Darwin Initiative: Final Report

To be completed with reference to the "Writing a Darwin/IWT Report" Information Note: (https://www.darwininitiative.org.uk/resources-for-projects/reporting-forms-change-request-forms-and-terms-and-conditions/).

*It is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)*

Darwin Project Information

Project reference	25-013
Project title	NTFP micro-enterprises for competitive forests and livelihoods in Ethiopia
Country(ies)	Ethiopia
Lead organisation	Huddersfield Business School (HBS), part of the University of Huddersfield (UoH)
Partner institution(s)	Ethio-Wetlands & Natural Resources Association (EWNRA), Ethiopian Biodiversity Institute, Apinec, Nati Spices, Ecopia and Bench Maji Zone Environmental Protection and Forest Office, in SNNPRS.
Darwin grant value	£374,420
Start/end dates of project	1st July 2018 to 31st March 2021
Project leader's name	Professor Adrian Wood
Project website/blog/social media	Non-Timber Forest Products micro-enterprises project (NTFP-ME) - University of Huddersfield @CSRC_hud
Report author(s) and date	Adrian Wood, Matthew Snell, Kassahun Adelo, Desyalew Fantaye, Hailemariam Nadew, Afework Hailu, Jen Ball and Phil Hwang June 2021

1 Project Summary

Deforestation has been identified as a major problem in the four districts in SW Ethiopia where this project is located (Figure 1). Forest loss and the associated loss of biodiversity, occur as people seek to improve livelihoods through agriculture rather than forest-based enterprises. Drivers of forest and biodiversity loss include lack of tenure security over forest and income from it. Additional drivers include investors' claims to forest, population growth, in-migration, cultural change and urban demands. These will increase given recent completion of a tarmac road through this area connecting Ethiopia to South Sudan.

Between 2010-2016, Huddersfield Business School (HBS) and partners implemented a project to improve forest tenure and income in these same four districts in order to maintain the natural forest and the wild coffee gene pool within it. That project had support from the Darwin Initiative for three years. Its focus was Participatory Forest Management (PFM) Agreements between communities and local government, providing security for communities and their Forest Management Groups (FMGs) managing the forests. In addition, communities generated

income from forest coffee sold through cooperatives. An external assessment found annual rates of deforestation were 0.18% in community-managed (PFM) forests compared to 2.6% in forests with no community management (Wood et al., 2019). Coffee production volumes and revenue continue to grow post-project.

However, forest-coffee primarily benefits men and is only found in 25% of 100,000ha of the community managed forest in which these partners work. The remaining areas benefit from other Non-Timber Forest Products (NTFPs), including honey, cardamom, chillies, forest fruits, long pepper and forest mahogany seeds. These are variously harvested by men and women for domestic use and limited local sale. Studies in 2015 proposed ways to add value to these NTFPs and sell them to national and international buyers. As a result of these studies, and in consultation with local communities and government, the project to which this report relates has aimed to build on the successes of the 2010-2016 forest-coffee work by developing value chains for these other NTFPs. This approach is intended to help diversify the sources of forest-related income, engage women more, and ultimately protect the forests and their biodiversity. These efforts have been supported by concurrent work strengthening tenure security through Communal Land Certificates which complement PFM Agreements and are recognised in Ethiopian law. Additionally, village-level forest management plans have been adapted in recognition of the ways NTFPs and their management and harvesting should be incorporated into PFM. This is a process that will need to be renewed every three years, when forest management plans are renewed. Overall, it is hoped that maintaining the forests and their biodiversity will become more attractive through these measures.

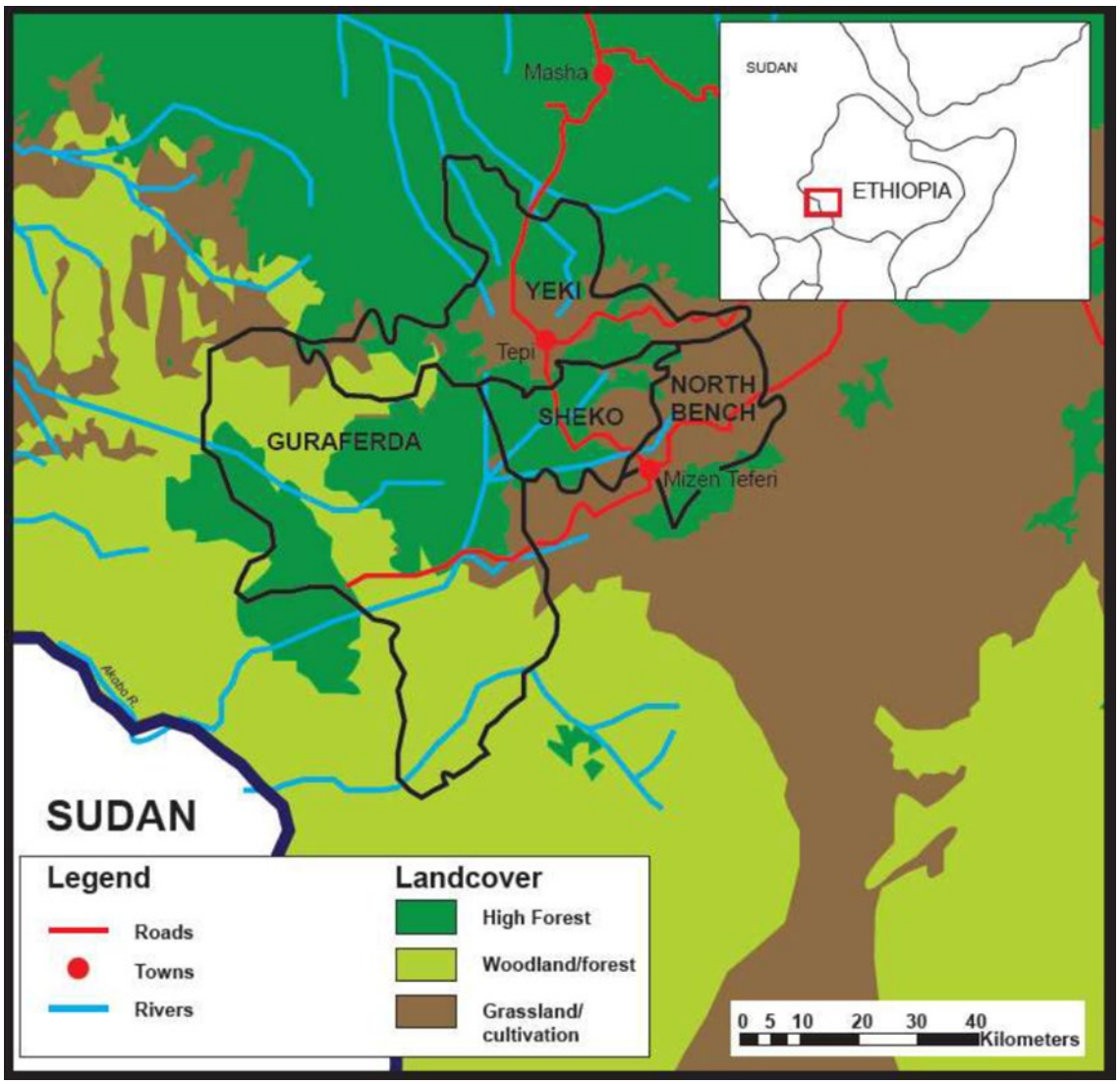

Figure 1. Map of project areas. Note: Yeki woreda was withdrawn from the project due to continued unrest. This was agreed with DI. North Bench has been renamed to Gidi Bench. The report and Annexes use both names interchangeably but they refer to the same location.

2 Project Partnerships

There were due to be six partners working with HBS on this project. A brief description of the relationship with each is provided below. A final paragraph highlights plans for the future.

HBS has worked alongside the main implementing partner, Ethio-Wetlands and Natural Resources Association (EWNRA), for over 20 years. The project was co-designed with EWNRA and local government. This is a well-established partnership and EWNRA is responsible for the recruitment and employment of staff in the project area. It is also responsible for providing logistics support and ensuring adherence to Ethiopian legislation. Evidence includes participation of two members of EWNRA's head office in recruitment of the NTFP-Facilitators funded by this project; participation of EWNRA's Executive Director in the project launch, in project meetings and in the review of this report; payment and review of project costs by EWNRA's finance team; rental by EWNRA of the primary vehicle to the project on very favourable terms; and provision of guidance about the coronavirus situation in Ethiopia.

The Ethiopian Biodiversity Institute (EBI) has partnered with HBS in previous projects, including the preceding DI-funded work. EBI staff gave a presentation at the project launch and undertook a field visit to the project area to identify, harvest, transport to Addis Ababa, dry and store seeds of the forest mahogany (*Trichilia dregeana*) for subsequent analysis (see Annexes 7.1a and 7.1b). *Trichilia dregeana* is one of the species identified for further exploration in this project. There were also multiple exchanges with EBI's Access and Benefit Sharing Directorate. It was intended that the seeds be exported to the UK for analysis when it was found that appropriate analysis could not be undertaken in the country. However, for various reasons this did not happen and an newly identified laboratory capacity in country was identified. The EBI released the seeds for analysis by chemists at two sites in Ethiopia. Extraction and characterisation of the seeds was undertaken at Hawassa University, while Gas Chromatography-Mass Spectrometry analysis was conducted by chemists at Adama Science and Technology University.

Apinec, the honey partner, undertook field visits to assess honey potential, storage and quality, as well as delivery of training courses on improved bee keeping and the honey value chain. These were conducted at community locations as well as a Training of Trainers course, delivered at Apinec's specialist site in Bonga, 150 km outside the study area. Sample reports from the honey assessment and training can be found in Annexes 7.2a and 7.2b, with a final quality assessment report pending. Although Apinec offered to buy the honey available at two sites the communities obtained better prices elsewhere.

Ecopia is the partner responsible for helping to develop products from forest fruits. It delivered training sessions on jam, juice and soap production, product traceability, and the strict Ethiopian rules regarding processed products. Coronavirus restrictions caused delays to some training sessions, but these were adjusted a) to use backyard fruits when forest fruits were out of season, and b) to work with forest fruits once restrictions were lifted in the final year. A report on the multiple training sessions is provided in Annex 7.3.

Following approval from Darwin, the original spice partner, Feed Green Ethiopia, was changed due to lack of responsiveness, and replaced by Nati Spices which had agreed to fulfil the same role. Despite this, Nati Spices proved reluctant to visit during widespread insecurity between August 2018 and February 2019. One of its partners provided training in March 2019 but, sadly, Nati Spices showed no subsequent interest despite multiple attempts to secure its involvement. Both Feed Green Ethiopia and Nati Spices were new partners for HBS and EWNRA, though Nati Spices was recommended by one of the other project partners. Neither relationship was successful. There were several lessons learned: a) conduct thorough due diligence on partners prior to projects, b) be clear on potential production volumes when seeking partners that are used to working at an international scale, c) some circumstances were not fully foreseen, e.g. insecurity / GOE permission for access, and may have serious consequences on potential partnerships. As a result of the spice partnership failure, the project team sought to progress this component of the project itself, securing input from a former member of staff of Farm Africa

with experience in market analysis and value chain development, as well as training from the Ethiopian Institute of Agricultural Research Spice Centre at Tepi, and the Department of Plant Sciences at Mizan Tepi University, and an exchange visit to a spice cooperative in a non-project district (see Annex 7.4).

Bench Sheko Zone Environmental Protection and Forest Office, is a key local government partner. Representatives spoke at key project events and collaborated in many activities. They also supported the team to identify the correct local government office for registration of newly created micro-enterprises. Briefing Note 17 (Annex 7.5) is developed from a learning note written in Year 2 on the process of micro-enterprise creation. Staff from key government offices have participated in various training sessions provided by the project and its partners, ensuring that government staff benefit as well as community members. This approach creates opportunities for government extension workers to help disseminate and cascade training, as demonstrated in Annex 7.4 which lists the training delivered.

In addition to organisational partnerships, the project works closely with the communities in the project area and the institutions developed by them and previous projects. These institutions are known as community Forest Management Groups (FMGs), which are in turn supported by District Forest Management Associations and Marketing Cooperatives. With all of these institutions and their communities the project has well established regular contact and makes a point of ensuring that the activities planned are jointly discussed and adapted through constant review and revision. The engagement of the communities in this way ensures that their perspectives and needs are addressed as appropriate within the framework of this Project. Community management plans and FMA activities have been adjusted to support creation of micro-enterprises and marketing of the NTFPs identified for support through this project. (Annexes 7.6a and 7.6b).

