in three provinces in NW Vietnam for use in developing provincial and distict enabling policies and incentives.	0	0	0
		59. Review of existing policies, strategies and (formal and informal) institutions on grazing management as it effects tree establishment in Ethiopia and knowledge sharing on the effectiveness of different approaches to establishing and managing exclosures. ACIAR.	1		1
FP2	Outcome 2.5 Closing yield gaps through improved pasture management and animal husbandry on over 15 million ha and 1 million animals and contributing	60. Assessment of bamboo and food crop production in agroforestry systems in Ghana, assessment of farmer perception of bamboo fodder use for livestock production and evidence for use of bamboo fodder for private sector investment with policy options presented to Ghana's Ministry of Agriculture on bamboo fodder options for goats and sheep and capacity strengthening (PhD and MSc).	0	0	1
		(*) 61. Impact evaluation of EADD (East Africa Dairy Development) project in Uganda.	1	0	0
		62. Journal manuscript on effects of tree pruning of fodder production in West Africa: Mali.	0	0	0

	to reducing and reversing land degradation on over 5 million ha	63. Review of shrub/tree fodder and its impacts on yields of animal products, and contributions to livelihoods and private sector processes across Central America	0	0	0
		64. Analysis of the role of trees in forest remnants, secondary forests, riparian forests and in line plantings and scattered in pastures on cattle production diversification, shading and cycling of organic matter, and biodiversity conservation across Central America	0	0	0
		(*) 65. Review of silvopastoral systems research in relation to delivery of SDGs and identification of key research priorities linking sustainable grazing management, productivity, certification, animal welfare and climate change.	1	0	0

Flagship 3

B.1 Delivery

B.1.1 Expected Annual Milestones towards Outcomes 2022

Towards Outcome 3.1, FP3 will focus on producing case studies and synthesis to provide evidence-based policy options to engage in two policy dialogues, both involving transnational and national regulations and public-private arrangements. One refers to timber legality linked to FLEGT implementation in several VPA countries, and the second to sustainable supply of palm oil, with focus on voluntary private standards (RSPO) and mandatory public standards, such as ISPO in Indonesia. FP3 will also refine approaches to assess and monitoring progress in timber legality and zero deforestation. The work on timber builds on existing partnerships with FAO and country ministries of forests, environment and finance. The work on palm oil builds on ongoing collaborative work with the Forestry Research and Development Agency (FORDA), the Bogor Agricultural University (IPB), the International Institute for Applied Systems Analysis (IIASA) and a working group on strengthening the Indonesian Palm Oil Standards (ISPO) led by the Coordinating Ministry of Economic Affairs in Indonesia, and the Indonesian Palm Oil Platform (InPOP). This work contributes to sub-IDO 8.1 to minimize deforestation and forest degradation by enhancing the governance systems that reduce pressure on forests and stimulate land use intensification.

Towards Outcome 3.2, FP3 will advance work on inclusive business models by operationalizing a strategic partnership with SNV aimed at building and testing approaches and interventions that improve the effectiveness of inclusive business models across several SNV projects. FP3 will also work with LANDac to build learning platforms on inclusive business models, with emphasis in Southern and Eastern Africa, and will link to other platforms (e.g. GLF: The Investment Case, Innovation Forum). Furthermore, multi-stakeholder processes will be supported by FP3 in strengthening capacities and policy environment for smallholders and SMEs in the forestry sector. Value Chains actors, such as in oil palm (Malaysia, Indonesia, Ghana, Cameroon) cocoa (Ghana, Cameroon), and timber (Cameroon, DRC, Indonesia, Guatemala and Nicaragua) will receive guidance on the adoption of business models that embrace goals of improving production efficiency, smallholder integration and uptake of sustainability practices. This work is aimed at reducing market barriers (sub-IDO 1.2.2), diversifying enterprise opportunities (sub-IDO 1.3.1), and increasing value capture by producers (sub-IDO 1.3.3).

Towards Outcome 3.3, with support from key partners (e.g. The Finance Alliance for Sustainable Trade, FAST) FP3 will co-design a research agenda engaging financial institutions, and investment funds and managers, by identifying existing lessons and knowledge gaps on how to mobilize investments at scale for agroforestry and forest-based activities in forest landscapes, in ways that benefit smallholders and deliver positive environmental impacts. Collaborative work will emerge with FP4 in this context. Lessons of studies (see B.1.2 below) on innovative finance schemes (e.g. palm oil in Indonesia, cacao in Ghana) will be discussed at the Global Landscapes Forum (GLF), and impact investing forums. This work contributes to achieving sub-IDO 2.1 on improved access to finance and other services, with emphasis on forest landscapes.

