Darwin Initiative Main: Annual Report

To be completed with reference to the "Project Reporting Information Note": (https://www.darwininitiative.org.uk/resources-for-projects/information-notes-learning-notes-briefing-papers-and-reviews/).

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

Submission Deadline: 30th April 2023

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Darwin Initiative Project Information

Project reference	29-021
Project title	More bees: Supporting agrobiodiversity and livelihoods in Amhara, Ethiopia
Country/ies	Ethiopia
Lead Partner	Bees for Development
Project partner(s)	Bees for Development Ethiopia, Pesticide Action Nexus Ethiopia, Pesticide Action Network UK, Bahir Dar University
Darwin Initiative grant value	£ 352,927
Start/end dates of project	01 June 2022 to 31 March 2025
Reporting period (e.g. Apr 2022 – Mar 2023) and number (e.g. Annual Report 1, 2, 3)	June 2022 to March 2023 and Annual Report 1
Project Leader name	Janet Lowore
Project website/blog/social media	More Bees: Supporting Agrobiodiveristy and Livelihoods in Amhara - Bees for Development
Report author(s) and date	Janet Lowore, 30th April 2023

1. Project summary

Successive assessments, community consultations and surveys (2018-2021) identified the core problem which this Project (***More Bees***) is seeking to address – namely the loss of bees, due to intensive use of pesticides, in some locations in Amhara, Ethiopia. The Project is designed to address this major driver of biodiversity loss, specifically in relation to bees and other beneficial insects. The most evident problem perceived by smallholders is that beekeeping, previously important for income, is becoming non-viable, with loss of income. Where viable, beekeeping income contributes up to 40% of household income. In one survey conducted in the same Project area, in the year before the Project started, farmers reported keeping ten times fewer bee colonies, attributing losses to pesticides. Chemical application is the only pest control method used by target population. The Project is highly relevant for local farmers and for informing higher-level decision makers in the agriculture sector in Ethiopia. It is relevant because it addresses the underlying reasons for farmers' overreliance on pesticides i.e. lack of awareness of alternatives and lack of understanding of the environmental and health risks. The Project is building understanding, knowledge and skills on i) alternative pest control practices, ii) role of natural enemies of crop pests, iii) role of bees and pollinators in fruit/seed development. Other problems of pesticides reported by farmers, in addition to loss of bees, include harm to human health and high cost. In addition, the Project helps to enhance farmers',

agriculture extension workers' and policy makers' understanding about the role of pollinators in crop yield and quality, and of biodiversity conservation.

The Project is being implemented in Fogera district of South Gondar Zone and North-Mecha district of West Gojjam Zone in Amhara Region, Ethiopia. Most of these districts are plains areas covered with large irrigation-based vegetable farming and in Fogera, residual-moisture based pulse crop production.

2. Project stakeholders/ partners

The success of this Project depends heavily on collaboration between formal partners and key stakeholders. The main demand for this Project came from beekeeper/farmers themselves who told Bees for Development Ethiopia (BfDE) that they were losing their bees to pesticides but did not know what to do about it – apart from to give up beekeeping – and it was this imperative which instigated BfDE and Bees for Development UK (BfD UK) to link up with Pesticide Action Network (PAN) who also have offices in both Ethiopia and UK and have previous experience of Darwin Initiative funding. These favourable enabling factors helped us to start the conversation some years prior to the submission of the grant application in 2021 (Stage 1 in 2021, Stage 2 in 2022) and the relationship became stronger during project design and has now moved into a new phase of shared working in all aspects of project management, including planning, monitoring, evaluation and decision-making.

The partnership is founded on the added value of each partner in implementing the Project activities and achieving results at various levels. Bees for Development (BfD) UK is playing the lead role and oversees project management. PAN Ethiopia are providing the key technical support for the IPM component. PAN UK provides technical backstopping through online meetings, sharing resources and technical visits. BfDE, takes the lead on project management and M&E in Ethiopia and coordinates project planning and implementation. BfDE holds regular planning meetings with PAN Ethiopia (PAN-E) who make frequent visits to the Project (PAN-E are not based in the Project site). BfDE implements the beekeeping components of the Project. PAN-E provides trainings on Integrated Pest management (IPM), practically demonstrates the IPM in Farmer Field Schools (FFS), monitors IPM-FFS demonstration plots and analyses the results to share learning amongst key stakeholders. PAN-E also strongly supported the policy familiarization workshop – presenting papers and facilitating discussion. Bahir Dar University, Agricultural Entomology Department provided training on IPM, pollinators' identification, and monitoring and presented a paper at the policy familiarization workshop. Key stakeholders, notably the agriculture and livestock offices, actively participated in selecting Project beneficiaries, inviting beneficiaries for training, allocated land for IPM-FFS plots in the Farmers Training Centres (FTCs) and attended the different trainings provided by the Project.

One staff member from PAN UK visited the Project in October 2022 and provided training. When a staff member from PAN UK visited their own Project in another part of Ethiopia in February 2023 – three members of BfDE were invited to join and learn from PAN's work there. This was a hugely valuable visit as the fieldworkers from Bahir Dar were able to talk directly to the fieldworkers in Ziway and Arba Minch, so enabling them to understand that the challenges they were facing (technical and social) were 'normal' and this increased their confidence. The visit afforded excellent opportunity for sharing, learning and planning between staff from partner organisations. This is a good example of the strength of the collaboration, which is proving successful and rewarding.

A 'six' month review was held with all partners (in December 2022 – so a bit late!) and an end of year 1 review was held in April 2023.

There have been challenges. The PAN-E team are not based locally to the Project site and they have many other work commitments. Visits need to be planned in advance – and yet it is hard to predict the correct timing for land preparation and planting, as these are weather dependant. As the local fieldworkers grow in experience and confidence they will rely less on the PAN-E team and will be able to do more by themselves. However, the PAN-E team have gone out of their way to ensure their visits have been timely.

The local government Development Agents are key, because it is they who advise farmers more widely on a day-to-day basis. They are not always available to participate and support the Project because they are asked to do other assignments by their bosses. Ideally, in time, there

will be closer alignment between the Project's work and their 'normal' work – yet this cannot be achieved within a short period of time. It will take time, and the sharing of results, to achieve this alignment, which is the long term goal.

3. Project progress

3.1 Progress in carrying out project Activities

Almost the entire work plan has been delivered as planned.

Output-1: Cognizant of the knowledge gap about the role and importance of pollinators, pollination expert Mike Edwards supported the delivery of activities towards achieving Output 1 through a visit to the Project site from 27 Sept to 12 Oct 2022. He identified potential beneficial insects, helped prepare training materials on pollinators with practical examples, took pictures to prepare the insect identification guide used by field workers and farmers and developed the pollinator monitoring protocol. He delivered 3 training sessions for local staff, Bahir Dar University students, government experts and Development Agents at Regional Level and woreda[1] level. This achieved activity (A1.1). The training focused on pollination, types of pollinators and natural enemies of crop insect pests, the role of beneficial insects in crop production and approaches to safeguarding ecosystem services. Similar trainings were subsequently delivered to smallholder farmers at village level by Project staff (A1.3). Farmers were also trained about agro-ecosystem, ecosystem services and how to maintain a healthy agro-ecosystem. This farmer training was combined with Development Agent training. Farmers and Development Agents practiced guided ecosystem walks to understand their local agro-ecosystem and the role of ecosystem services – identifying insect habitat, pollinated seeds and fruits, decomposing matter, soil organisms, shade and useful wild plants (A1.4). At the end of training farmers explained what they had learned (see below). The trainees also stated that the training helped them to understand the benefit of conserving insect habitats around farm boundaries for the conservation of beneficial insects. They also forwarded their concerns, i.e. beneficial insect habitats may also harbour pests. Selected pollinator observer farmers have been trained how to observe, recognize and describe flower-feeding insects in the Project areas (A1.5). Trainees were organized into group to identify the name of the pollinators, body parts and specific feature of the pollinators using coloured pictures. The group work was supported with field work. Pollinator observers were able to catch insects using insect nets and differentiate the body parts of each pollinator. Using the pictures taken during Mike Edwards visit, insect (to group level) identification guide is drafted (A1.6) for six most commonly found pollinator groups with local names, and descriptions, to enable pollinator observer farmers and agriculture extension workers identify insects during insect monitoring.

"We are polluted with chemical spray. The training helped me to identify beneficial insects, crop insect pests and their damaging stage. I understood that chemical spray kills including beneficial insects and exposed us to disease."
Farmer Babey Babil, Enguti-Kebele, North-Mecha woreda

"When I walk through grazing, farm and forest areas, I see different insects. I did not consider they are important for farmers. In this training I got new lesson about pollinators and natural enemies of crop insect pests."
Farmer Aderajew Asnakew, Kuhar-Abo-Kebele, Fogera woreda

"Previously I did not know insects are providing pollination service. Now I learnt that insects provide pollination and insect pest control (regulation service). Plus the maize food spray to attract natural enemies of crop insect pests and Neem spray (botanical pest control) is a new lesson for me; it reduces the cost for chemicals and good for human health"
Farmer Gizaw Dessalegn, Abuana-Kokit Kebele, Fogera woreda

"I know chemical spray affects our health and increases the cost of production. Now I learnt about natural enemies of crop insect pests, how they control insect pests and the need on the protection of habitats for insects".

[1] Woreda = district

Serke Abera, Kuar-Micael, Fogera woreda

"Except honey bees, I did not know about beneficial insects. Now I learnt about pollinators and natural enemies of crop insect pests and I will protect them as my family"
Farmer Bilata Asefa Alelign, Kuhar-Micael-Kebele, Fogera woreda

Output-2: Lack of understanding and practical experience about alternative environmentally-friendly crop pest prevention and control is the reason for over reliance on chemical application. The Project provided hands-on training on Integrated Pest Management (IPM) to agriculture experts and Development Agents (A2.1) and farmers (A2.2). IPM demonstrations were established and managed using the Farmers Field School (FFS) approach to maximise relevant and hands-on learning for farmers (A2.3). These FFS involved weekly training sessions with 30 farmers. Regular insect data collection/monitoring was done weekly (A2.4). Farmers were taught that there was no need to apply control measures until certain pest thresholds were reached and a balanced ratio of crop pests to natural enemies was breached – hence farmers learned how to make decisions to take pest control measures. At the demonstration plots, maize food spray has been sprayed to attract natural enemies of crop insect pest and a botanical pesticide (mix of Neem seed extract, soap and sugar) has been tested to control insect pests on onion, pulse (grass pea) and pepper. Strips of refuge crops (to provide habitat for natural enemies) were planted. Learning has been shared with experts, Development Agents and farmers through field visits (A2.5).