New partnerships were also developed with and between chemistry departments at Hawassa and Adama universities. Chemists collaborated to undertake analysis of the forest mahogany seed when it was not exported to the UK (Annex 7.1b). A joint publication is anticipated, as well as efforts to seek funding for further research. Joint publications are also planned with two of the consultants who undertook independent evaluations of the project, and Ecopia has developed relations with Mizan Tepi university, based in the project area, with a view to linking business students with the forest fruit Micro-Enterprises. Ecopia is interested in incorporating spices and the forest mahogany into its range of products, with potential for export to Europe in the longer term. In order to ensure capacity is built, key local government offices have stated their intent to continue to support the Micro-Enterprises created by the project. Since collaborating on this project, Ecopia, EWNRA, HBS, local government and communities have participated in the submission of joint funding bids.

3 Project Achievements

3.1 Outputs

General note - coronavirus

In March 2020, the Government of Ethiopia implemented widespread mitigation measures as a result of which places of worship, schools, universities and government offices were closed. Gatherings of more than four people were prohibited, travel restrictions introduced and all organisations (including civil society) encouraged to work from home and/or restrict office numbers. This inevitably had an impact on project activities, primarily throughout Y3 but also in Q4 Y2. In addition to Ethiopia's restrictions, the University of Huddersfield introduced travel restrictions in late-February 2020, prohibiting any non-essential international travel. These remain in place as of June 2021. Thankfully, the reported incidence of coronavirus cases and related deaths in Ethiopia remains low, though has sadly increased since submission of the Y2 report.

General note – insecurity

Guraferda district and a few limited kebeles of Sheko district suffered from insecurity in the first year of the project, and again in the final year. In some areas the situation has improved, but others remain insecure. This has affected the project's ability to access deeper parts of the forest due to understandable community reluctance to travel where armed bandits are hiding.

By Q2Y2 insecurity had abated in three of the four districts but continued to pose a real problem in Yeki district. As a result, it was agreed with DI and the Ethiopian government representatives that the project should withdraw entirely from Yeki district given that continued insecurity had led to cessation of all activities and was endangering staff.

Output 1. Three honey microenterprises producing higher quality honey and generating income from sales to Apinec and/or other honey buyers
Five honey micro-enterprises have been established, equating to 167% achievement in terms of the target for the number of honey micro-enterprises to be established. There are two in Guraferda, two in Sheko and one in Gidi Bench (Annex 7.7). Female representation in the membership committees of the five micro-enterprises averages 61%, though varies quite widely, being 20%, 47%, 67%, 71% and 100% across the five. This represents a major achievement in the honey value chain, and is illustrated in this short film: Project Achievements - University of Huddersfield

Seven training sessions have been delivered (Annex 7.4), with total participating numbers being 831 (though some of these have participated in multiple sessions). Core training has been provided to 481 participants and this continues to be cascaded out. On three occasions, Apinec has assessed honey quality, reporting it to range from high quality with low moisture content to mid quality with slightly high moisture content. (Annexes 7.2a and 7.2b)

In the LogFrame it was intended that, from Y2, Apinec, the partner that provided the training, would buy the honey from the micro-enterprises. Apinec did offer to buy the honey but the micro-enterprises secured better prices from Bench Maji Coffee Producing Farmers' Union as well as from local merchants and markets. A total of 1,181kg of honey has been sold and the next harvests are underway. Annex 7.8, the socio-economic impact assessment, reports that honey prices have increased by 95% compared with a pre-project baseline. It is thought that some of the price increase may be attributable to improvements in honey quality as a result of the training sessions. Covid-19 also had a positive impact on honey prices, with anecdotal reports that people in the project area believe it helps to fight the disease. Post Covid-19 prices are more than double pre-project prices, which would support these reports. Local demand for honey and such huge increases in the price paid for it suggest that at least some of the changes can be directly attributed to the project.

Output 2. Four micro-enterprises established for production and sale of forest fruit jams/dried products
Three micro-enterprises have been established representing 75% of the target number. It was intended that one forest fruit micro-enterprise be established in each of four districts. In 2018/19, the project had to pull out of Yeki district due to insecurity. Given that one forest fruit micro-enterprise was established in each of the three remaining districts, it could be considered that the project achieved 100% of its target of district-wide coverage.

Ecopia, the partner specialising in forest fruits and other organic produce, delivered five training courses during the project. There was a total of 336 participants, with 96 attending the core session, representing 96% of the original target numbers planned for when the project covered four weredas. Men and women participated in approximately equal measure in the training whereas it had been anticipated that this output would primarily attract women. Though no specific target was set in the LogFrame, women comprise 33% of the committee membership of each of these micro-enterprises, which is lower than anticipated. During the project design it was understood that women and children most often eat the fruits. However, greater male participation in the micro-enterprise committees (Annex 7.7) is reportedly due to men having responsibility for harvesting of the forest fruits which often requires trees to be climbed.

In the LogFrame, it was envisaged that a 10% increase in household income from forest fruits would be achieved. However, this proved an unsuitable indicator as no households were producing jams, juices, soaps or scrubs prior to the project. The entire concept and processing of these materials was new for the area. Alternative indicators are perhaps better indicators of the early success of these micro-enterprises: A) Ecopia has bought all the jams and juices produced by the micro-enterprises during their training sessions; B) Ecopia has signed MOUs

with all three micro-enterprises outlining the prices it will pay for future production and that it will buy a minimum 70% of the volumes produced, subject to quality assurance checks; C) With support from the project, Ecopia supported the microenterprises by holding a bazaar in the main Zonal town via which it showcased the new products, and during which ETB5,135 of profit was generated by the micro-enterprises of Ecopia; D) Ecopia's input was not limited to jams and juices, as it also trained participants in the production of soaps and scrubs, to which it also committed purchase agreements. These products are of particular interest because they have a longer shelf life and a higher profit margin than the jams and juices. These points are covered in Annex 7.3, Ecopia report.

Covid-19 prevented training being delivered when some of the forest fruits were in season so Y2 production was undertaken using backyard fruits, including guava and papaya, and the forest fruits products were developed once restrictions had been eased and the fruits were in season at the end of Y3. Four important lessons were learned from the interactions with Ecopia. 1) Although backyard fruits do not protect the more biodiverse forest fruits, production skills can be shared and applied to a range of products and it is worth adapting project targets to make the most of opportunities, especially when faced with Covid-19 restrictions. Production skills learned using backyard fruits were subsequently applied to forest fruits. 2) The seasonality of forest fruits means that these micro-enterprises will need to find other products with which to work when fruits are not in season. 3) Production of soaps and scrubs using, e.g. coffee husks and spices may help address point 2) while also being of interest because of the greater shelf life and profit margins. 4) Ethiopian legislation for processed goods is much stricter than for unprocessed goods. As a result, NTFPs such as honey, coffee and dried spices are subject to far fewer controls than, e.g. jams and juices.

Output 3. Four micro enterprises established for sale of spices for national and potentially international markets

Four micro-enterprises have been established, two in Sheko and one in each of Guraferda and Gidi Bench (Annex 7.7). Female representation in committee membership ranges from 28-53%. The target was for 100 people to be trained. There was a total of 577 participants across seven training sessions, of which 234 attended the comprehensive training on harvesting, drying, storing and post-harvest management, thereby exceeding the trainee target numbers by more than 100%.

Despite failed attempts to secure input from two partners specialised in the international spice trade (Feed Green Ethiopia and Nati Spices), the project team was able to arrange training sessions and skilled knowledge transfer from the Ethiopian Institute of Agricultural Research, the Plant Science Department of Mizan-Tepi University, and the Spice expert from the Bench Maji Coffee Farmers' Union, as well as an exchange visit to a spice cooperative in a non-project district (Annex 7.4). It also secured broader value chain analysis and support from a former employee of Farm Africa, with expertise in rural value chain development. He delivered two sets of training for the project staff and government partners and his reports have been submitted in previous years.

Given the lack of spice partner attached to the project, it was not possible to report on sales to any specific partner. However, the socio-economic impact assessment reports increased prices paid for several spices, including Ethiopian cardamom, Long pepper, and wild pepper known as mitmita. Despite a reduction in demand for and capacity to transport the spices because of Covid-19 restrictions, price increases exceed 100% for all these spices. There were also price increases for a number of non-indigenous spices which have been growing in the forests of SW Ethiopia for some time and for which there is demand, e.g. black pepper, for which a price increase of 69% was reported. Of the 233 responses related to spice harvesting, 203 reported increases in harvesting volumes, with 3,081kg of spices sold by the four micro-enterprises. All of this was sold to individual merchants and at local markets.

Output 4. Analysis of chemical properties and commercial potential of Forest Mahogany (Trichilia dregeana)

In November 2019, seeds were harvested from GPS-referenced points by a senior member of the Ethiopian Biodiversity Institute (EBI). These seeds were subsequently transported to Addis

Ababa where they were dried and stored, awaiting transport to the UK for tests in a laboratory at University of Huddersfield.

Despite 18 months spent completing paperwork and negotiating with EBI's Access and Benefit Sharing Directorate we were unfortunately unable to get the seeds to the UK. In discussion with the UK's Competent National Authority it transpired that this project was not alone in facing this challenge. Partial analysis was eventually undertaken in Ethiopia. Chemists at Hawassa University undertook preliminary analysis, with further Gas Chromatography-Mass Spectrometry analysis conducted by Adama of Science and Technology University, based in Nazareth. Results of the analysis are contained in Annex 7.1b. The researchers conclude that 'the seeds and their shells contain promising sources of oil from which to prepare cost-effective laundry soaps as well as other cosmetic products'. They also note reports by villagers of anti-fungal and anti-bacterial properties, which they consider would further enhance the cosmetic potential of the seeds and their shells. Unfortunately, they were unable to isolate the necessary anti-fungal strains due to a lack of specialised equipment in their laboratories, and recommend that this be conducted in future research. Findings of this research were due to be shared with government and local communities to inform potential future harvests. These results have only just been released given the delays incurred in trying to get the seeds to the UK, so the findings are currently being shared and should help inform future research and potential harvests.

Output 5. Biodiversity, measured by key indicator species, maintained in all micro enterprise sites

NTFP micro-enterprise harvest sites were selected and a number of indicator species identified in consultation with community representatives, mostly women. These species varied slightly by district, in keeping with the desire to ensure location-appropriate monitoring. The species formed the basis of the Importance Value Index referred to in the LogFrame and in the baseline and endline reports (Annex 7.9). The key conclusions from the baseline and endline assessments are A) that harvest of the NTFPs for use in the micro-enterprises has not led to a reduction in the presence of those NTFPs, and B) reduction should not be anticipated given that use relies primarily on the bark, seed, aril or fruit, with occasional use of the roots. This is encouraging given community interest to continue with the micro-enterprises as reported in the socio-economic impact assessment. A further but worrying finding of the biodiversity endline assessment is that woody species continue to be cut for use in timber and to create space for coffee development. While these were not the focus of this research or project, it is important that attention be paid to these trends. One other worrying situation was that the non-project biodiversity control sites that were established during the baseline survey could not be revisited for the endline survey due to insecurity deep in those forested areas. This was despite several attempts by the project team to visit with community members.

In addition to the baseline and endline assessments, training was given to community members to enhance their knowledge of biodiversity monitoring, and to build it into the schedule of activities undertaken by Forest Management Groups. Such field-based, community-oriented training is quite novel in Ethiopia and an experience that HBS intends to share and to inform future project design. Sample schedules incorporating NTFP forest management plans from Guraferda district are shown in Annex 7.6b.

Output 6. Policy makers made aware of role of NTFPs, micro-enterprises and women in sustainable management of forests

Interactions with government have occurred on several levels. At the district and zonal levels, staff from the offices of Cooperatives, Trade and Industry, Youth and Sport, Women and Children, Housing and Urban Development, and finally Enterprise and Industry Development were consulted with regard to official registration of the micro-enterprises. It was finally agreed that registration should be facilitated by the Office for Enterprise and Industry Development, though there was considerable input from the Office for Agriculture and Natural Resources, as well as the Office for Environment, Forests and Climate Change throughout the project lifetime. These widespread consultations helped to raise the project's profile and the initiatives it has sought to develop. Furthermore, these government staff have been involved in the delivery and receipt of multiple training sessions, linked both to specific NTFPS as well as to business and financial operations of micro-enterprises (Annex 7.4). Government offices and linked institutions

(e.g. unions) have participated in the Zonal bazaar showcasing products made by the micro-enterprises. They have participated in training sessions, workshops and meetings, as illustrated in this short film from the workshop in Mizan town Publications - University of Huddersfield.