B.1.2 Output towards Outcomes 2022

FP3 CoA 3.1 will produce about 30 research outputs, and hold key dissemination events at national and global events. It will focus on completing case studies on the governance of informal timber value chains in Cameroon, Zambia, Uganda, in the context of FLEGT VPA implementation, and produce synthesis to engage in national debates in these countries and with the European Union (EU). We will also produce case studies in three provinces in Indonesia on the public and private governance arrangements for zero deforestation and sustainable supply, with a focus on palm oil development. This analysis will inform the "strengthening ISPO" multi-stakeholder working group, and transnational initiatives (RSPO, ESPO). FP3 will also conduct analysis on the limits and potential of governance arrangements for sustainable beef supply

in the Brazilian Amazon and required incentive systems to transitions to sustainable land uses. A synthesis global report (ETFRN news 58) is planned to be released on commitments to zero deforestation. In addition, FP3 will undertake work on exploring private standards in cocoa and coffee, work that will link with the analysis of incentives for improved production systems by smallholders under FP2, as well as analysis on institutional arrangements for supporting low-carbon agriculture, linked to FP5.

FP3 CoA 3.2 will produce about 15 research outputs to support work on fostering inclusive business models. We will complete analysis on typologies of smallholders that will provide the basis to conduct assessments on the technical and economic performance of independent oil palm smallholders in West and Central Kalimantan. Similar analysis will be conducted on outgrower schemes implemented by companies on oil palm production in Brazil and sugarcane in Tanzania and Mozambique. This analysis will lead to recommendations on options for building more inclusive models that will supporting dialogues in a learning platform in Southern and Eastern Africa we are promoting with LANDac, and with smallholder oil palm organizations in Malaysia and Indonesia. Specific analysis of the role of women in oil palm production will continue in Indonesia, as well as efforts to mainstream gender into RSPO. FP3 will develop approaches to design project interventions that build more inclusive business models considering women and youth inclusion, and capacity strengthening in collaboration with implementing organizations (SNV). Work on inclusive business models links with approaches for scaling them up at landscape level with FP4.

FP3 CoA 3.3 will produce 7 research outputs and convene at least two discussion forums in the context of the Global Landscape Fund (GLF). Main focus will be on conducting a 'stock-taking' exercise to identify lessons learned and knowledge gaps from responsible finance and impact investing and their challenges to achieve investments at scale when dealing with agroforestry and forest-based investments in forest landscapes. In addition, this cluster will also advance studies on palm oil in Indonesia and cacao in Ghana on innovative finance schemes to overcome barriers facing smallholder for the access to affordable finance that could facilitate the uptake of more efficient and sustainable practices.

The Gender cluster of the support platform will work in 2017 with FP3 on the gender dimensions of timber and charcoal value chains in sub-Saharan Africa, as well as oil palm in Indonesia, to support the development of institutional arrangements and mechanisms that support gender empowerment agendas in the context of sustainable and inclusive supply of timber and oil palm. Furthermore, a cross-CRP study on the gendered dimensions and inclusiveness of agribusiness expansion in Tanzania aims at developing business models that are more inclusive, economically viable and environmentally sustainable[13].

B.1.3 Contribution of W1+2 Funds

W1+2 funds will be used to synthesize key work, building on bilateral projects results, as well as initiating some innovative lines of strategic work, as follows.

W1+2 funds will support the work on governance of sustainable supply (CoA 3.1), which also has the largest W3-bilateral resources, by producing synthesis related to 1) the limits and potential of formalization processes under FLEGT, and its applicability to other commodities, such as oil palm in Indonesia and cacao in Cameroon), 2) and the social and environmental impacts from regulations and certification on smallholder forestry and market engagement in Central America. In addition, W1+2 funds will expand ongoing work on developing monitoring tools to assess banks and companies' performance on zero deforestation. The reduction of W1+2 funds as expected in the proposal will limit the capacity to compare the different certification standards, and to expand the work on zero deforestation beyond Indonesia.

With regards to business models (CoA 3.2), W1+2 funds will contribute to refine FTA's approach and frameworks to assessing social, economic and environmental performance of business models and apply

[13] This is undertaken with and funded through the gender cluster of the support platform, with 187kUSD total, of which 120k W1+2.

to specific projects from partner organizations (e.g. SNV), and engage with smallholder organizations (e.g. oil palm growers in Indonesia and Malaysia) to examine schemes and incentives required for the uptake of sustainability standards, and the differentiated impacts on men, women and youth. The reduction of W1+2 funds as budgeted in the proposal will limit FP3's capacity to conduct systematic case studies across a larger diversity of business models, and have to focus in a limited set. FP3 will develop an analytical and methodological approach that will be applied in three countries, at least one case in each country, by using complementary resources from bilateral projects and levering on resources from implementing partners.

FP3 work on responsible and innovative finance (CoA 3.3) has comparatively lower W3-bilateral funds, since it is still work under development. In this case, W1+2 funds will support two key pieces that will provide the foundations for this work. The first is a review on the ESG integration strategies for different types of financial institutions' products and services, and its likely influence on actors along the value chains. The second is a scoping to identify the diverse types of responsible finance and impact investing funds, and knowledge gaps and challenges to mobilize investments at scale in forest landscapes. The lower availability of W1+2 funds has affected this area of work, which is the most promising, and given the reduction in resources, FP3 was not able to expand its team with additional expertise on finance.

The FTA support platform will contribute to FP3 work with W1+2 resources under Program supporting research, respectively 58k, 38k and 120k for MELIA, Capdev and gender work.