"When we produce onion, it is affected with insect pest and disease. We spray chemical several times and we spent a lot of money. Now I learnt about beneficial insects (pollinators and natural enemies of crop insect pests) and Integrated Pest Management (IPM). If the IPM practice is effective, we can grow health crop that can be sold with better price."
Farmer Maru Yimer,Kumar-Micael-Kebele Fogera Woreda

"The new thing I learned from training is about the Maize food spray and beneficial insects (pollinators and natural enemies of crop insect pests)."
Farmer Enana Andualem, Kuhar-Micael-Kebele, Fogera Woreda

Summary table of Farmer Field Schools (FFS) established in 2022/23

	Kebele	Crop	Harvest date	Number of farmers in FFS (M,F)
1	Kuar-Michael	Onion	May 2023	22 Males and 8 Females
2	Kuar-Abo	Onion	March 2023	20 Males and 10 Females
3	Kuar-Michael	Grass pea	Damaged	18 Males and 12 Females
4	Kuar-Abo	Grass pea	March 2023	16 Males and 14 Females
5	Enguti	Onion	May 2023	20 males and 10 females
6	Kudmi	Pepper	May 2023	22 males and 8 females

Output-3: Where viable, beekeeping income can contribute up to 40% of household income[2]. In the Project area farmers attribute the decline in beekeeping practice to pesticides[3]. Outputs 1&2 (see above) are delivered to address this problem. To complement this work, and in order to restore the declining beekeeping industry, it is also necessary to build the understanding and skills of experts, Development Agents and farmers about sustainable beekeeping, and the necessary synergy between beekeeping and agriculture. Training on sustainable beekeeping production has been given to experts and Development Agents, including Development Agents from other sectors such as crop production and horticulture (A3.1). This is a departure from normal practice where sectors are 'siloed' so there is usually little opportunity for DAs to

[2]Bees for Development. 2018. External Evaluation of UK Aid Direct Project: Increasing household income and enhancing livelihood resilience of vulnerable families and youth through beekeeping training and honey market development in Amhara, Ethiopia

[3]Amsalu, T. 2021. Field Survey Report on Agricultural Chemical Use and Its Effect on Beekeeping in Fogera and Metcha Districts of Amhara. Report submitted to Bees for Development Ethiopia.

appreciate the holistic nature of sustainable agriculture and the inter-connected ecological processes which underpin a healthy and resilient agricultural landscape. Two rounds of tailored practical beekeeping training was delivered for former beekeeper farmers (A3.3) and (A3.4). They learned how to protect bee colonies from pesticides, how to use and make top-bar hives and how to harvest, store and handle honey to maintain quality and earn the best price.

Output-4: The unintended environmental risks and hazards associated with pesticide application is poorly appreciated, not only by farmers and extension workers, but also by government higher officials including policy makers. Furthermore, where regulations about safe use of pesticides do exist – they are not enforced. There is a lack of 'joined-up' thinking about commitments to biodiversity conservation, honey production targets, and related existing international and national policies, strategies and proclamations. Therefore, to enhance awareness and understanding of these issues, key stakeholders attended a familiarization workshop in March 2023 (A4.1).

3.2 Progress towards project Outputs

The first year of the Project was a ten-month period and the Project is still at an early stage. Year 1 activities focussed on building the awareness and understanding of farmers and agriculture extension workers (crop and livestock) about the need to manage beneficial insects and harm caused by pesticides, importance of agro-biodiversity and ecosystem functioning and re-establishment of beekeeping. The establishment of six IPM trials, managed and delivered through the FFS approach formed a significant part of the work, together with the weekly training sessions and regular data collection. In general, progress towards the four project outputs is very positive, and it is likely that all Project Outputs will be achieved. The indicators are proving useful to monitor progress.

Output-1: To address the knowledge gap about agroecological approaches to farming, 47 government extension workers, Development Agents, Bahir University MSc students, BfDE, and PAN-E staff (13 females) have been trained on harmful impact of pesticides and the role of beneficial insects in sustainable agriculture. The trainees understood the harmful impacts of pesticides, and are able to identify pollinators (to group level) and natural enemies of crop insect pests and appreciate their benefits in pollination and crop pest management. The understanding of 172 smallholder farmers (64 females) regarding ecosystem service provision and the role of pollinators has been enhanced through classroom based training at Farmers Training Centres (FTCs), ecosystem walks and pollinator observation at Farmers Field Schools. To enable farmers to observe, recognise and describe local flower-feeding insects and regularly monitor them, training has been given for 39 pollinators observer farmers (6 females). The pollinator insect observers' training was supported with practical field work and participants were able to identify six types of insect groups, including honey bees, other bees, wasps, hover flies, ladybirds and lacewings.
The indicators for this output include the numbers of people who have attended the different training sessions (see above) and evidence of new knowledge gained by interviewing a sample of people who attended the training and ask indicators questions to reveal their level of knowledge, understanding and practice, before and after. Further indicators include the Guide to common bees and pollinator groups (a product) and results from the insect counts.

Our baseline survey revealed levels of understanding at Project start. To measure Output Indicator 1.3 Farmer knowledge and understanding about local agroecosystem, pollination and beneficial insects and harm causes by pesticides - six questions were asked and against each there were different possible answers. A maximum score of 25 was achievable by those exhibiting good understanding, knowledge and practice. At baseline the average score was **5.63** and the median was **3**. A survey done in April 2023 interviewed 55 farmers and revealed the average score (same questions) of **8.96** and median of **9.** This shows a marked improvement – but still room for progress as the maximum score is 25.

Attached at end is evidence of indicator 1.6 – ID guide for pollinator groups.
Evidence of indicator 1.7. Changes in insect numbers in IPM plots compared to non-IPM plots. Data has been collected for all six trials implemented to date. Analysis has only been completed for one – see Figure 1 – because the other trials are still underway. The data from

the onion trial in Kuar Abo indicates little change in number of spiders as a result of less pesticide application, but > 100% increase in ladybird numbers.

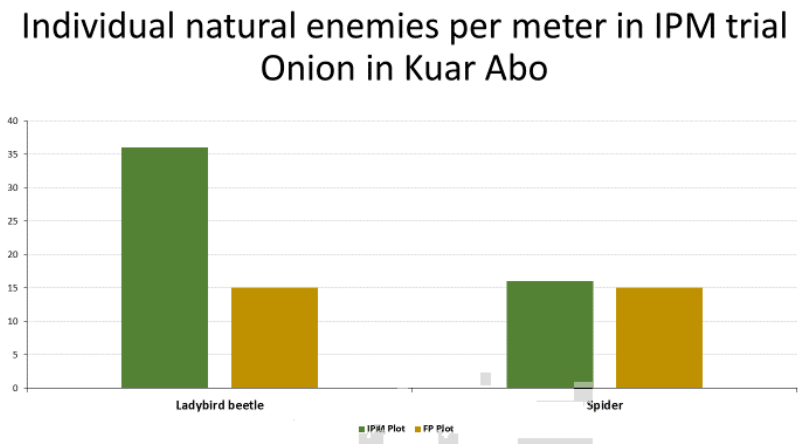

Figure 1. Results of IPM trial 1 showing increase in numbers of ladybirds. Data refers to totals throughout season.

Also in Year 1 we started landscape-wide pollinator monitoring at six sample plots with data collected once every two weeks. This data has not yet been analysed and indeed is unlikely to reveal change as a result of Project interventions at this early stage, also considering the normal seasonal variations in insect numbers. The monitoring started in November 2022.

Output-2: The Project provided hands-on training about IPM to 26 (6 females) agriculture experts, Development Agents and 2 Project field workers. Similarly, 172 smallholder farmers (64 females) attended classroom-based IPM training and gained basic knowledge about the different IPM practices. Extension workers and farmers strengthened their theoretical understanding and knowledge from these training sessions and through their weekly participation in the IPM-FFS practical demonstrations, throughout the life of the crop. 180 farmers [62 F] gained skills and knowledge in IPM through weekly trainings in six IPM-FFS trials so they can apply proven measures in their farms and teach others.

Insect monitoring was done on six IPM-FFS demonstrations (3 on onion, 1 on pepper and 2 on grass pea), with data collected also about the practices applied and money and labour spent. Similarly, the same data collection was done for selected conventional farmer-managed plots, for comparison. To date one trial has been completed to harvest (results below), the rest are still underway.

Evidence of progress is being measured through six indicators. 2.1 and 2.2 are evidence of knowledge and practice indicators. Indicator 2.1 concerns knowledge of Development Agents. A sample survey of 8 Development Agents was conducted in April 2023 and revealed:

- All 8 said that they will recommend that farmers use less pesticides in future.
- 2 said that they are already recommending IPM to farmers, 6 said that they will do so in future.
- All said that the learning had been very valuable and useful.
- 7 said they had learned about the benefits of NE of crop pests
- 7 said they understood the importance of monitoring pest numbers before applying pesticides.
- Only 1 said they understood about the link between nature and farming.

Output indicator 2.2 is strongly related to Outcome indicator 1.2 and the same data indicates progress in farmers' understanding and practice. The Baseline Survey asked and scored three questions [What do you think it the best way to control pests and diseases? Do you take steps to encourage Farmers Friend insects? What IPM do you practice?] with a maximum score of 21. The Baseline Survey results indicated a median score of 2 and a mean score of 3.89 indicating room for improvement (i.e. falling well short of the maximum score of 21). A sample of beneficiaries (55) were interviewed in April 2023. The results indicated an improvement with a median score of 7 and a mean score of 6.78. Furthermore, all those interviewed said that

they intended to apply the new IPM practices that they had learned, in their own farms next season.

Output indicator 2.3 refers to the results of the IPM-FFS trials. Six trials were started in 2022 and one has been completed to date with analysis (others still on-going). A snapshot[4] of this analysis is shown here. It is hugely positive and gives us cause to believe strongly that the activities are leading to the desired results. Note that the results have been moderated so the metrics apply *pro rata* to a plot of equal size i.e. 0.25ha.