At a higher level, the regional government's Bureau of Finance (BoF) approved the original project and undertook mid-term and final evaluations, finding it had contributed to the welfare of target communities, and making several recommendations. BoF's terminal evaluation concludes 'the project has made significant contribution in terms of strengthened non-timber forest product micro-enterprise[s] that have been established with the facilitations of livelihood[s].' and '[the project is in] a position of complete alignment with government policies and strategies pertaining to social strength supply to needy communities.' In terms of female participation, it notes 'High women empowered in all microenterprise is appreciable part of the project'…and [the micro-enterprises are] legal certified.' Of particular note is the remark that 'if it intervene in other woreda or continue its work in the same woreda…we believe that it can bring sustainable change among the large forest coverage area of western Ethiopia.'

Finally, a series of Briefing Notes (Annex 7.5) are being developed by the project team and will be shared with key policy makers, as will any journal articles published as a result of research conducted during the project.

3.2 Outcome

The project's Outcome was intended to improve income for 5,000 people through development of eleven community level NTFP micro-enterprises, supporting people in areas with limited coffee growing potential, and so making forest conservation attractive. In broad terms, it can be said that the Outcome was achieved, with greater detail provided below and a summary in the annotated Theory of Change (Figure 2, annotations shown in red boxes).

Twelve micro-enterprises have been created, spanning all the districts in which the project was active (Figure 3 and Annex 7.7), so this indicator was exceeded.

Total household income was reported to have increased by 10% but cash income was reported to have decreased by 6%. The reduction in cash income was partially attributed to a) reduced demand for spices, b) a reduction in agricultural income (not part of this project), and c) greater sampling focus on economically disadvantaged households in the endline survey compared to the baseline. Participating households reported higher annual income (ETB 81,459) than non-participating households (ETB 69,589), and reported an increase between the project baseline and endline compared to a decrease for non-participating households (Annex 7.8). All survey participants reported increases in NTFP production volumes, household participation, and NTFP prices, though demand varied, with spices suffering most (not just in this project). So, incomes have increased and economically disadvantaged households have benefitted, which was a target of the project.

Laboratory analysis of *Trichilia dregeana* has been undertaken and shared with government agencies and the EBI. It is also being shared with communities. However, despite repeated efforts to export the seeds for analysis in the UK, the level of analysis that was possible in Ethiopia fell short of that intended at project design. Isotope and fragmentation patterns could not be ascertained to the same level as initially envisaged, there was no analysis using Nuclear Magnetic Resonance and it is expected that some additional compounds that could have been identified were perhaps not, given the relative lack of instrumentation in Ethiopian laboratories as compared to those in the UK. It is therefore a) premature to share the analysis with potential businesses other than Ecopia which has expressed interest since the outset of the project, and b) premature to raise community expectations of commercial potential.

Biodiversity monitoring of key indicator species suggests the project created no negative effects on those NTFPs harvested, primarily because harvesting does not kill or damage the species. This component of the Outcome can be considered to have been achieved (Annex 7.9).

Contributions to government policy have been made at Zonal level, with consistent and widespread engagement of government offices (Annex 7.4). This has arguably exceeded the extent of local government engagement envisaged and bodes well for on-going support to the micro-enterprises now that the project has ended. However, this should be caveated with a lower than anticipated engagement at national government level, due to the impacts of Covid-

19 and an agreement with DI that workshops should probably not be held in the capital city at a time when cases were on the rise.

Finally, 72% of participating Forest Management Groups incorporated biodiversity and NTFP monitoring and management in their three yearly reviewed action plans and their fortnightly patrol schedules (Annexes 7.6a and 7.6b). Furthermore, at least 28 formal training sessions were delivered on NTFP harvesting and processing, biodiversity monitoring and conservation, as well as finance and business management, with 2,495 people participating, of which 1,982 were community members and 497 were government staff from a range of offices, including Agriculture and Natural Resources; Environment, Forests and Climate Change; Cooperatives; Trade and Industry; Youth and Sport; Women and Children; Housing and Urban Development; Enterprise and Industry Development. Consistent provision of support to communities and government offices plays an important role in helping a) to build institutional capacities, b) to ensure widespread awareness, and c) to create engagement amongst organisations tasked with continuing to provide support after the project has ended.

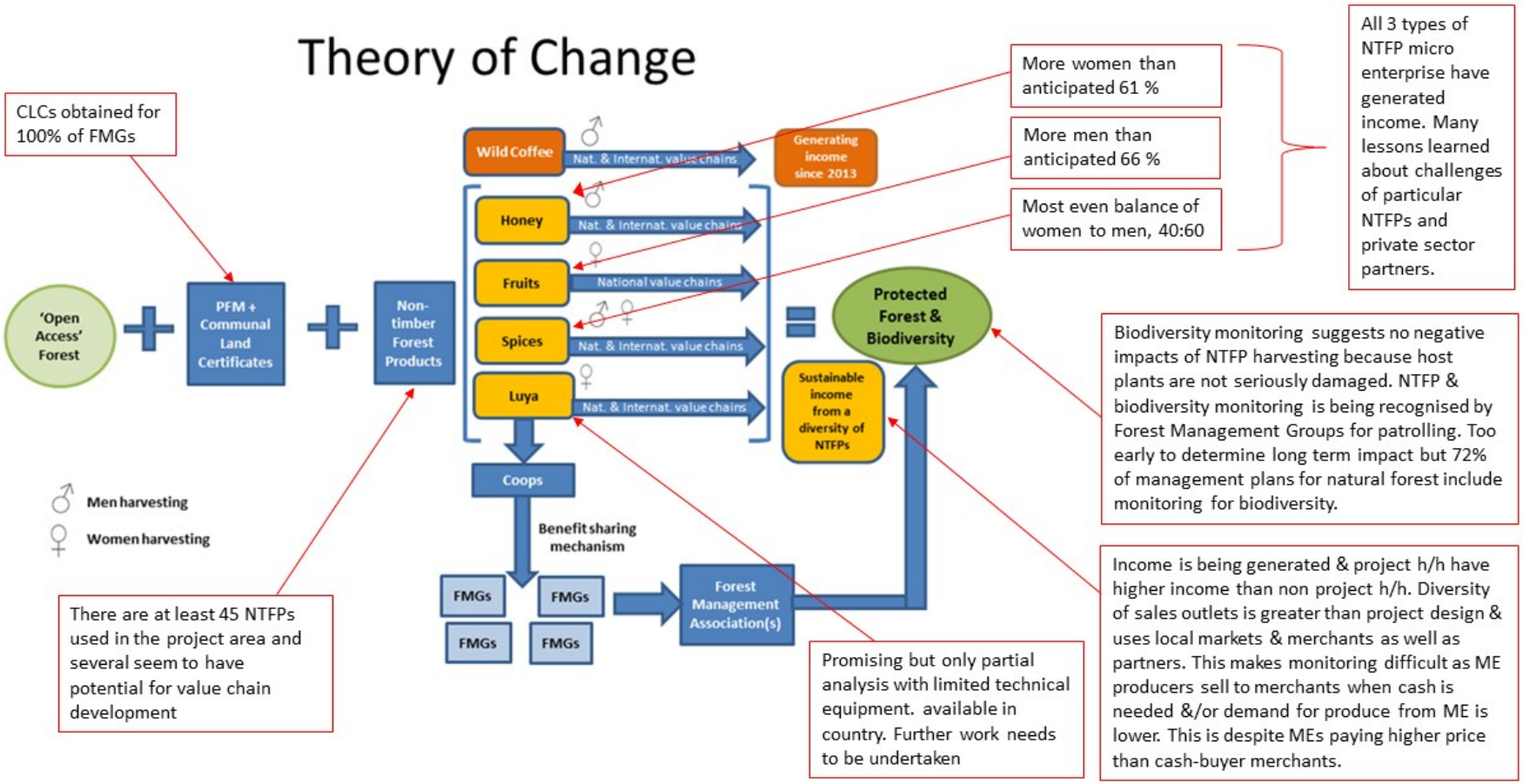

Figure 2. Annotated Theory of Change

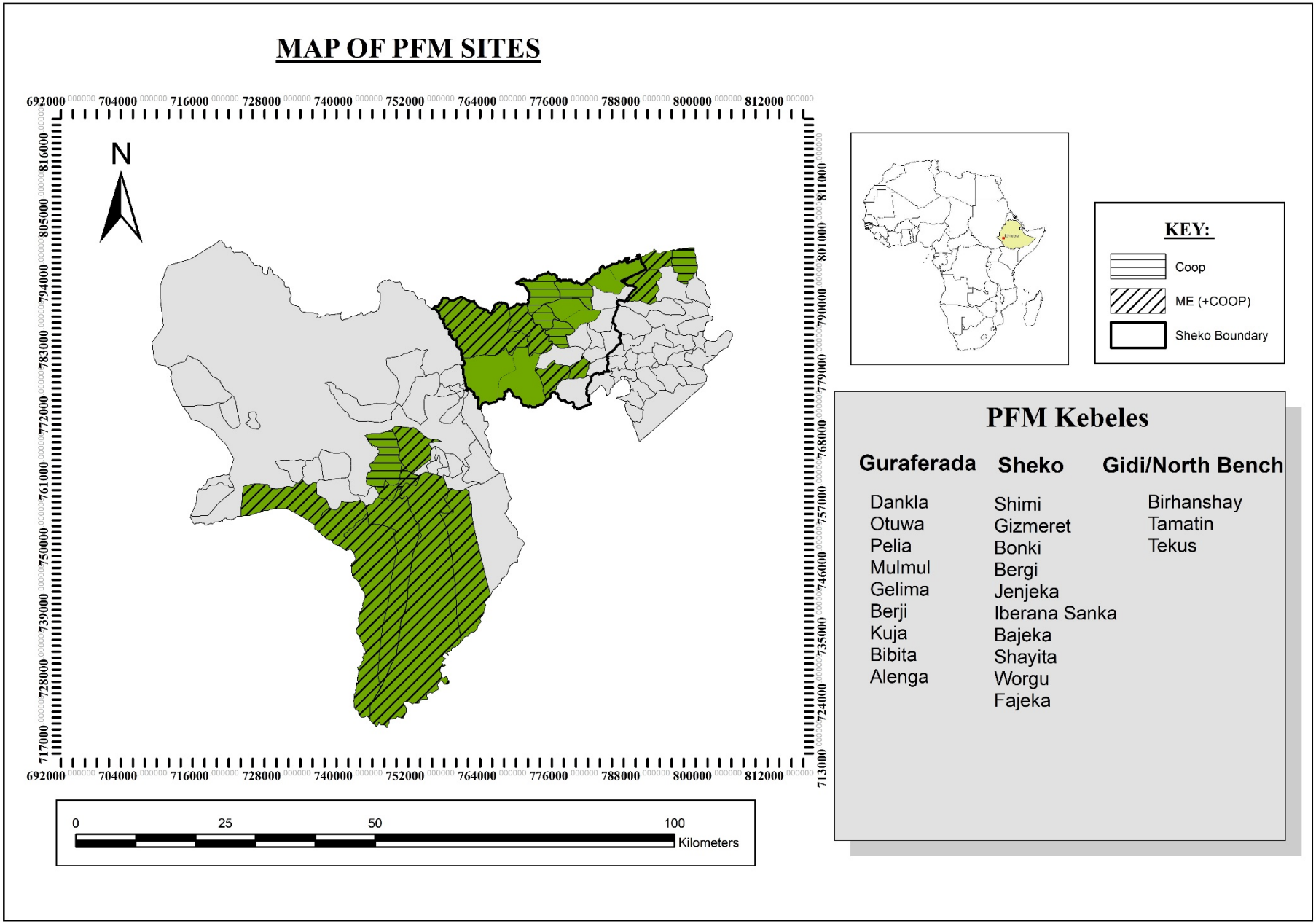

Figure 3. Map showing PFM sites, location of new project micro-enterprises, as well as existing PFM cooperatives

3.3 Monitoring of assumptions

One key assumption at Outcome and Output level was that the regional government would continue to grant access to HBS and EWNRA. This is particularly important given the devolved decision making in Ethiopia. This was closely monitored and good relations with government were maintained. In only two instances did government withdraw access. The first was during a period of heightened insecurity and the second was during the initial phase of Covid-19 restrictions. In both cases, project staff adhered to government regulations and only returned to the affected locations when permission was granted. These restrictions affected not just project staff but the wider society. In both cases, communication was shared with DI and approval sought. In one instance, the insecurity in Yeki district became too dangerous for the project to continue, so it withdrew in discussion with government. This too was communicated to and approved by DI.