Table 2c FP3 Preliminary indicators[14] and targets for contribution to the SRF

FP No.	Mapped and contributing to Sub-IDO	Relevant CRP sub-IDO indicators*	2017 Target**
FP3	1.2.1 improved access to financial and other services	# of financial service providers and platforms engaged lending to timber, tree and agricultural crops which adopt ESG criteria, that increase the amount of lending to models that integrate smallholders and SMEs	Engaged and informed 2 financial service providers and investment platforms lending to smallholders and SMEs
	1.2.2 Reduce market barriers	# of business platforms and businesses and service providers that develop and implement business models that are more inclusive, economically viable and environmentally sustainable	2 business platforms and 1 programs and initiatives from development agencies and service providers develop more inclusive business models
	1.3.1 Diversified enterprise opportunities		
	1.3.3 Increased value capture by producers		
	3.1.1 Land, water and forest degradation minimized	# of supported governance arrangements, mechanisms and tools involving public and private actors that ensure sustainable, inclusive, and equitable commodity supply in at least three countries	Supported 2 international platforms and 2 public-private governance arrangements for enhancing sustainable supply

[14] As explained in Part A, in 2017, FTA will revise its set of indicators and milestones, which currently, as submitted in this POWB, are under design. This work will also serve to align them within the context of a CG-wide integrated performance monitoring system for the CRPs. Because of this, the set of indicators and milestones in this Table is provisional.

	b.1.1 Gender equitable control of productive assets and resources	Number of platforms or initiatives supported on inclusive business models and responsible lending that adopt explicit approaches to enhance women inclusion	At least one

Table 3c: Expected 2017 Milestones (progress markers) towards Outcomes 2022

FP No.	FP Outcome 2022	Milestone 2017 Max. of 3 milestones per FP outcome 2022	Mapped budget request for 2017	
			W1/ W2 USD	W3/ bilateral USD
FP3	Outcome 3.1 Public and private actors adopt effective governance arrangements, mechanisms and tools for ensuring sustainable and inclusive commodity supply in at least 3 major producer countries	Milestone 3.1.1 Analysis of the governance of informal timber value chains inform transnational platforms and initiatives to enhance sustainable supply	479,333	4,996,967
		Milestone 3.1.2 Lessons from public-private governance arrangements inform debates for enhancing governance mechanisms in two commodity supply chains		
	Outcome 3.2 5 business platforms and 20 businesses and service providers develop and implement business models that are more inclusive, economically viable and environmentally sustainable	Milestone 3.2.1 Engaged and informed two business platforms with options of business models	344,333	4,107,735
		Milestone 3.2.2 Established partnerships with programs and initiatives from development agencies to design and implement inclusive business models		
	Outcome 3.3 At least 30% of financial service providers lending to timber, tree and agricultural crops adopt ESG criteria, and increase in 25% the lending to models that integrate smallholders and SMEs	Milestone 3.3.1 Identification of the knowledge gaps from financial service providers and impact investors for advancing lending to smallholders and SMEs	316,333	238,124

Table 4c: Expected Key Output 2017 towards Outcomes 2022

			Tagging of expected outputs 2017		
FP No.	**FP Outcome 2022**	**CoA Output**	**G**	**Y**	**CD**
FP3	Outcome 3.1: Public and private actors adopt effective governance arrangements, mechanisms and tools for ensuring sustainable and inclusive commodity supply in at least 3 major producer countries	1. Synthesis publication including gender-responsive analysis on the governance of informal timber value chains in Cameroon, Zambia, Uganda; organized workshops for policy engagement with policy-decision makers in Cameroon, Zambia and Uganda	1	1	1
		2. Publication assessing the palm oil governance complex with interactions between state regulations and private initiatives at the national and sub-national level, with cases in Central and West Kalimantan, Indonesia	1	0	1
		3. Journal articles assessing the impacts of FSC certification and state regulations for community and smallholder forestry in the cases of Guatemala and Nicaragua	0	1	1
		4. Publications and dissemination material with lessons from public and private governance arrangements for sustainable commodity supply in Indonesia, Brazil and Cameroon; organization of two discussion panels in international events on sustainable supply	0	0	1
		5. Web tool developed to assess companies' progress towards zero deforestation in the Indonesian palm oil sector with emphasis on land use dynamics in Borneo, Indonesia	0	0	1
	Outcome 3.2: 5 business platforms and 20 businesses and service providers develop and implement business models that are more inclusive, economically viable and	6. Publications and supporting data sets assessing the technical and economic performance of different types of Independent oil palm smallholders in West and Central Kalimantan, including recommendations for the uptake of sustainability practices	1	1	1
		7. Publication on lessons from oil palm and sugarcane outgrower schemes in Brazil, Tanzania and Mozambique, with recommendations on options for building more gender-responsive,	1	0	0