- By harvest time 53% more pests in the farmer-managed plot compared to the IPM plot
- By harvest time 60% more natural enemies in the IPM plot compared to the farmer-managed plot
- Farmer-managed plot applied Ajanta (Profenofos 50% EC) 8 times, compared to 0 in the IPM plot
- Farmer-managed plot applied Ridomil Gold 5 times, compared to 2 times in the IPM plot
- Labour costs in the IPM plot were higher at 25,854 ETB, compared to 11,298 ETB compared to farmer-managed plot.
- Yield in the IPM plot was higher at 4968 kg, compared to 3194 kg in farmer-managed plot
- **Net income in the IPM plot was higher at 43,200 ETB**, compared to 23,590 ETB earned from farmer-managed plot.

These results warrant further interrogation. For example, preliminary discussion suggests that the higher yield in the IPM plot might be because the recommended quantity of fertiliser was applied, compared to the farmer-managed plot where **excess** fertiliser was applied leading to onions putting on more leaf growth and less bulb growth. The high labour costs in the IPM plot might be due to the fact that labourers charge 'extra' when charging a project, compared to a normal farmer. Suffice to say that a very good yield was achieved with no application of Profenofos and this is very promising as a first result.

Output indicator 2.4 concerns the adoption of IPM by farmers in their own farms. To date we do not have evidence that farmers are applying IPM (too early) we only have evidence that they intend to.

"The maize food spray to attract beneficial insects and Neem extract spray to control insect pests are new lessons I got from the training and I will try it in my farm plot".
Farmer Melkamayehu Ambelu, Enguti-Kebele, North-Mecha woreda

"The training helped me to differentiate beneficial insects and crop insect pests and identify alternative crop insect pests control methods other than chemicals. This reduces men's pressure and money request to buy chemical. My husband attended the weekly training on IPM-FFS plots, he trained me how to prepare maize food spray and now I have prepared the maize flour to make the food spray and attract natural enemies of crop insect pests."
Farmer Sifrash Mesfin, Kuhar-Abo-Kebele, Fogera Woreda

Given that the earliest possible time that farmers can apply what they learn is in the season *following* the time when they gain new knowledge – then it is too early to expect evidence of this change at this time.

Output indicator 2.5 concerns learning, by **farmers not directly engaged** in the FFS, by visiting the IPM plots during guided learning days and finding out about the Year 1 results. 87 farmers (2 females), and 17 government extension workers and district administration and agriculture office heads (6 females) attended a field visit to see the results of the IPM-FFS work. We have not yet assessed the learning they achieved through a survey, as the event took

[4] We intend to write these results up properly and share in newsletter and on website. We did not have time to do this before this report – as the results have only just been analysed.

place very recently. Testimonials and feedback on the day revealed huge interest and farmers asked many questions. Of particular note was the surprise and shock that the **not directly engaged farmers** expressed when they learned that the onion crop they saw had not been sprayed with any pesticides. In fact they were suspicious and asked if people had coming secretly at night to do the spraying because they did not believe it was possible to manage without. As with any new technology the team sensed that some amongst the group were 'early adopters' and would be willing to try for themselves, whilst others are still reluctant to be the first people to try something new.

Output indicator 2.6. concerns learning achieved by government officials from a more formal results-sharing workshop. This activity has not yet been done – because we have not completed all the season one trials and we do not yet have all the results yet for presenting.

Output-3: Beekeeping is an important income source of the rural people. To enhance the understanding and skill of extension workers, beekeeping trainings have been provided to 41 crop protection, horticulture and beekeeping experts; Development Agents and Project field workers (10 females). At the end of the training the participants explained, "*the majority of us are crop protection and horticulture professionals and we did not have these basic beekeeping knowledge and skills. This is the first beekeeping training we took, we gained basic knowledge and lesson on beekeeping, effect of pesticides on bees and IPM, and we are confident to provide beekeeping training for farmers and assist beekeeping extension workers in any beekeeping activity"*. They also explained that the training helped crop protection and beekeeping extension workers to understand the ill effects of indiscriminate application of pesticides on honey bees, other beneficial insects, animals, humans and the environment. The trainees are inspired to maintain the health of bees and crops equally by using IPM pest control practices. Beekeeping training has been given to 78 former beekeepers (12 females) whose bee colonies are declining or lost due to pesticide. The training was mainly focusing on top-bar hive making, bee colony transfer, harvesting methods to maintain honey quality and dearth period management. The same beekeepers attended training how to boost forage availability for bees, how to enrich habitat and how to protect colonies from pesticides.

Output indicator 3.1. Extension workers were not included in the Baseline Survey; instead we interviewed a sample of participants in April 2023 (some weeks after the training). Out of the 8 interviewed 2 said their knowledge of beekeeping had improved a lot, 6 said it had improved a little. All said that they recognised that bees are important for pollination.
Output indicator 3.2. No new beekeepers were trained in Year 1. The timing was not right and this change formed part of our approved Change Request in November 2022.
Output indicator 3.3. concerns K&S about colony multiplication and top-bar hive beekeeping. Baseline Survey showed that 10% achieved a satisfactory skill score set against benchmark questions. Survey in April 2023 showed that this had risen to 25%.
Due the reasons of timing not all topics, included within this Indicator, were covered in Year 1 so this may account for the only moderate progress. The remaining topics will be covered subsequently.
Output indicator 3.4 concerns K&S about colony management and habitat enrichment. Baseline Survey showed that 1% achieved a satisfactory skill score set against benchmark questions.
Survey in April 2023 showed that 15% had achieved this score.
Output indicator 3.5 concerns number of colonies kept. Baseline Survey showed that the average number of colonies kept by existing beekeepers is 12. Non-beekeepers have not yet joined the Project. They will do so in Year 2.
Survey in April 2023 showed the average number of colonies to be 8.8 – a reduction. This might be further evidence that the current trend of falling bee numbers is continuing, and it is too early to expect the Project intervention to have begun to change that (as is intended). However, the Baseline Survey data included two 'outlier' beekeepers with 40 and 60 colonies respectively. If these are not counted than the average number counted in the Baseline Survey was 8.3 hence more or less the same as this repeat survey.
Output indicator 3.6 concerns honey sales. Baseline Survey showed that average income from honey selling, earned by existing beekeepers is £120. This average includes those who, for whatever reason, sold no honey in the season preceding the time of the survey.

Survey in April 2023 showed the average earnings to be closer to £60. This raises some questions – not so much a concern about a fall in income, but a question about accuracy and precision when measuring earnings, as this is an important metric. It is possible, for example, that the Baseline Survey measure referred to earnings over a 12 month period since a harvest, whereas the April 2023 survey referred to earnings over a 6 month period. Whilst the honey harvest tends to happen once a year in November and December, not all honey is sold immediately – so the beekeepers interviewed in April 2023 might have honey at home, as yet unsold. This is something that needs checking.

Overall, these metrics do not show significant improvements and increases. This is partly explained by the fact that the Project is still in an early stage and the hoped for uplift in beekeeping due to reduced pesticide application has not occurred yet.

Output-4: Output 4 includes four results. The first of these is Output Indicator 4.1 – evidence of key stakeholders having good knowledge about CBD and government policies relating to biodiversity conservation, pesticide use and safeguarding pollinators. The policy familiarisation workshop was held in March 2023. The event was attended by 44 (4 females) key stakeholders and 5 papers were presented. The information presented were new to most of the participants. The event helped them to understand about the ill-effects of pesticides, importance of pollinators and natural enemies of insect crop pests and challenges related to pesticide registration, distribution and management. There was lively discussion and participants stated that these policy issues and proclamations must be communicated to all extension workers, judiciary bodies and farmers. For instance, the 10 years agricultural plan has set the following targets: a) increase horticulture crop production from 181 million quintals to 261 million quintals, b) increase honey production from 59 thousand tons to 152 thousand tons, and c) application of pesticides to increase from 4.9 million litres to 5.5 million litres against regular pests. However, nothing is said about integrated pest management and safeguarding beneficial insects. The participants are from key government organizations working at regional to district level such as agriculture, livestock and fish resource development, forest and environment protection, justice, judge, and police; Bahir Dar University; other NGOs; chemical dealers and Project staff. Papers were presented by Bees for Development Ethiopia, Bahir Dar University, Ethiopian Biodiversity Institute, PAN-E and Amhara Region Livestock and Fish Resource Development Office.
The other results leading to Output 4 include:
4.2 further policy work to be undertaken in Year 2 (no results to date).
4.3 information booklet about pollinators and pesticides – also work to be undertaken in Year 2 (no results to date)
4.4 IPM and beekeeping newsletters published two per year. To date we have published one and distributed 250 copies (see Annex). We have not yet assessed the readership and impact of this newsletter.

3.3 Progress towards the project Outcome

We have set five indicators to measure progress towards the Project Outcome. We are 10 months into the Project and at an early stage.