Continued community interest in NTFP development was another important assumption. It is clear from the socio-economic impact assessment (Annex 7.8) that this was high throughout the project and remains high despite the relatively short duration of the project.

The willingness of the micro-enterprise producers to sell their goods to relevant partners was another assumption. This assumption was monitored and adaptation shown both by the producers and the project. Due to offers of low purchase prices and/or lack of partner interest, the producers of honey and spices sold instead to local traders and merchants from whom they obtained better prices and/or cash. As the aim of the project was to benefit households, this is a positive response to an overly simplistic assumption. For the forest fruit products, the partner bought all the products and the producers remain willing to sell to that partner (Annexes 7.3 and 7.8).

The most challenging assumption relates to government willingness to allow scientific analysis of *Trichilia dregeana* which, in the proposal, was intended to be conducted in the UK given lack of Ethiopian capacity as identified by EBI. Access to harvest the seeds from the project sites was granted and undertaken by EBI, but as outlined earlier, export to the UK for detailed analysis was not achieved. Efforts were made to get around this challenge by applying for permission for an EBI staff member to accompany the seeds to the laboratory at University of Huddersfield. This was communicated to DI who were willing to write a letter of support, but with the introduction of Covid-19 travel restrictions this too, had to be abandoned.

3.4 Impact: achievement of positive impact on biodiversity and poverty alleviation

In the original application form, the intended impact was that ‘rates of deforestation in SW Ethiopia are reduced as communities increasingly value forests and benefit economically from national and international trade in sustainably sourced Non-Timber Forest Products.’

Demonstration and development of the commercial value of the NTFPs selected for this project helped conserve them by virtue of attributing greater economic value to them and their place in the forests. Survey respondents reported increased knowledge of and interest in the NTFPs and biodiversity monitoring was incorporated into forest patrols (Annexes 7.6b and 7.8). Furthermore, the NTFPs selected for this project are not destroyed or seriously harmed during harvest (Annex 7.9). Finally, on a more general level, the more that communities become aware of the commercial potential of various forest products, the less likely they may be to engage in deforestation. Inclusion of NTFP and biodiversity monitoring in the updated community forest management plans suggests that this has been achieved.

In terms of human development and poverty alleviation, the focus of the project was on the generation of additional income, particularly for women and economically poor households. Although the micro-enterprises are still young, the endline survey suggests a positive financial impact for participating households.

4 Contribution to Darwin Initiative Programme Objectives

4.1 Contribution to Global Goals for Sustainable Development (SDGs)

SDG1.2 Reduce number living in poverty
Contribution to SDG 1.2 has been made through the sale of honey, jams, juices, soaps, scrubs and spices. In addition, the socio-economic impact assessment (Annex 7.8) found that a high proportion of economically marginal (poor) households had been targeted and impacted by this project.

SDG5.5 Women's full and effective participation; equal opportunities for leadership
Across the 12 project-supported micro-enterprises, 79 of the 162 membership positions are occupied by women, meaning that women hold 49% of the posts (Annex 7.12). This is a much higher proportion than we are used to seeing in the Forest Management Group committees, which is less than 20%. In terms of participation in the training courses, 34% of participants across all courses were women (Annex 7.4). This is lower than we targeted in the project plan, but better than the usual participation levels in this area.

SDG15.2/5/6 Sustainably manage forests; halt biodiversity loss; access and benefit sharing
Forest Management Groups (FMGs) were established through a participatory forest management process undertaken in an earlier EU and Darwin funded project (2010-2016), as well as during a project funded by UoH and Waterloo Foundation (2016 – 2021). FMG plans (agreed between the FMG and the local government and stipulating the amount of NTFPs that can be sustainably harvested by the community), are reviewed every three years. These have been updated during the same time as this project and now incorporate biodiversity monitoring into regular forest patrolling (Annexes 7.6a and 7.6b).

SDG 16 Peace and Justice; effective, accountable and transparent institutions
The micro-enterprises are linked to the existing cooperatives which operate under member generated bylaws guided by criteria established by the Trade & Industry Office. These state that organisations have to be open to everyone irrespective of gender, race/ethnicity or religion. Elections are held and cooperative management committees have to have at least one woman and one ethnic minority member on them, as outlined in the byelaws (Annex 7.10).

4.2 Project support to the Conventions or Treaties (e.g. CBD, Nagoya Protocol, ITPGRFA, CITES, Ramsar, CMS, UNFCCC)

Convention on Biological Diversity (CBD)
8(c) manage biological resources/sustainable use.
8(f) rehabilitate/restore degraded ecosystems.
8(j) Respect, preserve and maintain indigenous knowledge.
Forestry inventory specialists from Hawassa University, working with community members and local government staff, undertook scientific baseline and endline studies of biodiversity in selected sites. The same team also trained community members to undertake biodiversity community monitoring. The endline survey found no negative impacts of the project on the NTFPs selected for development.

Achi Target Contribution
AT1 Biodiversity Awareness.
AT4 Sustainable production and Consumption.
Training sessions were provided to local government and community members and 12 micro enterprises developed (five honey, four spice and three forest fruit). Micro-enterprises promote the value of forest spices and their related ecosystems. The micro enterprises are linked to larger coops. The FMGs all have sustainable forest management plans which detail the harvest volumes for NTFPs and incorporate regular monitoring (Annexes 7.6a and 7.6b). Plans are agreed with local government. Sale of honey, forest fruit products and spices has been achieved across all the micro-enterprises.

AT5 & AT15 Reduce habitat loss/carbon stocks.
Earlier project work (funded by the EU and Darwin) demonstrated that carbon stocks can be maintained and increased under participatory forest management with the support of FMGs (Wood et al 2019). FMGs have been supported in updating their forest management plans. This work is in line with one of the Ethiopian Government's strategies to achieve AT5, namely the adoption of participatory forest management, which was confirmed in the 2018 federal forest legislation, and in the development of which our earlier project contributed (O'Hara, 2016)

AT13 Genetic diversity.
The wider the range of products with added market value the greater the incentive for FMGs to patrol and monitor the forest to prevent deforestation and degradation. Sustainable use of forest spices (timiz, korerima, chillies), fruits and honey in addition to wild coffee helps maintain genetic diversity. Sustainable harvesting of NTFPs is managed through the forest management plans agreed between the local government and the FMGs (Annexes 7.6a and 7.6b).

AT14 Benefits to all.
Membership of cooperatives is governed by Ethiopia's Cooperative Law, whereas micro enterprise membership is governed by criteria set by the Trade & Industry Office. These state that organisations have to be open to everyone irrespective of gender, race/ethnicity or religion. Elections are held and existing cooperative management committees have to have at least one woman and one ethnic minority member on them.

Micro enterprise membership is facilitated by project staff in discussion with community members. Participatory methods are used to identify micro enterprise participants based on interest, income levels and gender. Women represent over 49% of committee membership in the 12 micro-enterprises established. Like the cooperatives, the micro-enterprises are open to everyone, irrespective of race, ethnicity or religion.

Nagoya Protocol
9: Sustainable Use.
See response to Achi Target AT4 on sustainable production and consumption.

22.5(j) Women's Access.
See response to SDG5.5 'Women's full and effective participation; equal opportunities for leadership'.

ITGRFA
5.i (b): Conservation...characterisation/evaluation/documentation.
6.2(e) expanded use of underutilised species;
Project partner, the Ethiopian Biodiversity Institute (EBI), supported the project in harvesting the seeds of forest mahogany (*Trichilia dregeana*), and in drying and storing the seeds in Addis Ababa. Subsequent analysis was undertaken by Hawassa University and the Adama Science and Technology University. Both the socio-economic impact assessment and the biodiversity surveys show presence of *T. dregeana* across all three project districts.

Additional NTFP presence, formal identification and potential uses have also been identified in the Additional NTFP report (Annex 7.11). This suggests a wide range of additional products that might be suitable for further research and formal analysis, as well as ultimately value chain development that may help expand use of some of these species.

4.3 Project support to poverty alleviation

As indicated in earlier sections, poverty alleviation through development of NTFP value chains has been the central focus of this project, and a critical component in the Theory of Change. An independent socio-economic impact assessment concludes that household income has increased by 10% in the endline survey of 250 participants, though cash income has decreased by 6% primarily due to a reduction in income not directly associated with the project. This impact assessment also highlights that households participating in the project now have a

higher annual income than those not participating in the project. While the samples were different in the baseline and endline survey, the fact that a higher proportion of economically vulnerable were sampled in the latter suggests that the income of participating households has improved through the project's duration.

Beneficiaries were women, men, children and the elderly from multiple ethnicities and religions, spread across the three districts in which the project operated. The project helped by improving technical knowledge of NTFPs, providing better drying and storage conditions, supporting in product transformation and sale, and creating 12 micro-enterprises via which micro-enterprise members can access formal loans and support from banks and government, beyond the end of the project timescale.

In addition to direct poverty alleviation from the sale of NTFPs through the micro-enterprises, it is interesting and encouraging to note how participants are using the income generated to support their wider livelihoods and diversify their sources of income. For instance, Matheos Shalo from Tekus got in Gidi Bench says: *"I am member of the FMG in Tekus Since 2017 and recently I have joined the ME. I have eight children. I fed my children from the agriculture which is rain fed only. Our agriculture is also affected time to time due to degradation and landslides. I was think what benefit the forest would really give to us. As I have joined the ME last year 2019, we had articulated our bylaw by the project facilitation and legally registered. This year (2020), I have harvested 20kg cardamom and sold for ETB 3600 and 5 kg timiz for 200 ETB, I have recently opened a small coffee and fast food shop as a side business for my families. This is a miracle for farmers like me. Many of the farmers are asking me and my friends to join our ME or establish similar in the area."*

4.4 Gender equality

- Women hold 49% of the committee positions in the 12 micro-enterprises established by the project. There are lessons to be learned in terms of female participation and influence across the micro-enterprises, with two being 100% women-led, three having an even split between female and male leadership, three having 33% of women in positions of power, and one having only 20% women holding positions of power. This is quite a range, but an average of 49% across the 12 represents a huge improvement compared to previous norms.
- 37% of the participants in the spice training were women (this increased to 39% for community members and decreased to 32% for government).
- 37% of the participants in forest fruit training were women (this decreased to 36% for community members and increased to 46% for government).
- In the two training sessions on business planning and management, plus financial and governance control, women represented 30% and 39% of the participants.
- 29% of the participants in the honey training were women (decreasing to 28% for community participants and increasing to 36% for government).
- Participation in training sessions also reflects a mix of results, though in general, women have participated much more than is traditional in this Zone.

Further detail can be found in Annex 7.4 – training participants.

It was anticipated that the forest fruit micro-enterprises would be women-led, but all three have 33% female committee membership. As reported earlier, this apparently reflects men's role in the harvesting of forest fruits, which often require trees to be climbed. In contrast, it was anticipated that spice and honey work would show greater male participation, but with the exception of one micro-enterprise, women comprise 49-100% of the membership of these two types of micro-enterprise.

A short video was produced - Project Achievements - University of Huddersfield. It showcases the involvement of one of the women who participated in the project, in particular in one of the micro-enterprises that has a 100% female management committee.

Evidence from short interviews with female members of the MEs suggests positive impacts on their lives. Abaynesh Demssie, a 40 year old lady with four children, is Chairperson of Netsanet

honey micro enterprise. She says *"After I become a member of the micro enterprise, I took the training regarding to the quality honey production system and how to maximize both the quality and the quantity of honey, with my colleagues at Bonga APINEC. I and my friends were changed a lot. Based on the training I had tried to work with my friends and practically converted the theoretical trainings in to practice. I had produced 10 kg of honey based on the quality and supplied to the honey micro enterprise. From this production, I had 700 birr (70 birr for each kg). In addition, to the honey, I have produced, I personally engaged in to spices and I had harvested spices from nearby forest."* It is interesting and encouraging to note that despite Abaynesh's ME training being focused upon honey, she has extended her involvement to participate in, and benefit from, spice harvesting in an adjacent project ME.

4.5 Programme indicators

- **Did the project lead to greater representation of local poor people in management structures of biodiversity?**

  The project specifically targeted women and households from marginalised ethnic groups, as well as NTFPs that were important in terms of biodiversity and that could be sustainably managed. As such, poor people are well represented in this project.

- **Were any management plans for biodiversity developed and were these formally accepted?**

  Forest Management plans exist for each village. These were developed before the current project but with support from DI in the past. Biodiversity monitoring and protection and NTFP management have been incorporated into these plans, as well as into the work of local government.