	environmentally sustainable	inclusive models; dissemination material with main findings			
		8. Partnership established with at least one development NGO to draw lessons from previous experience; agreed framework to assess the effectiveness of disparate interventions to support more inclusive and gender-responsive business models in some select projects across representative locations	1	1	1
		9. At least two multi-stakeholder policy dialogues and multi-stakeholder processes supported for enhancing smallholder integration in timber and/or oil palm in Indonesia and Cameroon; Infobriefs and other dissemination material that includes gender perspectives on smallholder integration for supporting policy dialogues in Indonesia and Cameroon	1	0	1
		10. Dissemination material with recommendations for enhancing women inclusion through informing learning platforms on inclusive business models in Southern and Eastern Africa, and responsible business platforms, with a focus on oil palm, in Southeast Asia	2	1	1
	Outcome 3.3: At least 30% of financial service providers lending to timber, tree and agricultural crops adopt ESG criteria, and increase in 25% the lending to models that integrate smallholders and SMEs	20. A scoping report to identify the knowledge gaps from different responsible finance and impact investing, and main challenges, for supporting inclusive and sustainable business models across different type of schemes	0	0	1
		21. Publication on the role of financial service providers in supporting oil palm development in Indonesia and Malaysia, with analysis on their efforts to adopt more responsible lending practices and supporting smallholder finance	1	0	1
		22. Publication on lessons from existing financing schemes (formal and informal) in Central Kalimantan and South Sumatra; report on case studies assessing emerging innovative financing models with potential to improve the provision of accessible and affordable finance for smallholder oil palm growers in Indonesia	1	0	0

Flagship 4

B.1 Delivery

B.1.1 Expected Annual Milestones towards Outcomes 2022

FP4 Milestones for 2017 are described in Table 3d, in the context of the FTA Phase II outcome 2022 expectations. FP4 analytical work at landscape system scale is directly linked to the intended use of the knowledge at (sub) national government level in terms of land use and clean development ('green growth') planning, across the SDG's, and aligned with other FTA FP's. FP4 quantitative outcomes indicators and respective 2017 targets are expressed as boundary institutions, area and number of people involved (Table 2d). Table 2d clarifies FP4's specific targets, as related to its four Clusters of Activity (CoA), and in relation to the three Sub-IDO's. The spatial extrapolation domains of the set of Sentinel Landscapes (SL) will, alongside a spatially explicit representation of where FTA activities take place, allow for a more transparent and quantitative perspective on what FP4 research contributes to. The SL portfolio directly covers a total area of > 100 M ha and a population of >80 M people. Policies, such as the Indian agroforestry policy, informed by FTA research, and their implementation, create new opportunities for FP4 reaching much larger areas in 2017 and beyond. The substantial investment in FTA Sentinel Landscapes in Phase I has created place-based partnership (especially among CIFOR, ICRAF, CATIE and with local partners) and connections to global partners interested in the patterns that are emerging from the data. In 2017, Bioversity, INBAR and Tropenbos International (TBI) are new FP4 partners, targeting works on landscape restoration, an area known for strong high level policy commitments, but characterized by considerable uncertainty on how best to achieve them. Existing, place-based restoration projects give an opportunity to derive global lessons. The emerging linkages between the restoration and green growth policy agenda may open new doors to implementation. Meanwhile, the national scale boundary work of TBI on the forest policy interface creates new opportunities for interfacing with existing FTA knowledge and experience. All W3 projects work with partners, on the research (universities) as well as the outcome (boundary organizations) side of the spectrum. Examples are the local forest management community groups that are supported in landscape management in Cameroon (selected on the basis of explicit criteria), national universities in the target countries, the Satoyama Initiative coordinated from Japan, Ecoagriculture Partners, Ecosystem Services Partnership and IFAD with its national project partners as potential to replicate lessons learned in the SmartTreeInvest project.

B.1.2 Output towards Outcomes 2022

A synthesis on certification across 5 commodities with consequences for the way landscapes start to play a larger role in global value chain and green growth debates (at the interface with FP3), a study of tree cover as key to hydroclimate (at the interface with FP5) and one on nutritional diversity (at the interface with FP1), are actively promoted to achieve uptake and 'outcomes'. FP4 and FP5 will work jointly on the LUMENS tool that broadens development planning from a low-emission focus towards the wider set of environmental services required by the SDG agenda. At the interface with FP2, current understanding of household decisions on land use change is translated to landscape consequences in FP4, in various (agent-based) models. These benefit from micro-economic analysis (esp. 'returns to labour') but also take into account ways local preferences and risk averseness are expressed in gender specific ways. Three of these operate at scales where 'gender' and 'youth' are relevant concepts. All work on 'ecosystem service consequences of tree cover change', 'nutritional diversity' and 'learning landscapes' has a strong focus on documenting, understanding and linking three domains of active knowledge systems: local (which has an explicit gender dimension), public/policy (which has many implications for youth and gender) and science.

Synthesis of a major comparative study of gender-specific landscape appreciation is under way. It shows that gender is a relevant distinction in many contexts, with partly unexpected consequences for gendered interest in maintaining forests as part of landscapes. Good practice guidelines for including gender

dimensions in action research exist and have been shared. Studies and guidelines on intersecting sources of marginalization in joint forest management will contribute to improved capacity of women, young and ethnically marginalized people to participate in decision-making.[15]

Active engagement with capacity development takes place, among others, in the context of the Landscape Academy (with multiple non-CG partners) with a number of deliverables based on current funding and a hope that more can be done soon.