No.		Baseline and progress	Comment
1	900 smallholder farmers [40% F = 360 F] adopt IPM practices, and reduce frequency of application of pesticides on irrigated vegetables and pulses grown with residual moisture, by end of project. Target is to cut frequency by at least half, against baseline, by end of project.	Baseline Survey showed that the average number of times pesticides applied across 7 crops was 7.73. This figure was supported by the farmer-managed plot we used to compare with the first onion trial where Profenofos was applied 8 times. The first IPM plot produced ***more onions*** with 0 application of Profenofos.	Farmers have not yet started adopting these new IPM approaches in their own farmers – yet evidence suggests a strong possibility that it is achievable. All farmers interviewed in April 2023 indicated their intention to use less pesticides in future. The indicator is adequate. We do not yet know the rate of adoption by farmers on

			their own, but the indications are pointing in the right direction.
2	Annual income of 200 smallholder farmers [80 former beeks all M, 60F new, 60M new] from beekeeping increases by average of GBP50 and 10kg of honey per beekeeper by end of project, against baseline. [100 are subset of IPM farmers, 100 additional].	The Baseline Survey showed that existing beekeepers are earning, on average, £120 from honey selling. For them an increase of £50 each would result in a new average of £170 for existing beekeepers. For new beekeepers we assume their income from honey selling is 0 to start. We have not yet started working with new beekeepers. To date there has been no change in honey yield and income as a result of the Project.	The Project Logic assumes that a reduction in pesticide application will be beneficial for honey bees and it will be possible to keep more colonies and colonies will be stronger. A reduction in pesticide application on onion alone might not achieve this result as, unless grown for seed (and some is), onion is not visited by bees. The other trials include grass pea and pepper which are visited by bees – hence important. This indicator remains valid, as it was beekeepers who advocated for this Project initially.
3	No. of honey bee colonies kept by smallholders in the project increased by 50% from the baseline, by end.	The Baseline Survey showed that existing beekeepers have on average 12 colonies each. To reach this target they would need to be keeping an average of 18 colonies each. For new beekeepers we assume that they have 0 colonies. We have not yet set a target for new beekeepers. We will do this as we engage with them in Year 2. We have not yet started working with new beekeepers. To date there has been no change in colony numbers as a result of the Project.	As above
4	Density of beneficial insects in farmers crops and margins shows an increase of at least 40% (change in natural enemies measured in diff. treatments throughout, change in pollinating insects measured by comparing pollinator counts at baseline (2022) in non-IPM farms and IPM plots in 2023 and 2024	Density of beneficial insects is being measured in two ways. (1) In the IPM plots and in farmer-managed plots, for comparison. (2) Landscape level counting at six permanent sample sites. Data collection for both (1) and (2) is on-going. Data has been analysed for one of the IPM trials as only one is complete. This shows there to be > 100% more ladybirds in the IPM plot than the	The early results from the IPM v non-IPM plots look promising – the cause-effect is highly targeted and direct. Demonstrating similar effect through the indirect, landscape level monitoring might be harder – not least because this depends on result 1 above i.e. many hundreds of farmers reducing pesticide usage, in their own farms. This is less directly within control of the

		farmer-managed plot. This indicates a strong positive result.	Project. Notwithstanding this question, this indicator remains valid – as these wider level changes in biodiversity are key success measures for the Darwin Initiative.
5	Increase, from 1 to 20, in no. of types of bees and other pollinating insects / insect groups which project participants can recognise in farms and margins (baseline = honey bee only).	At Baseline we learned that farmers recognise honey bees and know their role as honey producers, not pollinators. Farmers do recognise other insects, and are familiar with different types of crop pests. This indicator therefore is not so much about recognising insects – but recognising *which insects do what?* At Baseline Survey 94% of 368 farmers said that honey bees were the only beneficial insects that they were aware of, and they believed that all insects, except honey bees, should be destroyed.	Already the training sessions and the Farmer Field School learning is yielding results and farmers are becoming familiar with groups of insects and their roles including ladybirds, hoverflies, other bees (apart from honey bees). This indicator remains valid, although we need to modify to emphasise *which insects do what?*

Progress to date suggests that the Project Outcome is achievable by the end of the Project.

3.4 Monitoring of assumptions

All of the Outcome level assumptions still hold true.
Assumption 1: unexpected and out-of-control pest infestations that lead to government-led pest control campaigns (e.g. aerial spraying). This has not occurred.
Assumption 2: increases in yields of vegetables, pulses and honey harvests will not lead to price reductions. No evidence has emerged to challenge this assumption.
Assumption 3: the Covid-19 global pandemic will not lead government to order complete closure of trainings and workshops, and interrupt market chains and marketing opportunities for vegetables, pulses and honey. No indication that this is a current risk.
Assumption 4: extreme weather hazard will not occur. This assumption still holds true.

We believe the Output level assumptions still stand.
Assumption 1: Women farmers are able to attend training sessions held at their local Farmer Training Centers and by making sessions to be half-day sessions it is more feasible for women to attend as they have many daily household chores. In the Project areas women farmers' participation in trainings tends to be low due to high socio-cultural pressure. However, the Project has made utmost effort to involve women in targeting and each training sessions. Accordingly, 64 women (37% of trainees) attended the training in understanding the agro-ecosystem and pollination under Output 1.
Assumption 2: All training attendees, government workers and farmers will apply the new knowledge and share it with others. It is hard immediately to apply the new knowledge gained. However, the Project clearly communicated with government workers and farmers, to share the knowledge they gained with at least 2 other people.
Assumption 3: Government extension workers will support the Project and work alongside Project staff to regularly follow-up the FFS and collect trial data. Government extension workers are occupied with regular extension work and urgent assignments. As a result, their support is not as high as expected. However, the Project manager and field workers regularly

communicate with government extension workers to improve their support. They have supported the Project in many ways, for example, in beneficiary selection, arranging training venues and securing land for two IPM-FFS demonstrations at Farmers Training Centres, and participating in collecting IPM-FFS data. There has been no staff turnover of government extension workers.
Assumption 4: Based on discussion we know some farmers are willing to allocate land to FFS trials and some are unable. Where farmers are not able to allocate land we have made alternative arrangements to use FTC land and to rent land in some cases. Accessing irrigable land for IPM-FFS demonstration has been challenging. Hence, in the first year the Project used the FTC land for 4 IPM-FFS demonstrations for free, and rented land from farmers for 2 IPM-FFS plots.
Assumption 5: Participating in the FFS, for 1-2 hours each week, is time intensive and demands high commitment and we assume that all farmers make time to participate in FFS trials and to share the knowledge they gain from FFS to other farmers. In each IPM-FFS 30 farmers are expected to attend 1 to 2 hours learning each week. However, this activity coincides (necessarily) with the peak season of their own farming work. Despite some absenteeism, on average 18 - 22 farmers were attending the weekly learning in each FFS.
Assumption 6: Beekeepers and non-beekeepers are able and committed to apply IPM and reduce pesticide application. The IPM results are already showing good results. During the classroom and field based weekly learning beekeepers and non-beekeepers reiterated that pesticide application seriously damaged their health and increased the cost of production. They promised to test IPM practices and reduce pesticide application in their own farms, once they see that the IPM approach is working.
Assumption 7: The current high demand for honey persists. The assumption holds true. Currently, beekeepers sell a kilo of honey on average at 450 ETB (equivalent to $8).
Assumption 8: Government remains committed to co-hosting policy familiarization and analysis workshops and advocating and enforcing government policies, proclamations and regulations. Out of 4 policies and proclamations presented in the policy familiarization workshop (March 2023), 3 papers were presented by government office resource persons and Bahir Dar University staff. This demonstrates a good level of commitment from government.

3.5 Impact: achievement of positive impact on biodiversity and poverty reduction

The proposed impact of the Project is that **agriculture in Ethiopia delivers multiple benefits for people, for biodiversity and for the environment, with maximum synergy between sustainable development and ecosystem service provision**.

On biodiversity conservation this Project is working to mitigate the unintended harm caused to wildlife by toxic chemicals being released into the environment in locations in Ethiopia. These chemicals, which are widely applied in agricultural landscapes and near watercourses and water bodies, are designed to be lethal to insects, and are indiscriminate. Many are known also to be very hazardous to fish. The role of insects in the wider food chain e.g. as food for birds is well known. Insects provide a wide-range of ecosystem services – pollinators, predators, prey, decomposers, water purifiers – and a diverse and abundant insect population cannot be sustained in an environment heavily polluted with pesticides, and a resilient, functioning and biodiverse ecosystem cannot be sustained without insects. Notably the Project area is located on the shores of the Lake Tana Biosphere Reserve.

The Project is contributing to human well-being, development and poverty reduction in a number of ways.

- generating additional income from beekeeping business.
- helping farmers grow healthy and high market value crop for their consumption and market
- helping farmers reduce production costs
- contributing to farmers' better heath
- enabling farmers to achieve higher yields and income [note that the IPM managed onion trial produced a higher yield and a higher net income than the farmer-managed onion crop]

4. Project support to the Conventions, Treaties or Agreements (CBD, SDGs, ENBSAP, and CRGE-NAP-ETH)

The Project is working in line with national plans, towards contributing to international commitments. In March 2023 the Project conducted one familiarization workshop focusing on international conventions, treaties and development goals; and national policies, proclamations and action plans. This workshop was attended by a representative of the Ethiopian Biodiversity Institute (EBI). EBI is the Ethiopian focal point for the Convention on Biological Diversity. The representative gave a presentation about Ethiopia's commitments to the CBD, which was well received by other participants who were previously ill-informed about CBD.

This Project has the potential to contribute towards achieving Ethiopia's commitment to 'Coalition of the willing on pollination', within the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), through reducing harm caused to pollinators by pesticide application. This Project contributes to SDG 1, 2 and 15 through supporting sustainable farm incomes from crops and beekeeping, through supporting the production of nutritious, high-quality foods and through reducing harm caused to insect biodiversity on farms. Dr. Tadesse Amera, Executive Director of PAN Ethiopia is Co-Chair of International Pollutants Elimination Network (IPEN) and has observer status at different chemical related conventions (Basel, Rotterdam, Stockholm, Minamata, SAICM, UNEA). He shares the objective, actions, results and leanings of this Project in international meetings and platforms.

5. Project support to poverty reduction

The main target group of the Project are smallholder farmers (40% females) and government extension workers. Farmers in this part of Ethiopia are a highly disadvantaged group, and suffer deep poverty. The Baseline Survey revealed that 35% of men and 73% of women cannot read or write. They rely on farming to survive and it is essential that their farming system is sustainable and does not precipitate untenable environmental risks. This Project is helping to increase their income, and to safeguard the natural resource base and ecosystem functioning, on which they rely. The Project expects income to rise by halting the decline in beekeeping, a proven, valuable, livelihood addition. The results of the first analysed IPM trial shows an increase net income, compared to normal practice, so it is possible that IPM will enable farmers to earn more from vegetable growing as well.

Notable achievements in year 1 are the results from the first IPM trial shown here:

Yield and net income per 0.25 ha (converted to standard 0.25ha plot from actual plot size pro rata) of onion in Kuar Abo		
Items	IPM plot (no chemical pesticide)	FP (8 applications of Profenofos)
Total yield (Kg)	4,968.94	3,194.44
Price per Kg in ETB	19.00	19.00
Total sale	94,409.94	60,694.44
Production costs in ETB		
Pest & disease control cost	4,143.91	5,194.44
Soil fertility and Polyfeed cost	6,429.19	5,833.33
Labour cost	25,854.04	11,298.61
Land rent, Seedling input – costs	14,782.61	14,777.78
Total production cost	52,933.35	37,104.17
Net income in ETB		
Total sale	94,409.94	60,694.44
Production cost	52,933.35	37,104.17
Net income ETB	43,200.19	23,590.28

6. Gender equality and social inclusion

Womens' participation in trainings, meetings and field visits is generally low in the Project area and women tend not to access extension services as readily as men. To improve females' participation in a meaningful way, the Project is striving to ensure that at least 40% of Project beneficiaries – in all activities and results - are women. Currently, the level of participation of females varies depending on the nature of the intervention and it ranges from 15 to 37% (see section 5). We remain aware that unless the Project takes proactive actions to include women, the situation tends to 'revert to normal' and women are left out. For example, when the open day was held for farmers to visit and learn from the IPM-FFS work at the end of the season, only 2 out of the 87 farmers who attended, were women. We strongly considering how to correct this imbalance, for example deliberately insisting that husbands and wives attend such events together. Bees for Development Ethiopia has experience of this approach in other beekeeping projects and it has proved successful.