- **Were they participatory in nature or were they 'top-down'? How well represented are the local poor including women, in any proposed management structures?**

  Training in community-focused biodiversity monitoring was provided at a variety of locations. In addition, selection of species for community monitoring and for academic monitoring was developed in consultation with community members, primarily women. This is a new approach in Ethiopia and we are aware of only one other location in which this is being piloted. Further research into this type of monitoring, or 'citizen science', would be very worthwhile and it is anticipated that it will be incorporated into future projects implemented by EWNRA.

- **How did the project positively influence household (HH) income and how many HHs saw an increase?**

  The project influenced h/h income by enhancing knowledge, harvesting, storage and sales outlets for forest products. Furthermore, it specifically targeted economically poorer h/h, thereby providing opportunities for people traditionally less likely to benefit from such initiatives. According to an impact assessment of 250 h/h, all those involved in the project benefitted from increased income and at the end of the project had higher h/h income than those h/h not participating in the project.

- **How much did their HH income increase (e.g. x% above baseline, x% above national average)? How was this measured?**

  Overall h/h income increased by 10% on average, but cash income decreased by 6%. However, project participant h/h had an average of 17% more income than non-project h/h. Despite cash income having dropped for participating h/h, they still benefit from more cash income than non-participating h/h, to the tune of 10% of annual income. This was measured through an external baseline and endline impact assessment. 250 h/h participated in the endline survey, of which 142 were project participants and 108 were not.

4.6 Transfer of knowledge

No formal qualifications were planned in this project and none were obtained. However, the project did result in extensive collaboration with researchers at Hawassa University, who in turn

collaborated with researchers at Adama Science and Technology University. This is in addition to the collaboration with HBS academics.

Journal articles are under development for biodiversity related research as well as findings from the socio-economic impact assessments.

Two Ethiopian project staff members are currently undertaking research sponsored by HBS, one being an MRes and the other a PhD. These were supported beyond the scope of this project but have benefitted from research findings linked to it.

A series of Briefing Notes are being finalised and will be shared with practitioners and policy makers in Addis Ababa. These will replace the workshop that was cancelled due to rising infections of Covid-19.

Findings were shared and knowledge transferred to local government through extensive participation by government staff in training sessions, in meetings and in workshops in the main town out of which the project operated.

4.7 Capacity building

This project focused primarily upon building the capacities of rural, forest and forest-fringe dwelling communities. It also sought to enhance the skills of relevant government agencies, with a view to increasing their capacity to support communities post-project. In total, there were 2,495 participants in 28 training sessions delivered over the course of the project. Of these, 1,982 were community members (of which 33% were women) and 497 were government and a few project staff (of which 38% were women). There was a wide range of capacity building, including micro-enterprise and coop development and business planning, NTFP product development, harvesting and quality improvement techniques, NTFP product storage and transformation, NTFP value chain development, market assessment and price negotiation, as well as MOU signing and development. Additionally, capacities were built to support communities to monitor NTFPs and forest biodiversity as part of regular forest patrolling and sustainable forest management planning. Evidence of the impacts of this training are seen in the socio-economic impact assessment report (Annex 7.8).

Project staff capacity was built through participation in training sessions and research. It was also built through the hosting of workshops with government partners. These workshops were run in the absence of any physical input from HBS due to Covid-19 restrictions. This was a first for the project staff. The project team leader has been invited to contribute to REDD+ workshops through experience gained on this and complementary projects. The staff in question are male.

5 Sustainability and Legacy

The 12 micro-enterprises currently seem likely to endure and remain the focus in terms of both poverty alleviation and biodiversity conservation. Participant responses to the socio-economic impact assessment suggest that over 93% intend to continue to operate with the micro-enterprises, with income opportunities likely to be the most significant deciding factors. All 12 micro-enterprises have sold produce, locally or further afield in Ethiopia. All the forest fruit ones have signed MoUs to continue to supply Ecopia, with Ecopia committing to buy 70% of the produce and hoping to secure foreign investment for further development. Honey and spice sales are likely to continue at a local level, with heightened demand for honey likely to endure as long as there is a belief that it helps to protect from diseases. There is also work underway to link the micro-enterprises to local universities which operate a social outreach programme in which qualified students support nascent businesses. This is under development and is being led by one of the partners.

Further research into the Luya seed is envisaged but remains hampered by difficulties with getting the seed to countries with more advanced analytical equipment.

Regional government has witnessed the impacts of the micro-enterprises through participation in and approval of their formal registration and training. Adoption of micro-enterprises for development of forest value chains is innovative for Ethiopia, according to the socio-economic impact assessment and further efforts will be made to disseminate this approach through the sharing of lessons and Briefing Notes, but this will only come about post-project.

Some additional funding has been secured by the Ethiopian partner, EWNRA, and will support continued employment of some staff and the office in this Zone strengthening the PFM arrangements for the forest and further developing forest enterprises. Further funding proposals are anticipated, led both by EWNRA and by HBS. Any resources no longer required by the project will be handed over to EWNRA and/or local government in keeping with Ethiopian legislation.

6 Lessons learned

Independent biodiversity monitoring (Annex 7.9) suggests that development of value chains for NTFPs does not threaten biodiversity, but may instead help to conserve it, because the NTFPs are harvested for their seed, fruit, bark or roots, but the plants are not destroyed. This is extremely encouraging and a finding that HBS and EWNRA will seek to share, with a view to promoting the sustainable management of indigenous biodiversity value chains.

Community-supported monitoring of biodiversity and selected NTFPs is also an approach upon which HBS and EWNRA wish to build. Practical, field-based training that builds upon traditional knowledge and uses has the potential to a) develop Ethiopia's adoption of citizen science approaches, b) support communities in retention of indigenous biodiversity, and c) support poverty alleviation through creation of biodiversity-sustaining value chains. More research will be required to fulfil such potential in Bench Sheko Zone, but an encouraging start was made in this project.

Creation of formally registered micro-enterprises seems to have been a success. It has helped a) to increase geographic coverage of sales related outlets for communities in this area, b) has provided legally recognised organisations (the micro-enterprises) entitled to access bank loans and government support beyond the duration of the project, and c) increased the participation of poorer persons, especially women, in trade in NTFPs.

Insistence on greater female participation in positions of power seems also to have succeeded, but there is room to improve this further.

Use of private sector partners has met with mixed success. The spice component suffered as a result of two failed partnerships, the honey component seemed to work well in terms of training but purchase prices offered were low and reports were not forthcoming in Y3. Relations with the forest fruit specialist have been the most formal and have introduced the greatest amount of learning for the project and communities. Communities also have the potential to benefit most from formal purchase agreements. Greater due diligence and better analysis of local market opportunities should probably be the focus of future projects, rather than rushing into national or international export ambitions.

Establishment of the honey micro-enterprises included provision of support for transitional hives as well as traditional hives. Retention of traditional production techniques alongside the introduction of slightly modernised ones seems to have worked well. Use of the transitional hives seems to have helped increase women's participation in this value chain, but longer term monitoring will be required to assess this.

Ethiopian legislation for products that have been processed (e.g. jams and juices) is much stricter than for raw products. Considerably more time is required to build low-skilled and poorly educated rural communities to understand the importance of maintaining rigorous quality production standards.

In order for micro-enterprises and other MSMEs to be viable, they need to be able to harvest, produce and sell for at least 8-9 months of the year. Multiple harvests of a single product (e.g. honey in a good year) can make this feasible. Fruit related products seem not to ripen year-round, so expansion of the product range to include, e.g. soaps and scrubs made from non-fruit material may contribute significantly given different production times and longer shelf lives.

It is important to keep an open mind in terms of product development, and to evaluate the products in terms of ease of production, but also shelf life and profit margin. These last two points may be of particular importance in locations with limited infrastructure, limited quality storage (e.g. refrigeration) and other challenging conditions such as high humidity. Field visits and assessment of the range of NTFPs and potential products into which they could be transformed is time-consuming but may ultimately better support the long-term aim of forest conservation through sustainable value chain development.

6.1 Monitoring and evaluation

Monitoring of the project activities has been impacted by the security and C-19 restrictions. The major change to the project LogFrame was the project's withdrawal from one of the four target districts because of insecurity. This was agreed with DI, in a smooth and supportive manner. Other shorter delays were encountered due to Covid-19 and localised insecurity in other areas. Communication with DI was helpful in agreeing postponements and ways forward.

There are several lessons that have been learned in terms of the project's monitoring and evaluation.

Firstly, it was intended that the three private sector partners would provide regular data on sales volumes, products and quality assessments for the NTFPs for which they were responsible. This was based on the assumption that the private sector partners would buy most of the products from the micro enterprises. In reality, it is reported that in Year 2 some of the honey and many of the spices were sold by the micro-enterprise members to markets and to local traders because of prices, demand and challenges posed by Covid-19 and insecurity. While a sustainable approach given local demand, this made monitoring of prices and volumes difficult to assess. Unfortunately, there is no easy solution to monitoring this sort of pattern, because individual harvesters (ME members) are free to sell when and where they wish, and in response to whatever personal or external pressures they may face. A concurrent project supporting coffee development found that it took three to four years before coffee farmers really developed trust in the PFM cooperatives, after which the volumes of produce that the farmers sold through the coops increased significantly.

Secondly, the role of community guides (primarily women) in the identification and selection of biodiversity monitoring sites and indicator species seems to be important for community buy-in to a new system. Although this has not been proved, it may be that community involvement has played a role in encouraging the integration of biodiversity monitoring into existing forest management plans. This is important for the long term monitoring of these species. In contrast, insecurity prevented the team from revisiting sites selected as biodiversity control sites. These were in areas in which the project was not operational.

Thirdly, weather variations seem to have a profound effect on some of the NTFPs, for instance honey, leading in some cases to complete loss of a harvest. It proved difficult for such a short project to properly monitor weather variations and their impact on seasonal harvests, given how much time is required to undertake other implementation work, e.g. micro-enterprises creation and formalisation.

Fourthly, many of the micro-enterprises and forest management groups reportedly conducted additional training sessions and held regular meetings between themselves. This is not surprising given that the project was trying to impart new and/or improved skills to a wide range of people. However, the size and remoteness of the area, the lack of mobile phones and the number of groups involved means that it is not realistic to monitor and record all such meetings and extra training sessions. Only a sample can therefore realistically be reported.

The regional government's Bureau of Finance (BoF) undertook a mid-term and final external evaluation, in keeping with national legislation. Their recommendations include the need for beneficiary dependency on aid to be reduced, suggestion that the project be extended to allow more time for outputs to be completed, a request that support from partners continue to be forthcoming for government staff, and that considerable attention be given to scale up the good experiences and reputable practices of the project into other areas [of Ethiopia]. BoF's overarching conclusion was extremely positive, stating that it would be desirable if the project could be expanded into other forested areas of the country.

6.2 Actions taken in response to annual report reviews

AR1R

Comments 1 and 2 from Y1 review: Security situation in Yeki. It was requested that DI be kept up to date and the situation be reviewed with duty of care to staff given due consideration.
Actions: The team sought permission from DI to cease operations in Yeki given continued lack of security. This was granted by DI and subsequently approved by the relevant regional government department. Staff were reallocated to provide support to the three remaining woredas. DI have been kept informed on the field situation when necessary.

Comment 3. Specification on project's approach to micro enterprise creation sought. Evidence of micro enterprise creation also requested.
Actions: A Learning Note on micro enterprise creation was produced and shared in the Y2 report. This Note was supported by a range of additional documents that included documentary evidence of their creation as well as evidence of the types of support that have been provided to the micro enterprises. A sample business plan was included. All 12 micro enterprises have developed business plans following training delivered by Dr. Walter Mswaka, who was employed by HBS at the time of delivery of the training sessions.

Comment 4. Please provide evidence of how delayed activities will be rescheduled. Will a Y2 socio-economic survey take place?
Actions: Documentary evidence of training undertaken was provided and included those activities that were most delayed in Y1. Approval for a Y2 socio-economic survey was granted by DI in February 2020. This had to be delayed because of coronavirus but was undertaken in the earlier part of Y3.
Coronavirus-specific actions: Additional, project-wide delays were inevitable given very strict Ethiopian coronavirus restrictions from March through to August 2020, as well as subsequent gradual easing. The project sought to demonstrate how the Y3 timetable could be rescheduled to accommodate the new delays, recognising that constant adaptation was required. Funds that had been allocated for HBS travel to Ethiopia were reallocated.