B.1.3 Contribution of W1+2 Funds

As per the priority scheme used across FTA (see part A), the use of W1+2 funds in FP4 is prioritized for:

- 1. Basic knowledge management and reporting infrastructure (some staff time of FP and CoA leaders),

- 2. At least one new synthetic output in each of the four CoA's,

-3. Existing agreements with bilateral projects for key deliverables in strategic locations (with an understanding that no new commitments can be undertaken at current W1+2 levels),

- 4. Support for next steps in the FTA-Sentinel Landscapes portfolio.

In the context of W1+2 budget reductions, the decision was taken to continue work across the sentinel landscape portfolio (rather than suppressing part of it) to ensure representativeness, and to maintain the set of outcome targets for FP4, albeit considering induced delays in their achievement.

The specific new targets for W1+2 funds are:

- for CoA4.1 sharing new approaches to link tree cover change, driver analysis and policy interventions at the level of jurisdictional green growth strategies (in relation with FP5, CoA1),
- for CoA4.2 the dissemination of the hydroclimate/watershed management linkages, and a synthesis of profitability analyses of land use options at the interface with household-level decisions (with landscape ES consequences),
- for CoA4.3 new ways to link existing econometric analysis of landscape scale patterns (outcome level reality) to bottom-up information on trees and forests as contribution to nutritional diversity (linked to potential intervention points),
- and for COA4.4 agreed principles for monitoring governance capacity (skills, attitudes, knowledge) in the various learning landscape networks.

The FTA support platform will contribute to FP4 work with W1+2 resources under Program supporting research, respectively 108k, 36k and 88k for MELIA, Capdev and gender work.

Table 2d FP4 Preliminary indicators[16] and targets for contribution to the SRF

FP No.	Mapped and contributing to Sub-IDO	Relevant CRP sub-IDO indicators*	2017 Target**
FP4	Sub-IDO c.1.3	CoA4.1 Number of relevant boundary organizations *are supported* in the portfolio of FTA-Sentinel Landscapes to	At least 10 Boundary organizations

[15] Gender-specific work in FP4 is undertaken with and funded through the gender cluster of the support platform, with 140kUSD total, of which 88k W1+2.

[16] As explained in Part A, in 2017, FTA will revise its set of indicators and milestones, which currently, as submitted in this POWB, are under design. This work will also serve to align them within the context of a CG-wide integrated performance monitoring system for the CRPs. Because of this, the set of indicators and milestones in this Table is provisional.

		assess their capacity for adaptive management of multifunctional landscapes.	Covering 1.5 M people
			Covering 2 M ha
	Sub-IDO 2.1.2	CoA4.2 Number of local and national governments or organizations *making reference to* FTA science in their plans for restoration, water harvesting and landscape management, and 'green growth' in the context of the land nexus in the SDG's;	At least 10 organizations
			Covering 2 M people
			Covering 3 M ha
	Sub-IDO 3.3.1	CoA4.3 Number of national or subnational governance bodies *acknowledging in* their policies, based on FTA research, the role of forests, trees and agroforestry to enhance food security, including enhanced dietary diversity;	>10 governance bodies
			Covering 1.5 M people
			Covering 2 M ha
	Sub-IDO 3.3.1	CoA4.4 Number of action research initiatives conducted to test new co-investment and governance mechanisms in 'learning landscapes' supported by FTA science;	>30 initiatives, Covering 0.5 M ha
			Covering 0.3 M people

Table 3d: Expected Annual Milestones (progress markers) towards Outcomes 2022

FP No.	FP Outcome 2022	Milestone 2017 Max. of 3 milestones per FP outcome 2022	Mapped budget request for 2017	
			W1/ W2 USD	W3/ bilateral USD
FP4	Outcome 4.1: (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 understood on the basis of 'drivers' that operate at larger scales.	4.1.1 Dataset on socio-economic and biophysical characterization with the map of vegetation cover and land use planning for 6 sentinel landscapes in explicit pantropical extrapolation domains.	240,000	1,516,009
		4.1.2 Protocols/ guidelines on comprehensive land use plans of local government units are produced and disseminated in at least 3 languages.		
		4.1.3 Policy formulation is supported for low emission development and/or green growth from subnational level to national level in at least 3 countries		