A gender analysis has been conducted to identify the role and decision making power of females and males in crop agronomic practices and pest management. We learned that in most households men are responsible for buying pesticides, and both women and men are responsible for weeding, maintaining irrigation channels and inspecting the health of crops. It is imperative that women are equally engaged in learning about IPM, so they can discuss what they see in and on the crop, with their husbands, so they can contribute to joint decision-making about crop protection practices.

Please quantify the proportion of women on the Project Board[5].	25%
Please quantify the proportion of project partners that are led by women, or which have a senior leadership team consisting of at least 50% women[6].	40%

7. Monitoring and evaluation

The Project's M&E plan is based on the Logical Framework which contains 1 Outcome, 4 Outputs and 29 indicators. In the plan we have set out our approach to measuring change for each indicator. A short summary of the M&E is shown here – and sets out which tools are used for which indicators. The Baseline Survey collected metrics for 10 indicators, and comprised interviews with 369 farmers. The purpose of the Baseline Survey was to collect data against which we can measure change achieved by the Project. We conducted a shorter and quicker Annual Data Collection in April 2023, asking many of the same questions, sufficient to show whether the Project is on track, or not.

The Baseline Survey data serves for some, but not all, indicators. Some indicators require different measurement approaches for example, changes in insect biodiversity or changes in peoples' knowledge about government policies on biodiversity.

Broadly speaking the indicators can be divided into 5 groups – with different groups being measured using different types of tools.

Gp	Indicator grouping	How measured / tools	Indicators	Baseline survey
1	Understanding and	These indicators can be measured	Outcome indics	YES

[5] A Project Board has overall authority for the project, is accountable for its success or failure, and supports the senior project manager to successfully deliver the project.

[6] Partners that have formal governance role in the project, and a formal relationship with the project that may involve staff costs and/or budget management responsibilities.

	knowledge of farmers, and what they do in practice – skills levels and number of bee colonies	through interviews with farmers A. Sample across the community (true baseline – before any project interventions have happened) B. Specific questions added to the registration questionnaire for each cohort of direct beneficiaries	1.1 to 1.4 Output indics 1.3, 1.4, 2.2, 2.4, 2.5, 3.2, 3.3, 3.4, 3.5, 3.6.	
2	Understanding and knowledge of extension workers and experts, and what they do in practice	These indicators can be measured through interview with extension workers and experts (sample).	Output indic 1.1, 1.2, 2.1, 2.5, 3.1	YES
3	Insect surveys (two types – one Natural Enemies and one Pollinators).	A. Method for NE B. Method for Pollinators	Outcome indics 1.5 and 1.6	Insect survey methodology to be developed in October 2022
4	Documents produced e.g. workshop reports … and how used.	A. Physical evidence of actual documents B. Usage of documents e.g. how many people read it / use it	Output indic 4.2, 4.3, 4.4 Output indic 2.6, 1.6	Document and document usage can only be done in real time and once the documents have been produced.
5	Specific measures for some indicators	e.g. Output 4.1 will need a specific purpose-made measure and Outcome 1.7 will need a specific purpose-made measure. Why? The cohort of people to which these indicators apply are a smaller group – therefore it doesn't make sense to include questions (about these indicators) in surveys for larger groups. ALSO – lets include Output indic 2.3 here. This will be evidenced by progress reports and FFS tallies and reports.	Outcome indic 1.7 Output indic 4.1 Output indic 2.3	Needs special attention or evidenced by operational work (as in FFS assessments)

We have not made changes to the M&E plan during the reporting period, but during the writing this Annual Report, a number of issues have come to light. We will revisit the M&E plan shortly to confirm whether it is adequate or needs adjustment.

All partners share in the M&E work and information is shared through quarterly review meetings, sharing documents by email and through ad-hoc meetings to discuss specific achievements.

How can we demonstrate that the Outputs and Activities actually contribute to the Project Outcome? This is achieved through triangulation of different sources of evidence and information. We know that, should we achieve our aim of reducing pesticide use in the area, this is highly likely to be attributable to Project Outputs and Activities because the general trend is the opposite and there are almost no other influences reaching farmers, promoting IPM. Strong evidence comes from the farmers themselves. Those less directly engaged in the FFS remain suspicious about the effectiveness of IPM. Should we achieve our aim of reversing the current downward trend of beekeeping we will be able to ask beekeepers about the factors which led them to adopt beekeeping or increase their colony numbers. An increase in density of beneficial insects in crops subject to less frequent spraying is highly likely to be related to this factor. An increase in density of beneficial insects in our landscape-level sample plots, may or may not be detectable within the time-frame of the Project. If achieved this is likely to be attributable to the Project intervention because this is contrary to the prevailing trend. However, we will remain mindful of other possible causes such as local changes in land use, habitat richness and explore these.

8. Lessons learnt

Overall progress of Project implementation and achievements has been very good, with high interest from farmers and support from the local government. We have learned lessons also.

Initially, the Project planned to provide classroom based IPM training for *lead* farmers and then asking/expecting lead farmers to pass on this learning to other farmers (called followers) of the Farmer Field School. Development Agents and Project field workers advised the Project team that this would not work as the followers would resent the lead farmers receiving special attention. Accordingly, the Project provided the classroom training for all IPM-FFS participants – we managed the budget implications by combining some topics. This approach helped the Project to reach more farmers and avoid potential grievances.

The number of women attending classroom and FFS sessions is increasing and encouraging. Farmers are realising that women's participation enriches the learning for all, and the gender analysis group work exercise has proved important in influencing mindsets, about gender roles. The Project will continue to exert its outmost effort to convince husbands to send their wives to trainings, FFS sessions and field visits.

The grass pea IPM protocol on insect counting and threshold level determination needs modification.

We have learned that the data collection and recording process for the IPM-FFS trials is very onerous – data is first recorded in notebooks, then transferred to softcopy. The Year 2 plan is to increase the scale of the work and we predict the data collection will become more difficult – we propose therefore to change to an electronic data collection system.

The Project has collected feedback from farmers and government extension workers during various events. They have forwarded the following suggestions:
1) to teach more farmers, increase the number of IPM-FFS plots and cover more villages
2) they request help in sourcing neem seed, as it is not readily available in the Project area and farmers want to grow the tree and test the spray
3) they also requested a guide or list of pesticides that are less poisonous to beneficial insects and human beings.

9. Actions taken in response to previous reviews (if applicable)

No previous review

10. Risk Management

See separate risk register.

11. Other comments on progress not covered elsewhere

None.

12. Sustainability and legacy

More Bees project is being implemented in Fogera and North-Mecha districts of South Gondar and West Gojjam administrative zones respectively in Amhara Region, Ethiopia. At Project start we held project familiarization workshops at regional level (1 workshop) and at zonal level (2 further workshops) – with the aim of introducing the Project to key stakeholders, especially government offices. Project aims and objectives are clearly communicated at the start of different training sessions. In addition, the works of the project have been promoted during policy familiarization event and through bi-annual newsletter.

Crop pest infestation and the risks associated with pesticides is a very pressing issue for farmers and extension workers and our work is generating a lot of interest. For example, the first IPM onion trial was visited by administrators, agriculture and livestock office heads, development agents and farmers. Participants observed that the onion yield from the IPM plot was 49.7 quintals per 0.25 hectare compared to the conventional farmers plot, which yielded record 31.9 quintals per 0.25 hectare i.e. the IPM-managed plot gave a higher yield. The government officials declared their interest to take the IPM experience to other villages and districts. In addition, farmers are requesting the Project to supply botanical inputs (Neem seed) to test it in their farm plot and grow the Neem tree in their farm boundary.

The capacity, knowledge and understanding of extension workers and farmers is improving. Farmers can explain the role of pollinators and extension workers are keen to train other farmers in IPM. This suggests the changes achieved by the Project will sustain.

The Project is making progress and we are not making any substantive changes to original plan.

Women, men, youth, administrators and religious leaders have all participated in classroom learning, FFS training and field exercises – the greater the reach of the Project and the more inclusive it is, the greater the likelihood of achieving a sustained legacy. Special focus has been given for females to improve their participation. As a result, positive attitude change has been observed.

The introduction of IPM helps farmers to reduce expenses for pesticides, reduces loss of pollinators and improves pollination service for quality and better crop yield. In addition, the restoration of beekeeping business will generate additional income. In this way, the Project is providing opportunities to make farming more financially viable and more resilient – so helping to ensure a sustained legacy. The two main pillars to ensure long term change are (a) ensuring that the IPM methods tried, tested and promoted really work and are easy to adopt by farmers, and (b) influencing government extension workers, and their offices, to incorporate the learning from the Project into their day-to-day work. If these two conditions can be met, we can be confident of a sustained legacy.

13. Darwin Initiative identity

The Project has been using the Darwin Initiative logo in banners, newsletters, training materials, and presentation slides. The Darwin Initiative funding has been recognised as a distinct Project with a clear identify and has been well promoted locally during Project launch, training sessions and policy familiarization events. The concept of the *More Bees* Project is new in addressing the problem of pesticide application and it is different from many other livelihood projects – hence the local team in Ethiopia have had to work hard to explain the Theory of Change to government offices. Consequently, regional government signatory organizations are very familiar with the Project and strongly recognise the UK Government's support, through the Darwin Initiative. Before the *More Bees* Project the Darwin Initiative was not known in the area. Currently, there is good understanding among the staff of Bureau of Finance and Economic Cooperation, Bureau of Agriculture, Livestock and Fishery Resource Development Office, and Environment and Forest Protection Authority at all levels (region to kebele). The Project promotes its achievements through a newsletter and the websites of Bees

for Development and Bees for Development Ethiopia. We plan to do more communications, jointly with Pesticide Action Network in coming months.