Comment 5. Clarification sought on business development plans in case Luya seed analysis proves commercially interesting.
Actions: Luya seed analysis was eventually conducted in Ethiopia. DI were kept appraised of the challenges faced in getting the seeds to the UK and were made aware that HBS had also contacted the UK's Competent Authority (OPSS) as well as seeking advice from other parties that were trying a number of approaches. As yet business plan development is not feasible, but project partner Ecopia will follow up on this and has expressed its desire to work with project micro-enterprises in the longer term. Its creation of MoUs with the forest fruit micro-enterprises could be used as a model for development with Luya seed value chain development.

Comment 6. More information sought on biodiversity analysis, community involvement and the training delivered.
Actions: Two reports, including results of scientific baseline and community training were provided and a further report produced in Year 3 (Annex 9). The Y2 annual report contained, in its Annex 10.2, details of the very practical and field based training that was provided to community members to support their monitoring of forest biodiversity and NTFPs. In addition, most of the species selected for inclusion as Importance Value Indicators were selected, discussed and agreed with input from community members, mostly women.

Comment 7. More detail on harvest volumes and sales in next report.
Actions: Receipts of sales were provided in Y2AR. Production volumes continue to be monitored alongside sales and reports are partially provided in the socio-economic impact assessment as well as other annexes.

AR2R
Comment 3: Recommendation that Output level targets be reviewed to set more specific and measurable targets
Although the targets were not altered, the socio-economic impact assessment sought to report more measurable results, and the volumes and prices paid have been gathered where feasible.

Comment 5: Inclusion of a table summarising members per commodity type/micro-enterprise and disaggregated by gender
Annex 7.12 provides a list of all the committee members and certificates for each micro-enterprise. This is further supported by a list of all the training sessions (Annex 7.4). Both are disaggregated by gender, by community and by government.

7 Darwin identity

Darwin identity has been recognised and was used at the official project launch. This included recognition of Darwin support in speeches by the Executive Director of EWNRA and UoH staff and on the banner produced for the occasion. It also included recognition by the speaker from EBI.

A project signboard has been made and erected and 100 posters outlining the project purpose and partners, including Darwin, have been produced in English and Amharic. Posters have been distributed to Woreda (District) and kebele level government offices that the project interfaces with as well as the new project micro-enterprises and existing coops.

The project has a distinct identity. It is outlined on the UoH website with Darwin support recognised and a link provided for people to go to the Darwin website and find out more about the Darwin Initiative. https://research.hud.ac.uk/institutes-centres/surge/src/forestsandwetlands/forests/ntfp-me/

The project has also been promoted on the University web news site, with the project award from the Darwin Initiative promoted in June 2019.
https://www.hud.ac.uk/news/2018/june/374kgranttoextendunisethiopiannaturalresourcesprojects/

In addition, the project and associated Darwin Initiative funding was featured in the Huddersfield Business School Monthly newsletter (Word on the Street) on 5th June 2018. “HBS Researchers Win Major Government Contract (Darwin Grant)”. The project was also featured in Darwin’s gender focused newsletter.

The Sustainable & Resilient Communities research cluster within UoH manages its own twitter account (@CSRC_hud) and follows Darwin, tweeting directly about the project and re-tweeting relevant Darwin posts.

Two films have been produced, one showcasing a personal story of one female member of a honey micro-enterprise - Project Achievements - University of Huddersfield; the other summarising the closing workshop - Publications - University of Huddersfield. DI identity is promoted at the beginning and end of both videos.

The DI logo also features in all the t-shirts that were worn by local government staff, community representatives and project staff.

8 Impact of COVID-19 on project delivery

Covid-19 had a major impact on the project. It caused multiple delays to training sessions, field visits, independent assessments, as well as monitoring and support visits from HBS. Furthermore, it exacerbated the already complex process of shipping seeds from Ethiopia to the UK, ultimately preventing this from happening because a member of EBI staff could not

travel to the UK to accompany the seeds. It also hindered demand for the NTFPs produced, most notably the spices, primarily by preventing them from being transported out of the districts. This was not unique to the project – interviews with spice traders showed that this was a widespread problem.

Meetings with government, communities and businesses were also constrained, at times having been banned, and subsequently having only limited numbers allowed. Restrictions were felt most acutely from the end of Y2 and through the first half of Y3, until they were eased.

We dealt with these challenges by a) ensuring project staff had the necessary protective equipment, b) ensuring any training sessions also provided the necessary equipment, c) supporting the national partner (EWNRA) in its response to the national call for a month's wages to be set aside to assist the government's Covid-19 response, d) holding smaller group meetings and training sessions, e) restricting local travel and banning international travel. The project partners also adapted their response, using e.g. backyard fruits to conduct training when forest fruits had gone out of season by the time that Covid-19 restrictions were eased.

Overall, we sought to conduct as many of the sessions as we had initially intended, but to do so later in the project, as restrictions were lifted. This inevitably led to a delay in results trickling down, but it is hoped that this approach will help sustain community interest in the longer term. One advantage is that new harvest opportunities occur at least every year and sometimes more than once a year (Annex 7.13) and as such, there should always be cyclical opportunities for the micro-enterprises to harvest, dry, process and sell their goods, regardless of future Covid-19 surges.

9 Finance and administration

9.1 Project expenditure

Project spend (indicative) since last annual report	2020/21 Grant (£)	2020/21 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)				Costs for ongoing roles were lower than budgeted throughout the project and exchange rate savings were made. Some staff costs had been overclaimed in error in year 1, a correction has bee made to the figures in this year to ensure the total claimed is correct which has further reduced the spend
Consultancy costs				Consultancy costs were higher in Y3 because a) some underspend in Y2 that was carried over b) several consultancy assignments took more time than

				anticipated and there was budget t accommodate these, c) an additional NTFP identification assignment was financed from underspend in other areas, e.g. travel, salaries & subsistence.
Overhead Costs				Overhead costs had been higher than planned in the previous project year reflecting differences in timing of expenditure compared to budget.
Travel and subsistence				Due to the pandemic most of the planned travel was not possible in this project year.
Operating Costs				Underspend from other budget lines was reallocated to cover additional operating costs, e.g. extra maintenance costs for hired vehicles.
Capital items (see below)	-	-	-	
Others (see below)				These costs are fo the Luya analysis which had been delayed and had been budgeted for in an earlier projec year.
TOTAL				

Staff employed (Name and position)	**Cost (£)**
Kemal Mhuye NTPF Facilitator	
Shimeles Melese NTPF Facilitator	
Hailemariam Nadew, Income Generating & Marketing Facilitator	
Sewnet Worku Sendeke Driver	
Kassahun Adelo, Project Manager	
Frehiwot Mekonnen, Finance & Admin Officer	
Eskatnef Getachew, Cashier Accountant	
Kebedetch W/Aragay, Cleaner	

Eyasu Kobetet, Assefa Koygu & Feleke Shurbab, Guards	
TOTAL	

Capital items – description	Capital items – cost (£)
TOTAL	

Other items – description	Other items – cost (£)
Chemical analysis and reporting relating to Luya Seed	
TOTAL	

9.2 Additional funds or in-kind contributions secured

Source of funding for project lifetime	Total (£)
Waterloo Foundation	
Huddersfield University	
TOTAL	

Source of funding for additional work after project lifetime	Total (£)
TOTAL	

9.3 Value for Money

Certain elements of this project are considered to have represented good value for money. For instance, delivery of over 28 multi-day training sessions to 2,495 participants; introduction of biodiversity monitoring and incorporation of it into existing forest management plans; concurrent and linked securing of communal land certificates for all key kebeles and gotts. Other elements have been more challenging, for instance insecurity increased the relative cost of some work

because of the need for repeat visits to areas, and periods of time in which activities had to be paused to comply with government restrictions aimed at addressing the spread of Covid-19.

Perhaps the most significant contribution in terms of value for money is the foundation that this project has laid for biodiversity-sensitive NTFP value chain development. Assessment by the biodiversity monitoring team suggests no negative effects of sustainable harvesting of NTFPs. This is very encouraging for the handful of NTFPs targeted by this project, but also promising for the 40+ additional NTFPs already used to greater or lesser degrees by households in Bench Sheko Zone. Furthermore, these foundations may help to stimulate greater academic interest to investigate the nutritional, pharmacological and cosmetic potential of a wide range of NTFPs found in this Zone.

10 OPTIONAL: Outstanding achievements of your project during the (300-400 words maximum). This section may be used for publicity purposes

I agree for the Darwin Secretariat to publish the content of this section.

There are two outstanding achievements of this project. The first is that it succeeded in securing 49% female representation in the 12 micro-enterprise committees. This is much higher than the norm for this part of Ethiopia, and indeed many other parts of the world. The second is that it began to demonstrate the potential for NTFP value chain development for products from a number of indigenous forest species. Further research into this model may help advance an approach via which forests can compete with other forms of work (e.g. agriculture) in the provision of financially secure rural livelihoods. Demonstrating that forests can be economically viable, even in the absence of sustainable timber harvesting (which is known to be very important economically in helping forests pay their way), could help shift the mindset of the public and policy-makers thereby helping to reduce rates of deforestation and loss of biodiversity. As the Final Impact Assessment notes this project has developed “an innovative approach to demonstrate and promote incentive-based conservation of nature.”

Annex 1 Project's original (or most recently approved) logframe, including indicators, means of verification and assumptions.

Note: Insert your full logframe. If your logframe was changed since your Stage 2 application and was approved by a Change Request the newest approved version should be inserted here, otherwise insert the Stage 2 logframe.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Impact: **(26/30 words)** Rates of deforestation in SW Ethiopia are reduced as communities increasingly value forests and benefit economically from national and international trade in sustainably sourced Non-Timber-Forest-Products (NTFPs).			
Outcome: **(29/30 words)** Forest becomes more economically competitive through development of community level micro-enterprises collecting, processing and selling Non-Timber-Forest-Products which improve income for 5,000 people whose engagement in coffee harvesting is limited.	0.1 Three (3) honey micro-enterprises supported in Y1 and selling to Apinec by Y2, generating additional income for 980 producers in Guarferda, Sheko and North Bench. 0.2 Four (4) women-led forest-fruit micro-enterprises established in Y1 and selling jams and dried produce to Ecopia by Y2, generating income for 1,120 households. 0.3 Four (4) spice micro-enterprises established in Y1 and trading with FGE exports by Y2, benefitting 1,120 households. 0.4 Laboratory analysis and commercialisation potential of *Trichilia dregeana* completed and shared with communities, businesses and government by Y2. 0.5 Biodiversity of key indicator species maintained in all sites. 0.6 Contributions made to government policy.	0.1 Honey micro-enterprise documentation, sales and income reports, business plans and household surveys. 0.2 Fruit micro-enterprise documentation, sales and income reports, business plans and household surveys. 0.3 Spice micro-enterprise documentation, sales and income reports, business plans and household surveys. 0.4 Laboratory results and correspondence with businesses, communities and government. 0.5 Biodiversity monitoring reports in Y1 and Y3. 0.6 Evidence of communications sent to government departments	Government continues to grant access to UOH and partners to work in the area. Government biodiversity conservation and forest policy continues to support sustainable use and community management to conserve natural forest, with harvesting of Non-Timber-Forest-Products (NTFPs). Continued community interest in NTFP development.
Outputs: 1. Three honey micro-enterprises producing higher quality honey and generating income from sales to Apinec and/or other honey buyers	1.1 Establishment of three honey micro-enterprises in Y1. 1.2 75 honey producers in 3 districts trained to reduce moisture content and improve honey quality (by mid-Y2). 1.3 Apinec buying honey from micro-enterprises in Bench Maji Zone (Year 2).	1.1 Micro-enterprise incorporation documents. 1.2 Participant training list and honey moisture test results. 1.3 Apinec purchasing records and micro-enterprise sales records.	National honey prices remain stable enough to generate income. Producers are willing to sell to Apinec.