	Outcome 4.2: (Sub)national governance systems in landscapes covering 100M 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-level synthesis and planning.	4.2.1 At least 3 Mha of degraded land under management using agroforestry, water harvesting and silvicultural approaches supported by FTA	585,000	8,255,715
		4.2.2 Tools and approaches towards sustainable landscapes through land use planning process that is integrative, inclusive and informed in improving livelihoods while increasing carbon storage, maintaining biodiversity, and water buffering technology are developed and tested in at least 5 countries.		
		4.2.3 Synthesis publication on the role of eco-certification, the conditions under which it is likely to emerge and the pressures to further evolve.		
	Outcome 4.3: 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; 10M people)	4.3.1 Data and analysis on variation of nutrient is available, and the knowledge and industrialization of tree based food productions is increased.	250,000	815,126
		4.3.2 Local Capacity and livelihood on food and trees diversification is developed integrating with gendered livelihood concerns.		
		4.3.3 Synthesis on functional and nutritional diversity in agroforestry		
	Outcome 4.4: Adaptive landscape institutions empowered and supported on 6 M ha inhabited by 4 M people to manage changing landscape mosaics towards more balanced and adaptive multi-functionality and successful 'forest landscape restoration' through 'action research' and inclusive, participatory learning. This is aligned with efforts in PIM.5.2 towards 6 million hectares of shared landscapes under more	4.4.1 Agreed framework for assessing strengths and weakness of local resource governance in learning landscapes, as basis for prioritized actions	255,000	1,505,090
		4.4.2 Active website for supporting cross-learning between landscapes, and locally appropriate application of PES mechanisms		
		4.4.3 Practitioner guide on PES lessons shared in Africa, Asia and Latin America		

	productive and equitable management.			

Table 4d: Expected Key Output 2017 towards Outcomes 2022

			Tagging of expected outputs 2017		
FP No.	**FP Outcome 2022**	**CoA Output**	**G**	**Y**	**CD**
FP4	Outcome 4.1: (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 multifunctionality, using similarity domains based on patterns and intensities of forest and tree cover change in space and time in Sentinel Landscapes understood on the basis of 'drivers' that operate at larger scales.	1. Dataset on socio-economic and biophysical characterization (Peru) ; vegetation cover map and land use planning system (Kenya and Indonesia); categorization of AC zones (Peru); drivers of forest degradation (Kenya).	1	1	1
		2. Protocols/ guidelines on comprehensive land use plans (Indonesia), proposal on project development on forest protection and restoration in Philippines.	1	1	1
		3. Policy advice and support for low emission development and/or green growth from subnational level to national level in at least 3 countries; and institutional capacities strengthened in natural resource management and conservation.	0	1	1
	Outcome 4.2: (Sub)national governance systems in landscapes covering 100M 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-level synthesis and planning.	4. Maps assessing rainwater harvesting potential (Chad); Finance dialogs conducted for Restoration Finance Assessments (Indonesia); reports on integrated research in development for improved livelihoods programme (Zambia); documentation of awareness and commitment of multistakeholders toward restoration issues.	1	1	1
		5. Publication on compelling case for restoration at the province level	1	1	1

		using LUMENS and ROAM; evidence of implementation of the Rapid Restoration Diagnostic, and convene workshops to develop common methodologies and systems for measuring and monitoring the regrowth of biomass in Indonesia.			
		6. Synthesis on the role of ecocertification (global); Publication of a trade-off analytical method that includes multiple dimensions of socio-economic factors and multiple stakeholders and environmental services beyond carbon storage; policy report that features a range of policy options to support forest landscape restoration; paper on social differentiation and gender equity in joint forest management.	2	1	1
	Outcome 4.3: 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; 10M people)	7. Publications on the importance of traditional fruit in conservation and livelihoods in Central America and the analysis on variation and industrialization of tree based food productions; functional diversity in agroforestry systems; implications and options for managing and delivering multiple resources, both food and timber from forest landscapes (Burkina Faso, Cameroon, Ethiopia, Indonesia).	1	0	1
		8. One on-line knowledge-sharing event to policy makers and other stakeholders; writeshop to support students in finalizing publications on the data of management and governance to produce food along with timber from forest landscapes in Congo; and Integrating gendered livelihood concerns in restoration initiatives.	2	1	1
		9. Policy-briefs related to food security and nutrition; journal articles related to tree cover and	2	1	1

		diets; and mobilizing household methodologies for gender-equitable restoration. (Burkina Faso, Cameroon, Ethiopia, Indonesia, Uganda, Zambia)			
	Outcome 4.4: Adaptive landscape institutions empowered and supported on 6 M ha inhabited by 4 M people to manage changing landscape mosaics towards more balanced and adaptive multi-functionality and successful 'forest landscape restoration' through 'action research' and inclusive, participatory learning. This is aligned with efforts in PIM.5.2 towards 6 million hectares of shared landscapes under more productive and equitable management.	10. Agreed framework for assessing strengths and weakness of local resource governance in learning landscapes', as basis for prioritized actions; documents on generic principles, potentially differentiated (or prioritized) criteria, and context-specific indicators, tests in various contexts that include mainstreaming the potential of climate smart and integrated watershed management practices in Ethiopia; inclusive business model from a gender and poverty perspective, and insights from NTFP value chains in India	2	1	1
		11. Active website for supporting cross-learning between landscapes, and locally appropriate application of PES mechanisms as a platform that can, for example, be used in strengthening capacities for the management of secondary forests and rural institutions (farmers, youth, and women groups) and extension systems	2	2	2
		12. Practitioner guide on PES lessons shared in Africa, Asia and Latin America covering social-economic, ecological and governance dimensions of broadly interpreted PES concepts, with case studies that show the diversity of contexts and the relevance of local reinterpretation of the basic ideas and concepts	2	1	1

Flagship 5

B.1 Delivery

B.1.1 Expected Annual Milestones towards Outcomes 2022

Towards Mitigation (Outcome 5.1), FP5 in 2017 will reach three milestones (see Table 3d). FP5 will develop an updated data set for policy analysis in its Global Comparative Study (GCS) on REDD+ (Reducing Emissions from Deforestation and Forest Degradation). With new research on the role of non-state actors, on linking REDD+ finance streams to REDD+ outcomes and low-emission development strategies, FP5 will produce an analysis as technical basis for "payments for results' at jurisdictional scale, which is central to implementing REDD+. We also expect to have two papers on low emissions development strategies published. These activities will be made available to country actors through policy publications, workshops and training events in 2017 to provide in-country support for 3E+ climate change policy and practice.