14. Safeguarding

Has your Safeguarding Policy been updated in the past 12 months?	No
Have any concerns been investigated in the past 12 months	No
Does your project have a Safeguarding focal point?	Yes In UK – Janet Lowore [redacted] In Ethiopia - Getsh Kassa [redacted]
Has the focal point attended any formal training in the last 12 months?	No Not in the last 12 months, but both have attended formal training within the last 24 months.
What proportion (and number) of project staff have received formal training on Safeguarding?	Past: 60% - 6 Planned: 40% - 4
Has there been any lessons learnt or challenges on Safeguarding in the past 12 months? Please ensure no sensitive data is included within responses. None. Although we remain vigilant and mindful of potential issues and alert to concerns which might be raised.	
Does the project have any developments or activities planned around Safeguarding in the coming 12 months? If so please specify. Yes we plan to provide formal safeguarding training to new staff who have joined us within the last 12 months.	

15. Project expenditure

Table 1: Project expenditure <u>during the reporting period</u> (1 April 2022 – 31 March 2023)

Project spend (indicative) since last Annual Report	2022/23 Grant (£)	2022/23 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)	[redacted]			
Consultancy costs				
Overhead Costs				
Travel and subsistence				
Operating Costs				
Capital items (see below)				
Monitoring & Evaluation (M&E)				
Others (see below)				
TOTAL	**132,824**	**132,824**		

Table 2: Project mobilising of matched funding during the reporting period (1 April 2022 – 31 March 2023)

	Matched funding secured to date	Total matched funding expected by end of project
Matched funding leveraged by the partners to deliver the project.	[redacted]	
Total additional finance mobilised by new activities building on evidence, best practices and project (£)		

16. OPTIONAL: Outstanding achievements or progress of your project so far (300-400 words maximum). This section may be used for publicity purposes

I agree for the Biodiversity Challenge Funds Secretariat to publish the content of this section (please leave this line in to indicate your agreement to use any material you provide here).

File Type (Image / Video / Graphic)	File Name or File Location	Caption, country and credit	Online accounts to be tagged (leave blank if none)	Consent of subjects received (delete as necessary)
				Yes / No
				Yes / No
				Yes / No
				Yes / No
				Yes / No

Annex 1: Report of progress and achievements against logframe for Financial Year 2022-2023

Project summary	SMART Indicators	Progress and Achievements April 2022 - March 2023	Actions required/planned for next period
Impact: Agriculture in Ethiopia delivers multiple benefits for people, for biodiversity and for the environment, with maximum synergy between sustainable development and ecosystem service provision.		It is too early to quantify positive changes that contribute towards positive impact on biodiversity, environment or benefits for people. However indications are positive. The results of the first IPM trial plot showed that the IPM plot had more than twice as many ladybirds as the farmer-managed (normal practice) plot and was more profitable, yielding greater net income. Good for biodiversity and good for farmers.	[redacted]
Outcome: Adoption of integrated pest management in 2 sites in Amhara, leading to restoration of beekeeping livelihoods, increased abundance of beneficial insects, and more income for smallholders.	0.1 900 smallholder farmers [40% F = 360 F] adopt IPM practices, and reduce frequency of application of pesticides on irrigated vegetables and pulses grown with residual moisture, by end of project. Target is to cut frequency by at least half, against baseline, by end of project. 0.2 Annual income of 200 smallholder farmers [80 former beeks all M, 60F new, 60M new] from beekeeping increases by average of GBP50 and 10kg of honey per beekeeper by end of project, against baseline. [100 are subset of IPM farmers, 100 additional] 0.3 No. of honey bee colonies kept by smallholders in the project increased by 50% from the baseline, by end.	0.1 Farmers showed positive interest to apply the IPM techniques in the next production season illustrating clear progress towards indicator 0.1. 0.2.The positive response to beekeeping training, and the early evidence that same crop yields can be achieved with less pesticide application – suggests farmers might be willing to apply less pesticides, causing less harm to honey bees, hence beekeeping income should rise. Note that whilst this indicator expected income increase to come from beekeeping alone, in fact the first IPM trial netted more income than normal farmer practice, indicating that household income can rise from this as well. 0.3. No change as yet.	Key actions for next period are the setting up of 12 new IPM-FFS plots with a new cohort of 360 farmers who will learn, practically, how to approach crop pest management through application of agroecological principles, instead of chemicals. 120 new beekeepers (people who have never kept bees before) will be trained and help to set up sustainable apiaries. Pollinator monitoring at landscape level will continue. Insect counts in IPM-FFS plots will be done weekly throughout the season

	0.4 Density[7] of beneficial insects in farmers crops and margins shows an increase of at least 40% (change in natural enemies measured in diff. treatments throughout, change in pollinating insects measured by comparing pollinator counts at baseline (2022) in non-IPM farms and IPM plots in 2023 and 2024. 0.5 Increase, from 1 to 20, in no. of types of bees and other pollinating insects / insect groups which project participants can recognise in farms and margins (baseline = honey bee only).	0.4 Insect counting is progressing, but too early for results. See Figure 1 in Section 3.2 for some results. 0.5 Fair progress. As reported in section 3.3 the emphasis should not just be on recognising insects *but knowing which insects do what?*	
Output 1. Smallholder farmers and government extension workers in Fogera and Mecha have a good working understanding of their local agro-ecosystem. Specifically, they will be (i) able to identify specific pollinators, natural enemies [NE] and crop pests and know their lifecycles and understand their roles in the agro-ecosystem (natural enemies and pollination) (ii) appreciate how misuse of pesticides can interrupt beneficial processes within their agro-ecosystem leading to pesticide resistance, pest replacement and resurgence and pollination deficits (iii) perceive that their agro-ecosystem is a whole system and can be nurtured to increase the sum of benefits.	1.1 & 1.2 36 Govt. extension workers[8] gain knowledge about harmful impact of pesticides and role of beneficial insects in 22/23, and about pollination and sustainable agriculture in 23/24, 3 training days/year. 1.3 30 lead, 90 follower farmers[9] [40% F] understand local agro-ecosystem, pollination, beneficial insects and harm caused by pesticides, by attending 4 ½ day sessions [24 in 22/23, 48 in 23/24, 48 in 24/25]. 1.4 44 Government extension workers, 120 smallholder farmers gain knowledge and understanding about their agro-ecosystem through 1-day ecosystem walks [32 in 22/23, 66 in 23/24 and 66 in 24/25]	1.1 Good progress – target was 36 – we reached 47. Indicator is appropriate. As this is a knowledge-based indicator we need to continually improve our ways of assessing knowledge. Evidence provided in Section 3.2 1.2 Good progress. Evidence in Section 3.2. This work continues in 23/24. 1.3 Good progress. Target was 24 in Year 1, we reached 172 (64F) by combining with other training. Indicator is appropriate. Evidence provided in Section 3.2 1.4 Good progress. 172 (64F) farmers trained. Training for Development Agents, not yet complete. 1.5 Good progress. Target was 30 – we reached 39 pollinator observer farmers (6 females). As mentioned in Section 3.3, to improve this indicator we need to re-emphasise that this should be about *which insects do what?* 1.6 Achieved. Appropriate indicator. Evidence is attached in Annex. 1.7. Good progress. 180 IPM-FFS follower farmers (62 females) conducted NE and pest counts in six IPM plots and made decision on protection measures. Evidence in Section 3.2 and in Annex.	

[7] For natural enemies (NE) we measure number per metre in length through plot, for bees and other pollinators we measure number per square metre.

[8] Two levels – Experts [4] and Development Agents [32], from livestock and crop departments.

[9] 900 farmers participate in Farmer Field Schools, and a sub-set of the 900 receive more intensive training – namely 30 lead and 90 followers = 120.

	1.5 Pollinator observers (extension workers, staff and farmers) [15M, 15F] know how to recognise and describe groups of bees / other pollinators – and able to tell and guide others by June 2023. 1.6 List or ID guide of common bees / pollinators / natural enemy groups important in the project area compiled with easy-to-follow descriptors by June 2023. 1.7 Knowledge of change in density of bees / natural enemies [NE] / other pollinators in Project area through tally counting of NE in IPM plots throughout IPM trials and comparing with non-IPM plots and by conducting pollinator counts in non-IPM plots at baseline (2022), and thereafter in IPM plots and non-IPM plots in 2023 and 2024.		
Activity 1.1 Experts and Development Agents in livestock and crop production (government extension workers) attend 3-days training courses in harmful impact of pesticides and the role of beneficial insects in sustainable agriculture.		47 (13F) participants trained. (130% of the plan).	This activity is completed
Activity 1.2 Experts and Development Agents in livestock and crop production (government extension workers) attend 3-days training courses in local agro-ecosystem, in pollination and sustainable agriculture.		47 (13 F) participants trained. (130% of the plan).	The remaining training on agro-ecosystem and sustainable agriculture will be given in 2023/24.
Activity 1.3 Smallholder farmers [40%F] attend training courses in understanding their local agro-ecosystem and in pollination, attend 4 half-day sessions at local Farmer Training Centres in 2022, 2023 and 2024		172 farmers (64F) trained. Initially, it was planned to train 24 lead farmers in Year 1. However, from other experience we understood this approach will create grievance among lead and follower farmers. Hence, we combined this training along with A 2.2 whilst maintaining the required quality, and keep within budget. Hence, reached 172 farmers, not 24 (716% of plan)	In Year 2 new farmers in new FFS will join the Project and receive the training also.
Activity 1.4 Experts and Development Agents in livestock and crop production		Following A1.3 training, 172	Government extension workers will