	1.4 By end Y2 a 10% increase in contribution of honey to household income of 980 producers.	1.4 Household socio-economic survey records and independent household interview results	
2. Four micro-enterprises established for production and sale of forest fruit jams/dried products. Specifically the fruits of *Manilkara Butuji, Pouteria Altisima, Morus Mesozygia* and Ch'atu (scientific name unknown) previously identified and discussed with Ecopia	2.1 Establishment of four forest fruit micro-enterprises in four districts in Y1. 2.2 Forest fruits harvested, seasonal availability and volumes established, jam/dried fruit production training delivered to 100 women in four districts (mid-Year 2), and trial samples produced. 2.3 By Y1 four samples reviewed for taste and quality, production feedback provided, orders for Y2 placed, led by Ecopia. 2.4 Market analysis and jam-manufacture potential for four fruits assessed with Ecopia (mid Y2). 2.5 Jam-related/dried fruit production underway in four micro-enterprises by Y2. 2.6 By end Y2 a 10% increase in contribution of forest fruit related income to 1,120 households.	2.1 Micro-enterprise incorporation documents. 2.2 Fruit assessment and harvest reports, samples from Y1 for review, female participant lists. 2.3 Ecopia quality and taste reports, production reports, order forms. 2.4 Ecopia market analysis report. 2.5 Production records from all jam/fruit micro-enterprises. 2.6 Household socio-economic survey records and independent household interview results.	Consumer demand remains for at least one of the forest fruit related products. Producers are willing to sell to Ecopia.
3. Micro-enterprises established for sale of long pepper, cardamom and other spices within national and potentially international markets.	3.1 Establishment of four spice micro-enterprises in four districts in Y1. 3.2 100 men and women in four micro-enterprises trained in harvest, drying and storage of spices found within their localities. Training provided by Feed Green Ethiopia by mid-Y2. 3.3 Y1 harvest assessed by Feed Green Ethiopia exports for quality, including moisture content, and volume. 3.4 Feed Green Ethiopia exports buy and sell spices produced by new micro-enterprises in Y2 and Y3.	3.1 Micro-enterprise incorporation documents. 3.2 Participant training lists and training content records. Lists of spices identified by location. 3.3 Y1 harvest analysis records and reports. 3.4 Y2 order and purchase records from Feed Green Ethiopia exports and micro-enterprises.	Continued community interest in harvesting spices. Producers are willing to sell to Feed Green Ethiopia.

	3.5 By end Y2 a 10% increase in contribution of spice related income to 1,120 households.	3.5 Household socio-economic survey records and independent household interview results.	
4. Analysis of chemical properties and commercial potential of Forest Mahogany (*Trichilia dregeana*) undertaken and shared with businesses and communities.	4.1 Undertake chemical analysis of characteristics of *Trichilia dregeana* and compare against *Trichilia emetic* which has already been successfully commercialised in skin-care and hair-care products. 4.2 Explore potential product uses, trade options and value chain development with companies post-laboratory analysis. 4.3 Share findings with communities and local government and undertake assessment of distribution and potential quantities for harvest. 4.4 Subject to positive laboratory analysis, develop potential business plans for coops with *Trichilia dregeana*.	4.1 Chemical analysis reports. 4.2 Technical and commercial reports, Emails, meeting minutes and other correspondence between companies and University of Huddersfield. 4.3 Minutes of meetings, copies of correspondence and forest assessment reports. 4.4 Copies of business plans.	Government is willing to allow scientific analysis of the chemical and biological characteristics of *Trichilia dregeana* *Trichilia dregeana* has no underlying negative qualities which prevent its potential commercialisation. Communities are willing to harvest the seed if commercial potential is established
5. Biodiversity measured by key indicator species, maintained in all micro enterprise sites.	5.1 Biodiversity of species identified in Importance Value Index is maintained to a greater degree in NTFP micro-enterprise sites than in non-NTFP micro enterprise sites of similar context.	5.1 Importance Value Index, NTFP micro-enterprise site selection and control site selection. 5.2 Biodiversity report from independent consultant.	Access to NTFP and non-NTFP sites is permitted in order to conduct controls.
6. Policy makers made aware of role of NTFPs, micro-enterprises and women in sustainable management of forests	6.1 Number of exchanges between project, Ethiopian Biodiversity Institute and relevant government agencies at regional and national levels. 6.2 Number of training sessions held by project, Ethiopian Biodiversity Institute and policy specialists for government agencies.	6.1 Records of discussions, workshops and training sessions between project, Ethiopian Biodiversity Institute and other government agencies. 6.2 Records and reports from training sessions held for government agencies.	Government policy remains in favour of community ownership and use of forest for conservation and livelihood development

Annex 2 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements
Impact: Rates of deforestation in SW Ethiopia are reduced as communities increasingly value forests and benefit economically from national and international trade in sustainably sourced Non-Timber-Forest-Products (NTFPs).		All NTFPs harvested reported substantial increases in price over the life of the project and harvesting of them is not considered to negatively impact biodiversity in any of the sites assessed. 72% of forest management groups have incorporated biodiversity and NTFP monitoring into their regular forest patrols and plans. 95% of participants expressed their desire to continue to sell through the NTFP micro-enterprises after the project has ended. Women comprise an unprecedented 49% of micro enterprise members.
Outcome Forest becomes more economically competitive through development of community level micro-enterprises collecting, processing and selling Non-Timber-Forest-Products which improve income for 5,000 people whose engagement in coffee harvesting is limited.	0.1 Three (3) honey micro-enterprises supported in Y1 and selling to Apinec by Y2, generating additional income for 980 producers in Guarferda, Sheko and North Bench. 0.2 Four (4) women-led forest-fruit micro-enterprises established in Y1 and selling jams and dried produce to Ecopia by Y2, generating income for 1,120 households. 0.3 Four (4) spice micro-enterprises established in Y1 and trading with Nati Spices by Y2, benefitting 1,120 households. 0.4 Laboratory analysis and commercialisation potential of Trichilia dregeana completed and shared with communities, businesses and government by Y2.	0.1 Five honey micro-enterprises established, spread across Guraferda, Sheko and Gidi Bench* districts. Sales made to traders, to local markets and to Bench Maji Union, because of higher prices paid than those offered by Apinec. 0.2 Three forest fruit micro-enterprises established, one in each district, with fourth not established because of project withdrawal from Yeki district. Income generated from sales of jams, juices, soaps and scrubs, bought by Ecopia. Additionally, MOUs signed between Ecopia and micro-enterprise guaranteeing minimum 70% purchase of future produce, subject to quality standards. 0.3 Four spice micro-enterprises established, spread across all three districts. Nati Spices has not participated so sales have been to local traders and markets. 0.4 Laboratory analysis undertaken jointly by Hawassa University and Adama Science and Technology University, in Ethiopia. Findings shared with Ethiopian Biodiversity Institute and Ecopia (business partner). Findings will be shared with communities but results have only just been released. Further research desired for full commercial development. 0.5 Biodiversity key indicator species maintained in all project sites as evidence in community monitoring. Control sites could not be visited due insecurity problems. 0.6 Government offices have participated in training and contributed time and resources to deliver extension training across full range of NTFP micro enterprises. Workshops and meetings with local government have been

Project summary	Measurable Indicators	Progress and Achievements
	0.5 Biodiversity of key indicator species maintained in all sites. 0.6 Contributions made to government policy.	held throughout project. Major policy-linked workshop scheduled to be held in capital city was cancelled given rising Covid-19 infections. Policy Briefing Notes will be circulated in due course.
Output 1. Three honey micro-enterprises producing higher quality honey and generating income from sales to Apinec and/or other honey buyers	1.1 Establishment of three honey micro-enterprises in Y1. 1.2 75 honey producers in 3 districts trained to reduce moisture content and improve honey quality (by mid-Y2). 1.3 Apinec buying honey from micro-enterprises in Bench Maji Zone (Year 2). 1.4 By end Y2 a 10% increase in contribution of honey to household income of 980 producers.	Five micro-enterprises, spread across three project districts. There have been 831 participants at 7 training sessions. Of these, 720 were community members and 111 government staff, whose role will be to continue to support honey micro-enterprises into the future. Moisture content was assessed as good and medium, representing and improvement on pre-project moisture. Apinec offered to buy the honey in Y2 but better prices were offered by one of the local Unions and by local traders and markets, to whom sales were therefore made. Price of honey has increased by 95% since the introduction of the project, and by more than 100% since the onset of Covid-19. H/h participating in the project generate 15% more from honey than those not participating in the project.
Activities 1.1 and 1.3 Honey producer micro-enterprises created and linked to coops		Honey production and potential for improvement assessed by Apinec. Five micro-enterprises created (two in each of Sheko and Guraferda, and one in N. Bench). All linked to coops.
Activities 1.2 and 1.5 Training sessions delivered		Seven training sessions delivered by Apinec, HBS and extensions staff. A total of 831 participants over the project lift.
Activities 1.4 and 1.6 Harvests assessed by Apinec and sales negotiated		Quality assessed pre-project and during project, in 2018, 2019 and 2020, by Apinec. Improvements in quality achieved after training sessions. Sales negotiated with local traders, markets and Union, all offering better prices than Apinec. Post-project harvests currently underway or about to commence in all three districts.
Output 2. Four micro-enterprises established for production and sale of forest fruit jams/dried products. Specifically the fruits of Manilkara	2.1 Establishment of four forest fruit micro-enterprises in four districts in Y1.	Three micro-enterprises established, one in each remaining participating woreda.

Project summary	Measurable Indicators	Progress and Achievements
Butuji, Pouteria Altisima, Morus Mesozygia and Ch'atu (scientific name unknown) previously identified and discussed with Ecopia	2.2 Forest fruits harvested, seasonal availability and volumes established, jam/dried fruit production training delivered to 100 women in four districts (mid-Year 2), and trial samples produced. 2.3 By Y1 four samples reviewed for taste and quality, production feedback provided, orders for Y2 placed, led by Ecopia. 2.4 Market analysis and jam-manufacture potential for four fruits assessed with Ecopia (mid Y2). 2.5 Jam-related/dried fruit production underway in four micro-enterprises by Y2.	There have been 321 participants of which 241 community members and 80 government staff, to continue to support forest fruit development. A total of 123 women have been trained, representing 38% of participants. Five training sessions delivered during the project. One training session used backyard fruits instead of forest fruits because of impact of Covid-19 restrictions. MOUs have been signed between these micro-enterprises and Ecopia, with Ecopia committing to buy 70% of produce post-project. Training has not been limited to jams and juices but has included soaps and scrubs, with long shelf lives and higher profit margins. Further work needs to be done to capitalise on this potential. Use of 10% increase in h/h income was an unsuitable indicator given the lack of any previous income from it. Despite significant delays due to Covid-19, all micro-enterprises made a profit from sales to Ecopia, as well as sales via a bazaar held in the main town.
	2.6 By end Y2 a 10% increase in contribution of forest fruit related income to 1,120 households.	
Activities 2.1-2.5 Forest fruits assessed, women trained, micro-enterprises created and linked to coops, and Y1 produce evaluated		First field visit conducted in Q2Y2 so no Y1 produce to assess. Potential assessed, micro-enterprises created and linked to coops, and women and men trained. Facilities had to be adapted given lack of reliable water supply and electricity. 123 women participated in training, exceeding the target, but representing only 38% of the total. There is further work to be done to understand this.
Activities 2.6 – 2.8 Improvements to Y1 production agreed with women & Y2 orders placed		Y2 production of jams, juices, creams and soaps was undertaken as part of second training in Y2. Quality was assessed and produce bought by Ecopia – first time for any participating h/h to make jams and juices using formal processing techniques.
Activities 2.8-2.11 Y3 production and sales negotiation		Equipment purchased but held in stock due to Covid-19 restrictions. Training eventually delivered in Q4 Y3 with easing of restrictions. Equipment handed over, bazaar showcasing produce held and sales made, MOUs signed between Ecopia and micro-enterprises with Ecopia committing to buy 70% of future produce.