Towards its 2022 Adaptation Outcome 5.2, in 2017 FP5 expects to conclude a final analysis disentangling the trade-offs and synergies of adaptation and mitigation at the landscape scale, as a basis for multilevel governance decisions.

Working towards strengthening Outcome 5.3 on Bioenergy, FP5 will in 2017 conclude its analysis on the current status of bioenergy types, including the sustainability of agroforestry, and LCA and NEB of agroforestry based biofuels, together with another analysis, targeting the sustainability of agroforestry based biofuels (two milestones).

Outcome 5.4 on Performance assessment and effectiveness underpins the outcomes of the other three clusters of activity by providing policy support towards widespread adoption of performance assessment of mitigation and adaptation policy and practice. Two milestones in 2017 will contribute to this goal. In 2017, forest reference levels will be determined for a variety of situations and land uses, in collaboration with partners in countries. This includes training and capacity development for assessing mitigation efforts in three countries. FP5 will also undertake preparatory work for a major assessment of sub-national REDD+, to be undertaken in 2018.

B.1.2 Output towards Outcomes 2022

FP5 climate change mitigation work (towards Outcome 5.1) in 2017 will explore the link between restoration and climate change, e.g. assessing the size of the carbon sink that global restoration efforts could create under realistic assumptions. Regarding carbon-dense tropical wetlands, FP5's Sustainable Wetlands Adaptation and Mitigation Project (SWAMP) will conduct research and capacity development activities in 25 countries with 500 partners (range 10-100 per country), and engage with international Blue Carbon initiatives (e.g. UN's Global Peatlands Initiative). FP5 will analyse men's and women's preferences regarding land use decisions and their implications for climate change mitigation and adaptation in the Colombian and Peruvian Amazon. FP5 research on landscape-level integration of mitigation options (e.g. GCS-REDD+) is done by linking with FP4 (sentinel landscapes) at site and landscape scales.

New climate change adaptation work in 2017 (towards Outcome 5.2) includes: exploring the links between global change, migration and forests in Indonesia, Peru and Tajikistan; working on the role of farm trees in adaptation to climate change with a focus on dryland Africa and on adaptation strategies for tree fodder and trees in pastures in Latin America and East Africa, at the interface to FP2. FP5 will work in Cameroon to support local authorities with regards to gender equality in adaptation strategies. Research in Nicaragua will examine women's and men's capacities to access and implement information on agroforestry practices in order to develop gender-sensitive recommendations for adaptation strategies[17].

[17] Gender-specific work in FP5 is undertaken with and funded through the gender cluster of the support platform, with 80kUSD total, of which 77k W1+2.

Outputs towards Outcome 5.3 in 2017 include a study on the potential of bioenergy production on degraded lands, including the socio economic analysis of agroforestry as a basis for business solutions involving biofuels in Indonesia and other developing countries to strengthen the outcome of more integrated food and bioenergy production policy and practice. In 2017 also, FP5 will provide a woodfuel analysis in INDCs of African countries as a basis for policy advice. Knowledge generated from this research will be incorporated in the development and promotion of agroforestry options in FP2.

Towards Outcome 5.4, one new area of investment is related to oil palm diversification and innovative business models: co-learning platforms will be established, and trainings held for farmers and technicians. FP5 will update its *CarboScen* tool to develop carbon scenarios on the fly during stakeholder consultations on landscape-based integrative approaches to development and climate mitigation. FP5 will conclude pilot research on a proof-of-concept for the independent and transparent monitoring of forest resources and how to respond to countries' needs, e.g. by providing clear guidelines of how transparency can be implemented. The FTA/Global Forest Watch Terra-I tool will be used across different FTA projects in Peru needing deforestation monitoring, and develop new work in Southeast Asia (Myanmar, Vietnam). Terra-I will also be linked to the Big Data platform of the CGIAR. FP5 will also conducting a series of capacity development exercises towards government officials on forest policy and the use of deforestation monitoring tools and methods in several countries in Asia in 2017. FP5 will commence trainings on Advance Monitoring Systems for Sustainable Community Forest Management with at least five community Forests in Cameroon in the Dryad Project.