(government extension workers) and smallholder farmers participate in agro-ecosystem walks to understand their local agro-ecosystem and the role of ecosystem services		smallholder farmers (64 females) participated in agro-ecosystem walk to understand their local agro-ecosystem and the role of ecosystem services.	practice the agro-ecosystem walk in 23/24 Farmers joining Year 2 FFS will do this training in 23/24.
Activity 1.5 Learning About Pollinator days: group of 40 pollinator observers are taught by entomologist how to observe, recognise and describe locally-found flower-feeding insects in the project areas – through fieldwork – so they can share these skills and knowledge with others.		39 pollinator observer farmers (6 females) trained.	We will assess their understanding about *which insects do what* and augment this training if needed.
Activity 1.6 Produce an easy-to-use ID guide for the most commonly found bees, other pollinators and natural enemies using local names and descriptions		ID guide in hard and soft copy produced and ready for use.	Share more widely with stakeholders.
Activity 1.7 Pollinator observers conduct flower-insect timed counts using ID guide [1.6] in IPM plots and normal plots (2km distance between) in 24/25		At present this work is being done by fieldworkers, not farmers.	Technically support pollinators observer farmers to do regular insect counting.
Output 2. Integrated pest management approaches adopted by smallholders in Fogera and Mecha. Specifically, farmers will adopt a range of cultural, physical and biological measures to manage crop pests. Chief amongst these will include enrichment of field margins to provide habitat for natural enemies and use of food sprays to attract natural enemies – together enhancing natural pest control services by boosting biodiversity.	2.1 45 Government extension workers know the basics of IPM what it is, why important, how to do it and learn of examples from Ethiopia through 5 day training [25 in 22/23 and 20 in 23/34] 2.2 120 farmers [40% F] know basics of IPM; what it is, why important, how to do it and learn of examples from Ethiopia through 3 day training [24 in 22/23, 48 in 23/24 and 48 in 24/25] 2.3 Appropriate IPM measures tested by farmers, in Fogera and Mecha, for vegetables and pulses, through 30 Farmer Field Schools (FFS) and IPM trials [6 FFS set up in 22/23, 12 in 23/24 and 12 in 24/25] 2.4 900 FFS farmers [360 F, 540 M] gain skills and knowledge in IPM so they can apply proven measures in their farms and teach others. 180 in 22/23, 360 in 23/24 and 360 in 24/45. 2.5 240 farmers learn results of IPM trials through field visits, together	2.1 Target was 45 – did not reach target. 26 (6 females) govt. extension workers trained in IPM. Good progress. Evidence see Output 2 part of section 3.2. Appropriate indicator. Need to reflect on our approach to measuring knowledge – *are we asking the right questions?* 2.2 Target was 24 – exceeded target (explained above at 1.3). 172 smallholder farmers (64 females) attended IPM training and gained basic knowledge about the different IPM practices. Learning supported by the FFS practical sessions. Indicator needs refining to reflect combination (overlap?) of some training sessions and objectives and shift away from lead/follower model to include all FFS farmers instead. 2.3 Target was 6 FFS set-up. This was achieved and IPM are being tested in all 6. Data analysis completed for one so far (others still in the ground). Results of the one – see Section 3.2. 2.4. Target was 180 in 22/23 – this was achieved – 180 farmers [62 F] gain skills and knowledge in IPM. Good progress. Evidence in Section 3.2. 2.5 Target 80 farmers – reached 87 farmers (2 females), and 17 government extension workers and district administration and agriculture office heads (6 females) attended the field visit organized in IPM-FFS trials. Progress good although underperformed on including women farmers. Evidence in Section 3.2. 2.6 Workshop not done yet because not all results from all IPM plots are in. Appropriate indicator.	

	with 34 govt. staff [10] each year. [80 different farmers each year] 2.6 120 farmers [40% F] learn results of IPM trials in workshop, together with 34 govt. staff each year [40 different farmers each year]		
Activity 2.1. Experts and Development Agents in livestock and crop production attend training in Integrated Pest Management (IPM).		26 (6 females) attended IPM training. This will continue into 23/24.	In 23/24, 20 experts and development agents will take similar training.
Activity 2.2. Smallholder farmers [40%F] attend training in IPM.		Completed for 22/23 cohort of farmers.	Further training in 23/24 for new cohort.
Activity 2.3. Establish Farmers Field Schools (FFS) for IPM field trial and learning in 8 kebele (2 woredas), design trials with range of measures		Six FFS for IPM field trial established in 4 kebeles and used for learning. The achievement is100% of the plan.	In year 23/24 12 FFS for IPM field trial will be established
Activity 2.4. Conduct Integrated Pest Management trials in FFS, field workers and farmers to make weekly assessments, collect, record and analyse data		Weekly insect pest and natural enemies' data collected in the six FFS-IPM trials. The achievement is100% of the plan.	Data analysis for the remaining five FFS-IPM trials of year 2022 will be conducted after crop harvest. In addition, in year 2023/24 weekly date collection and analysis will be done in 12 FFS-IPM trials.
Activity 2.5. Experts and Development Agents in livestock and crop production (government extension workers) and smallholder farmers participate in IPM field visit in the project kebeles (within the project woredas).		87 farmers (2 females), and 17 government extension workers and district administration and agriculture office heads (6 females) attended the field visit organized in IPM-FFS trials.	In 23/24 similar field visit will be arranged for 114 government extension workers and farmers. Need to address gender imbalance.
Activity 2.6. Officials, Experts and Development Agents in livestock and crop production and smallholders attend workshops to learn of IPM field results.		Not done	Workshop will be held in 2023, as soon as all trials harvested.
Output 3. Beekeeping enterprises established and re-established by smallholder farmers. Youth, women and both new and existing beekeepers will receive training and support to establish profitable home-based beekeeping enterprises.	3.1 44 Government extension workers have skills and knowledge in advanced sustainable beekeeping by end 22/23. 3.2 120 new beekeepers [at least 60F] know how to make hives, procure bees, establish apiaries in 2023/24	3.1 Target was 44 – achieved 41 extension workers (10 females) attended training. Evidence of learning see section 3.2. Appropriate indicator. 3.2 – no target for 22/23 3.3 Target 80 - achieved 78 former beekeepers (12 females). See Section 3.2 for evidence of progress. 3.4 Target 80 - achieved 78 former beekeeper (12 females). See Section 3.2 for evidence of progress. 3.5 – no target for 22/23	

[10] Government staff = 34 from field, zonal and regional level, same 34 each year.

	3.3 80 former/declining beekeepers [almost all former are men] gain skills and knowledge in bee colony multiplication and top-bar beekeeping by end of 2022/23 3.4 200 beekeepers [total of those above] know how to boost forage availability for honey bees, enrich habitat and protect colonies from pesticides [80 in 22/23, 120 in 23/24]. 3.5 200 [80 former, 120 new] beekeepers start or re-establish beekeeping with small input provision from project and engage in profitable beekeeping at household level in 2023/24 3.6 200 smallholder farmers [at least 60 F] know how to get the best price for their honey by end of 24/25	3.6 – no target for 22/23	
Activity 3.1. Experts and Development Agents in livestock and crop production attend training in advanced sustainable beekeeping		Completed.	
Activity 3.2. Smallholder farmers [60 M and 60 F] attend training in how to make hives, how to get bees and how to establish apiaries and basic beekeeping			120 new beekeeper smallholder farmers will be trained in 23/24
Activity 3.3. Former/declining beekeepers attend training in bee colony multiplication and top-bar beekeeping		Training was delivered.	Additional training on colony multiplication will be done in 23/24
Activity 3.4. All beekeepers given training in how to boost forage availability for bees, how to enrich habitat and how to protect colonies from pesticides		This was delivered for 78 existing beekeepers (12F)	120 new beekeeper smallholder farmers will take this training in 23/24.
Activity 3.5. Small input provision procured and donated to beekeepers, based on needs assessment			200 beekeepers (120 new and 80 former beekeepers will get input support in 23/24.
Activity 3.6. All beekeepers given training in how to get the best price for their honey (in marketing, quality assurance, understanding the market)			This will be done for 200 beekeepers in 23/24.
Output 4. Farmers, government extension workers and other stakeholders have good understanding about instruments and guidelines to support	4.1 46 key stakeholder organization heads, directorates and experts have good knowledge about CBD, government policies, proclamations and regulations on biodiversity	4.1 The work was done in March 23 and attendance register and report available. 44 (4 females) senior people attended. Apart from the feedback received on the day which was positive we do not yet know the result of the workshop – we will interview a sample of participants at a later date to ask what difference it made to their work. Indicator is appropriate. 4.2 – no target for 22/23	

biodiversity-friendly agriculture. Specifically, stakeholders, including vendors of agrochemicals, will have knowledge of (i) government policies, proclamations and regulations on protecting biodiversity (ii) responsible use of agro-chemicals, toxicity of different products. iii) lessons learned from project actions and results	conservation, pesticide use, managing pollinators and sustainable agriculture by end 20022/23. 4.2 Analysis of gaps and strengths of government policies, proclamations and regulations in relation to 4.1 undertaken by 56 key stakeholder organization heads, directorates and experts in 3-day policy analysis workshop by end 2023/24. 4.3 Information booklet about pollinators, natural enemies of crop pests and impact of pesticides on the agro-ecosystem in Amhara published and used by key stakeholders in 2023/24. [2,000 hard copies distributed, e-copies also available on partners' websites]. 4.4 500 IPM and beekeeping newsletters published twice each year and read by key stakeholders [500 x 2 x 3 = 3000, e-copies also available on partners' websites]	4.3 – not target for 22/23 4.4 - published one bi-annual newsletter and distributed 250 copies to stakeholders. Evidence = the newsletter, attached.	
Activity 4.1. Key stakeholder organization heads, directorates and experts attend policy familiarization workshop on CBD, SDGs, and government policies, proclamations and regulations on biodiversity conservation, poverty reduction, pesticide use, pollination services and sustainable agriculture.		Completed	
Activity 4.2. Key stakeholder organization heads, directorates and experts attend policy analysis workshop on CBD, SDGs, and government policies, proclamations and regulations on biodiversity conservation, poverty reduction, pesticide use, pollination services and sustainable agriculture.			This activity is 2023/24 plan
Activity 4.3. Publish and distribute information booklet about pollinators, natural enemies of crop pests and impact of pesticides on the agro-ecosystem in Amhara (hard copy and electronic means).			This activity is 2023/24 plan
Activity 4.4. Publish and distribute Bi-annual IPM and beekeeping newsletters in hard copy and electronic means.		One newsletter published in 22/23	Bi-annual newsletter will be published and distributed in 23/24 and 24/25.