Project summary	Measurable Indicators	Progress and Achievements
Output 3. Micro-enterprises established for sale of long pepper, cardamom and other spices within national and potentially international markets.	3.1 Establishment of four spice micro-enterprises in four districts in Y1. 3.2 100 men and women in four micro-enterprises trained in harvest, drying and storage of spices found within their localities. Training provided by Nati Spices by mid-Y2. 3.3 Y1 harvest assessed by Nati Spices exports for quality, including moisture content, and volume. 3.4 Nati Spices exports buy and sell spices produced by new micro-enterprises in Y2 and Y3.	Four spice micro-enterprises established, one in each woreda and an additional one in Sheko woreda. There were a total of 577 participants, of which 433 community members and 144 government staff. Women comprise 39% of community participants. Seven training sessions were delivered over project duration. Second spice partner (Nati Spices) failed to engage in project unfortunately. Project team took on role of trying to identify key producers and markets with support from Ethiopian consultant with expertise from Farm Africa, and Mizan Tepi University.
	3.5 By end Y2 a 10% increase in contribution of spice related income to 1,120 households.	Sales made from Y1 harvest, mostly to local traders and markets. Ethiopian cardamom, long pepper (timiz) and wild pepper (mitmita) all experienced price increases of 98% and above, following introduction of project. Since Covid-19, prices for cardamom and long pepper have fallen, though remain above pre-project prices. Black pepper (non indigenous) is also widely used and was harvested, experiencing an increase in price of 68% which has been more or less sustained. Covid-19 seemed to affect spice prices more than the other NTFPs, due to transport restrictions leading to excess stock in traders' stores.
Activities 3.1-3.3 Spices assessed by partner, training provided and micro-enterprises created and linked to cooperatives		Change to spice partner was agreed with DI, but second spice partner also failed to deliver. Alternative training sessions were provided by government research staff and members of an Ethiopian agricultural research centre. Four micro-enterprises were created and linked to coops. Y1 harvests were sold and obtained good prices.
Activities 3.4-3.5 Spices harvested, dried and stored in Y2		Spice qualities assessed, but more emphasis placed upon provision of training and equipment to make up for absence of support from partner. Exchange visit to spice cooperative in neighbouring area organised and attended by 86 participants.
Activity 3.6 Y3 harvests completed and sales negotiated		Y3 harvests completed end Q4Y3 and sales currently under negotiation.
Output 4. Analysis of chemical properties and commercial potential of Forest Mahogany (Trichilia dregeana) undertaken and shared with businesses and communities.	4.1 Undertake chemical analysis of characteristics of Trichilia dregeana and compare against Trichilia emetic which has already been	Seeds were harvested by EBI, then transported to Addis Ababa to be dried and stored for onward transport to UK after EBI agreed no Ethiopian laboratory capacity to undertake analysis. Unfortunately, despite 18 months of work, export to the UK was not possible for various practical and legal reasons. Analysis was therefore undertaken in Ethiopia in Q3 and Q4 of Y3.

Project summary	Measurable Indicators	Progress and Achievements
	successfully commercialised in skin-care and hair-care products.	Report has just been made available and shared with EBI and at least one interested company – project partner Ecopia.
	4.2 Explore potential product uses, trade options and value chain development with companies post-laboratory analysis.	
	4.3 Share findings with communities and local government and undertake assessment of distribution and potential quantities for harvest.	
	4.4 Subject to positive laboratory analysis, develop potential business plans for coops with Trichilia dregeana.	
Activity 4.1 Conduct laboratory analysis of Trichilia dregeana		Laboratory analysis completed, with joint work by Hawassa and Adama Science and Technology Universities, both in Ethiopia.
Activity 4.2 Compare properties of Trichilia dregeana with T. emetica properties		Analysis revealed high saponifiable characteristics and potential for use in manufacture and affordable and low-tech soaps, with potential for adoption by low skilled and low educated workforce. Analysis also suggests anti-fungal properties that may suggest usefulness in cosmetic products. Lack of necessary equipment in Ethiopia prevented this analysis from being completed, so further research is required.
Activity 4.3 Share findings with communities, government and cosmetic companies		Report has been made available to EBI and interested company. Findings will be made available to communities but need for further research also explained.
Output 5. Biodiversity measured by key indicator species, maintained in all micro enterprise sites.	5.1 Biodiversity of species identified in Importance Value Index is maintained to a greater degree in NTFP micro-enterprise sites than in non-NTFP micro enterprise sites of similar context.	Endline survey completed in majority of project sites. This suggests no negative impact of NTFP harvesting because NTFP components do not lead to long term damage or death of plants. Full report is contained in Annex 7.9. Control sites from non-project locations could not be assessed because of insecurity in those areas.

Project summary	Measurable Indicators	Progress and Achievements
Activity 5.1 Select local species for inclusion in Importance Value Index (IVI)		Local species were selected and adjusted for each woreda. Baseline and endline reports indicate these.
Activity 5.2 Select IVI biodiversity monitoring sites in micro-enterprise areas		Sites were selected and used for baseline and endline assessments, as well as in community training. Reports provide evidence.
Activity 5.3 Select IVI biodiversity monitoring sites in non-micro-enterprise sites		As per 5.2 above.
Activity 5.4 Conduct Y1 baseline		In order to make up time lost in Y1 the baseline was conducted concurrent to site selection.
Activity 5.5 Continue standard forest monitoring patrols and report findings		164 community members and 15 government staff were trained by Hawassa specialists across the 3 woredas. Community monitoring of NTFPs and biodiversity was built into regular forest management plans and patrols.
Output 6. Policy makers made aware of role of NTFPs, micro-enterprises and women in sustainable management of forests	6.1 Number of exchanges between project, Ethiopian Biodiversity Institute and relevant government agencies at regional and national levels.	There were dozens of meetings between project staff and Ethiopian government departments. Departments include: Cooperatives; Trade and Industry; Youth and Sport; Women and Children; Housing and Urban Development; Enterprise and Industry Development. In addition, EBI participated in the project opening as well as harvesting of the Luya seed, and have since received the report on analysis of those seeds. 28 training sessions at which government staff participated and / or were involved in delivery.
	6.2 Number of training sessions held by project, Ethiopian Biodiversity Institute and policy specialists for government agencies.	
Activity 6.1 Participate in appropriate national discussion platforms		Numerous national exchanges were had with EBI in relation to Luya seed and with Hawassa University and Adama Science & Technology University. Numerous meetings, collaborations and agreements with Zonal government including closing workshop and presentations. National workshop cancelled due to rising Covid-19 infections in capital city.
Activity 6.2 Training sessions held by project, Ethiopian Biodiversity Institute and policy specialists for government agencies.		There were 497 government staff participants spread across 28 training sessions delivered by the project. Government staff received all types of training delivered to community members. In some instances they also delivered extension training. This level of collaboration with government is very important in the creation of trust and post-project support.

Annex 3 Standard Measures

Code	Description	Total	Nationality	Gender	Title or Focus	Language	Comments
Training Measures							
1a	Number of people to submit PhD thesis						
1b	Number of PhD qualifications obtained						
2	Number of Masters qualifications obtained						
3	Number of other qualifications obtained						
4a	Number of undergraduate students receiving training						
4b	Number of training weeks provided to undergraduate students						
4c	Number of postgraduate students receiving training (not 1-3 above)	2	Ethiopian	Male	MRes: Economic value of forests in rural livelihood development. PhD: Ethiopian business model development through NTFP value chains	English	UoH providing fee waivers
4d	Number of training weeks for postgraduate students	6	Ethiopian	Male	As above	English	UoH providing fee waivers
5	Number of people receiving other forms of long-term (>1yr) training not leading to formal qualification (e.g., not categories 1-4 above)						

6a	Number of people receiving other forms of short-term education/training (e.g., not categories 1-5 above)	2,495 (total participants)	Ethiopian	Women & men	Honey, spice, forest fruits, business skills	Amharic, Bench, English	Various sessions by range of facilitators & partners
6b	Number of training weeks not leading to formal qualification	14 (some full weeks, some 2-4 day courses). Does not include extension training by ME members as difficult to quantify but significant.	Various	Women & men	Honey, spice, forest fruits, business skills	Amharic, Bench, English	Various sessions by range of facilitators & partners
7	Number of types of training materials produced for use by host country(s) (describe training materials)	6			Honey, spice, forest fruits, business skills	Amharic, English	Various materials produced by range of facilitators & partners

Research Measures		**Total**	**Nationality**	**Gender**	**Title**	**Language**	**Comments/ Weblink if available**
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (ies)	1	N/A	N/A	Community biodiversity monitoring guide	English	Participatory process
10	Number of formal documents produced to assist work related to species identification, classification and recording.	1	N/A	N/A	NTFPs of Bench Sheko Zone	English	No formal documents but additional

							NTFP identification report
11a	Number of papers published or accepted for publication in peer reviewed journals	0	N/A	N/A		English	2, possibly 3 are planned, now that endline results have been received
11b	Number of papers published or accepted for publication elsewhere						
12a	Number of computer-based databases established (containing species/generic information) and handed over to host country						
12b	Number of computer-based databases enhanced (containing species/genetic information) and handed over to host country						
13a	Number of species reference collections established and handed over to host country(s)						
13b	Number of species reference collections enhanced and handed over to host country(s)						

Dissemination Measures		**Total**	**Nationality**	**Gender**	**Theme**	**Language**	**Comments**
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	1	Ethiopian	Women & Men	Project findings & community feedback	Amharic	Workshop videoed & evidenced in annex
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work will be presented/ disseminated.	1	British	Women & Men	Project findings &	English	Workshop to share experiences

Dissemination Measures		Total	Nationality	Gender	Theme	Language	Comments
					conservation topics		with Durrell Conservation & Jersey Overseas Aid is planned for 2021

Physical Measures		Total	Comments
20	Estimated value (£s) of physical assets handed over to host country(s)		
21	Number of permanent educational, training, research facilities or organisation established		
22	Number of permanent field plots established	34	34 biodiversity monitoring plots have been established spread across three districts, all geo-referenced.

Financial Measures		Total	Nationality	Gender	Theme	Language	Comments
23	Value of additional resources raised from other sources (e.g., in addition to Darwin funding) for project work *(please note that the figure provided here should align with financial information provided in section 9.2)*						

Annex 4 Aichi Targets

	Aichi Target	Tick if applicable to your project
1	People are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	✓
2	Biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	✓
3	Incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.	
4	Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	
5	The rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	
6	All fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	
7	Areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	✓
8	Pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	
9	Invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	
10	The multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	
11	At least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	
12	The extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	
13	The genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	

14	Ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	✓
15	Ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	
16	The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	✓
17	Each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	
18	The traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.	
19	Knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	
20	The mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	

Annex 5 Publications

Provide full details of all publications and material that can be publicly accessed, e.g. title, name of publisher, contact details. Mark (*) all publications and other material that you have included with this report

Type * (e.g. journals, manual, CDs)	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. web link, contact address etc)
Journal	Community forest management (CFM) in south-west Ethiopia: Maintaining forests, biodiversity and carbon stocks to support wild coffee conservation Wood, A., Tolera, M., Snell, M., Ohara, P. & Hailu, A. 2019	British	British	Male	Global Environmental Change,	https://doi.org/10.1016/j.gloenvcha.2019.101980
Journal	Monitoring wild coffee using ground survey and satellite observation in community-managed forest in Sheko, south-west Ethiopia. Hwang, B. P., Wood, A., Snell, M., Fantaye, D., Belayneh, E. & Mekuria, B. 2020	British	British	Male	Sustainability, Basel	https://doi.org/10.3390/su12229409
Journal	Assessing Value Chain Interventions in Zambian and Ethiopian Forest Beekeeping Systems. Lowere, J., Meaton, J. & Wood, A. 2020	British	British	Female	Business Strategy and Development,	http://dx.doi.org/10.1002/bsd2.136
Journal	Intensified management of coffee forest in southwest Ethiopia detected by Landsat imagery.	British	British	Male	Forests,	https://doi:10.3390/f11040422

	Hwang, B., Kitessa Hundera, Bizuneh Mekuria, Wood, A. & Andinet Asfaw 2020					
Journal	African forest honey: an overlooked NTFP with potential to support livelihoods and forests. Lowore, J. Meaton, J. and Wood, A. 2018	British	British	Female	Environmental Management	https://doi-org.libaccess.hud.ac.uk/10.1007/s00267-018-1015-8

Annex 6 Darwin Contacts

Ref No	25-013
Project Title	NTFP micro-enterprises for competitive forests and livelihoods in Ethiopia
Project Leader Details	
Name	Professor Adrian Wood
Role within Darwin Project	Principal Investigator and Adviser
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Phone	
Fax/Skype	
Email	
Partner 1	
Name	Afework Hailu Gebrewold
Organisation	Ethio-Wetlands Natural Resources Association (EWNRA)
Role within Darwin Project	Executive Director of main implementing partner
Address	
Fax/Skype	
Email	
Partner 2 etc.	
Name	Dr. Tesfaye Awas
Organisation	Ethiopian Biodiversity Institute
Role within Darwin Project	Link to EBI, collector of seeds, presenter at project launch
Address	
Fax/Skype	
Email	

Checklist for submission

	Check
Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	Y
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	N
If you are submitting photos for publicity purposes, **do these meet the outlined requirements (see section 10)?**	N/A
Have you included means of verification? You should not submit every project document, but the main outputs and a selection of the others would strengthen the report.	Y
Do you have hard copies of material you need to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number. However, we would expect that most material will now be electronic.	N
Have you involved your partners in preparation of the report and named the main contributors	Y
Have you completed the Project Expenditure table fully?	Y
Do not include claim forms or other communications with this report.	