B.1.3 Contribution of W1+2 Funds

FP5 W1+2 funds were prioritized using the priority setting scheme (see Part A), to support (i) part of the salaries of the cluster of activity leaders, partners' focal points and some support staff to a very modest amount (typically 1 month staff time or less per function); (ii) higher-level analysis that build on synergies available across the bilaterally funded work; (iii) development of new joint work, particularly to integrate the new non-CG partners in the work; (iv) interaction with CCAFS, though at much lower levels than intended; (v) innovative parts of the flagship (biofuels, performance assessment) where less bilateral resources are available, and where W1/2 funding is be key to build strong, coherent programs (through a competitive call for work). Finally, support to bilateral initiatives, e.g. Terra-I, had to be scaled down due to the limited W1+2 funding.

The FTA support platform will contribute to FP5 work with W1+2 resources under Program supporting research, respectively 58k, 6k and 77k for MELIA, Capdev and gender work.

Table 2e FP5 Preliminary indicators[18] and targets for contribution to the SRF

FP 5	Mapped and contributing to Sub-IDO	Relevant CRP sub-IDO indicators*	2017 Target**
	A.1.4 Enhanced capacity to deal with climate extremes	Number of target countries using risk-assessed ecosystem-based adaptation (EbA) policy and practice including joint mitigation and adaptation approaches	2 target countries
	A.1.1 Reduced net GHG emissions from agri-	Number of countries considering performance assessment of mitigation	2 target countries

[18] As explained in Part A, in 2017, FTA will revise its set of indicators and milestones, which currently, as submitted in this POWB, are under design. This work will also serve to align them within the context of a CG-wide integrated performance monitoring system for the CRPs. Because of this, the set of indicators and milestones in this Table is provisional.

	culture, forests and other forms of land use	and adaptation policy and practice widely implemented	
	A.1.1 Reduced net GHG emissions from agri-culture, forests and other forms of land use	Share of actors engaged in knowledge sharing events that report having internalized the value of efficient, effective and equitable (3E) REDD+	At least 50% of the actors in at least 4 knowledge sharing events in at least 4 countries. (one workshop in each of the countries)
	A.1.1 Reduced net GHG emissions from agri-culture, forests and other forms of land use	Share of stakeholders reporting having used analytical products from FTA for biofuels (e.g. woodfuel analysis for SSA, global analysis of the status of bioenergy types, bioenergy crops for marginal lands in Indonesia, etc.)	At least 50% of the interviewed stakeholders per country, in 3 different countries.

Table 3e: Expected Annual Milestones (progress markers) towards Outcomes 2022

FP No.	FP Outcome 2022	Milestone 2017 Max. of 3 milestones per FP outcome 2022	Mapped budget request for 2017	
			W1/ W2 USD	W3/ bilateral USD
FP5	**Outcome 5.1** Efficient, effective and equitable climate national and international mitigation policies and funding, aligned with development objectives (3E+ goals)	Milestone 5.1.1 An updated data set in at least three target countries available for policy analysis and practice in REDD+, published and presented in international and national fora	380,553	9,186,078
		Milestone 5.1.2 An analysis that provide the technical basis on 'payments for results' initiative to reduce emissions using a whole landscape approach, at jurisdictional scale		
		Milestone 5.1.3 Two manuscripts on low emissions development strategy submitted to international peer-reviewed journals		
	Outcome 5.2 Risk-assessed ecosystem-	Milestone 5.2.1	370,859	1,866,352

	based adaptation (EbA) policy and practice in place including joint mitigation and adaptation approaches	Concluding analysis of synergies/trade-offs between mitigation and adaptation published and applied		
	Outcome 5.3 Integrated food and bioenergy production policy and practice realized	Milestone 5.3.1 Analysis on the current status of bioenergy types concluded, presented and disseminated using various media to targeted stakeholders	250,559	368,687
		Milestone 5.3.2 An analysis of the sustainability of agroforestry based biofuels conducted and published.		
	Outcome 5.4 Performance assessment of mitigation and adaptation policy and practice widely implemented	Milestone 5.4.1 Reference levels determined for a variety of situations and land uses and available for countries to adapt.	248,029	973,258
		Milestone 5.4.2 Training and capacity development for assessing mitigation efforts conducted in three countries		

Table 4e: Expected Key Output 2017 towards Outcomes 2022

			Tagging of expected outputs 2017		
FP No.	**FP Outcome 2022**	**CoA Output**	**G**	**Y**	**CD**
FP5	Outcome 5.1	1. Country profile and policy network analysis of REDD+ in at least 3 countries updated and published	1	1	2
		2. Publication on comparing methods for effectiveness assessment of subnational REDD+ initiatives concluded and published	1	1	2

		3. Analysis and report on low emissions development opportunities completed and published for one jurisdiction	1	0	1
	Outcome 5.2	4. Publication on opportunities and challenges for women's role in agroforestry and climate change strategies in Latin America	2	0	0
		5. Publication on trade-offs between ecosystem services	1	1	0
		6. Publication on climate policy integration in the land use sectors	1	0	0
	Outcome 5.3	7. Study on the potential of bioenergy production on degraded lands in Indonesia concluded and published	1	1	0
		8. Socio economic analysis of agroforestry based biofuel production analysed and published	1	1	0
		9. LCA and NEB of agroforestry based biofuels analysed and published	1	0	0
	Outcome 5.4	10. A publication on the independent monitoring of GHG emissions from the land use sector from stakeholders‘ perspective	0	0	2