Annex 2: Project's full current logframe as presented in the application form (unless changes have been agreed)

Project Summary	SMART Indicators	Means of Verification	Important Assumptions
Impact: Agriculture in Ethiopia delivers multiple benefits for people, for biodiversity and for the environment, with maximum synergy between sustainable development and ecosystem service provision.			
Outcome: Adoption of integrated pest management in 2 sites in Amhara, leading to restoration of beekeeping livelihoods, increased abundance of beneficial insects, and more income for smallholders.	0.1 900 smallholder farmers [40% F = 360 F] adopt IPM practices, and reduce frequency of application of pesticides on irrigated vegetables and pulses grown with residual moisture, by end of project. Target is to cut frequency by at least half, against baseline, by end of project. 0.2 Annual income of 200 smallholder farmers [80 former beeks all M, 60F new, 60M new] from beekeeping increases by average of GBP50 and 10kg of honey per beekeeper by end of project, against baseline. [100 are subset of IPM farmers, 100 additional] 0.3 No. of honey bee colonies kept by smallholders in the project increased by 50% from the baseline, by end. 0.4 Density of beneficial insects in farmers crops and margins shows an increase of at least 40% (change in natural enemies measured in diff. treatments throughout, change in pollinating insects measured by comparing pollinator counts at baseline (2022) in non-IPM farms and IPM plots in 2023 and 2024. 0.5 Increase, from 1 to 20, in no. of types of bees and other pollinating insects / insect groups which project participants can recognise in farms and margins (baseline = honey bee only).	0.1a Farmer interviews about IPM, farm visits, reports on crop protection practices, gender disaggregated 0.1b Farmer interviews, asking about the type of pesticides used, and frequency of application, at start and end of project. 0.2 Annual gender disaggregated beekeeper survey- measuring income from beekeeping of project beneficiaries 0.3 Annual gender disaggregated beekeeper survey- measuring number of honey bee colonies maintained by farmers. 0.4 Assessment of beneficial insects (natural enemies and pollinating insects) in project area, using tally of count of NE within sample plots against developed list of beneficial insect groups in IPM plots, in field margins and non-IPM plots in 22/23, 23/24, 24/25 and counting pollinators in non-IPM farms in 2022 (baseline) and in non-IPM farms and IPM plots annually thereafter. 0.5a Reports of field activities teaching participants insect observation skills and how to recognise pollinators, 22/23 0.5b End of project in-field evaluation with farmers, and other stakeholders.	Assume unexpected and out-of-control pest infestations that lead to government-led pest control campaigns (e.g. aerial spraying) do not happen. Assume that increases in yields of vegetables, pulses and honey harvests will not lead to price reductions –so that yield increases will lead to income increases for farmers. We assume that the Covid-19 global pandemic will not lead government to order complete closure of trainings and workshops, and interrupt market chains and marketing opportunities for vegetables, pulses and honey. PAN-Ethiopia continued FFS work in 2020 using smaller groups and honey selling has continued through 2020/21. We assume that extreme weather hazard will not occur.

Outputs: **1. Smallholder farmers and government extension workers in Fogera and Mecha have a good working understanding of their local agro-ecosystem.** Specifically, they will be (i) able to identify specific pollinators, natural enemies [NE] and crop pests and know their lifecycles and understand their roles in the agro-ecosystem (natural enemies and pollination) (ii) appreciate how misuse of pesticides can interrupt beneficial processes within their agro-ecosystem leading to pesticide resistance, pest replacement and resurgence and pollination deficits (iii) perceive that their agro-ecosystem is a whole system and can be nurtured to increase the sum of benefits.	1.1 & 1.2 ~~50~~ 36 Govt. extension workers[11] gain knowledge about harmful impact of pesticides and role of beneficial insects in 22/23, and about pollination and sustainable agriculture in 23/24, 3 training days/year. 1.3 30 lead, 90 follower farmers[12] [40% F] understand local agro-ecosystem, pollination, beneficial insects and harm caused by pesticides, by attending 4 ½ day sessions [24 in 22/23, 48 in 23/24, 48 in 24/25]. 1.4 44 Government extension workers, 120 smallholder farmers gain knowledge and understanding about their agro-ecosystem through 1-day ecosystem walks [32 in 22/23, 66 in 23/24 and 66 in 24/25] 1.5 Pollinator observers (extension workers, staff and farmers) [15M,15F] know how to recognise and describe groups of bees / other pollinators – and able to tell and guide others by June 2023. 1.6 List or ID guide of common bees / pollinators / natural enemy groups important in the project area compiled with easy-to-follow descriptors by June 2023. 1.7 Knowledge of change in density of bees / natural enemies [NE] / other pollinators in Project area through tally counting of NE in IPM plots throughout IPM trials and comparing with non-IPM plots and by conducting pollinator counts in non-IPM plots at baseline (2022), and thereafter in IPM plots and non-IPM plots in 2023 and 2024.	1.1 & 1.2a Evidence of new knowledge, through interviewing sample of women and men attendees 6 months after training – asking how they have put their learning into practice by using a checklist (to be developed) covering practices, confidence and messages conveyed to farmers. 1.1 & 1.2b Attendance registers. 1.3a Evidence of new knowledge, gained by interviewing sample of women and men attendees 6 months after each training – asking how they have put learning into practice by using a checklist (to be developed) covering practices, confidence and likelihood of telling others. 1.3b Training attendance registers. 1.4a Evidence of knowledge of local agro-ecosystem shown through interviewing a sample of women and men participants 6 months after ecosystem walks in 22/23, 23/24 and 24/25. 1.4b Ecosystem walk participant attendance registers. 1.5 Reports compiled after ***Learning About Pollinators*** field days, with testimonials from pollinator observers. 1.6 Guide to common bees / pollinators / groups with easy-to-follow descriptors, local names and photographs where possible produced in hard and soft copy. 1.7 Bees / NE / and pollinator count results.	We assume that women farmers are able to attend training sessions held at their local Farmer Training Centers and by making sessions to be half-day sessions it is more feasible for women to attend as they have many daily household chores. We assume that all attendees, government workers and farmers will apply the new knowledge and share it with others.
2. Integrated pest management	2.1 ~~50~~ 45 Government extension	2.1 Evidence of knowledge of IPM by	We assume that the

[11] Two levels – Experts [6] and Development Agents [44], from livestock and crop departments. Same applies throughout where see number 50 or 44.

[12] 900 farmers participate in Farmer Field Schools, and a sub-set of the 900 receive more intensive training – namely 30 lead and 90 followers = 120.

approaches adopted by smallholders in Fogera and Mecha. Specifically, farmers will adopt a range of cultural, physical and biological measures to manage crop pests. Chief amongst these will include enrichment of field margins to provide habitat for natural enemies and use of food sprays to attract natural enemies – together enhancing natural pest control services by boosting biodiversity.	workers know the basics of IPM what it is, why important, how to do it and learn of examples from Ethiopia through 5 day training in 22/23 [25 in 22/23 and 20 in 23/34] 2.2 120 farmers [40% F] know basics of IPM; what it is, why important, how to do it and learn of examples from Ethiopia through 3 day training [24 in 22/23, 48 in 23/24 and 48 in 24/25] 2.3 Appropriate IPM measures tested by farmers, in Fogera and Mecha, for vegetables and pulses, through 30 Farmer Field Schools (FFS) and IPM trials [6 FFS set up in 22/23, 12 in 23/24 and 12 in 24/25] 2.4 900 FFS farmers [360 F, 540 M] gain skills and knowledge in IPM so they can apply proven measures in their farms and teach others. 180 in 22/23, 360 in 23/24 and 360 in 24/45. 2.5 240 farmers learn results of IPM trials through field visits, together with 34 govt. staff [13] each year. [80 different farmers each year] 2.6 120 farmers [40% F] learn results of IPM trials in workshop, together with 34 govt. staff each year [40 different farmers each year]	extension workers shown through interviewing a sample of attendees 6 months after training in 22/23. 2.2 Evidence of knowledge of IPM by farmers shown through interviewing a sample of women and men attendees 6 months after training in 22/23, 23/24, 24/25. 2.3 Assessments / results of FFS trials including data about farmer [M,F] attendance, pest levels, presence of natural enemies, disease infestation, crop yield, profit margin and use of trap crop across all three years. 2.4 Survey of skills and knowledge of women and men farmers, through interview and visiting farms to see IPM being practiced, including images and testimonials from project farmers, across all years. 2.5 Evidence of adequate knowledge of IPM, gained through interviewing a sample of field visit participants 6 months after the visit in 22/23, 23/24 and 24/25. 2.6 Record of IPM field trial result sharing workshop proceedings in 22/23, 23/24 and 24/25.	government extension workers will support the project and work alongside project staff to regularly follow-up the FFS and collect trial data. We assume that if there is staff turnover new staff can be trained to get 'up to speed'. Based on discussion we know some farmers are willing to allocate land to FFS trials and some are unable at project start. Where farmers are not able to allocate land we have made alternative arrangements to use FTC land and to rent land in some cases. Weekly, attending 1 to 2 hours learning in FFS is time intensive and demands high commitment and we assume that all farmers make time to participate in FFS trials and to share the knowledge they gain from FFS to other farmers. PAN-Ethiopia have achieved high retention rates in other projects.

[13] Government staff = 34 from field, zonal and regional level, same 34 each year.

3. **Beekeeping enterprises established and re-established by smallholder farmers.** Youth, women and both new and existing beekeepers will receive training and support to establish profitable home-based beekeeping enterprises.	3.1 44 Government extension workers have skills and knowledge in advanced sustainable beekeeping by end 23/24. 3.2 120 new beekeepers [at least 60F] know how to make hives, procure bees, establish apiaries, ~~60 in 22/23 and 60 in 23/24~~. [change this to 120 in 23/24] 3.3 80 former/declining beekeepers [almost all former are men] gain skills and knowledge in bee colony multiplication and top-bar beekeeping by end of ~~23/24~~ [change this to 22/23] 3.4 200 *** beekeeper [total of those above] know how to boost forage availability for honey bees, enrich habitat and protect colonies from pesticides [60 in 22/23, 140 in 23/24]. 3.5 200 [80 former, 120 new] beekeepers start or re-establish beekeeping with small input provision from project and engage in profitable beekeeping at household level ~~[60 in 22/23, 140 in 23/24~~] Change to 200 in 23/24 3.6 200 smallholder farmers [at least 60 F] know how to get the best price for their honey by end of 24/25 ***Of these 200 people, 100 are also FFS participating farmers	3.1a Interviewing sample of attendees 6 months after training, checking their knowledge of beekeeping using BfD-developed skill score by end 23/24. 3.1b Training attendance registers 3.2a Interviewing sample of attendees 6 months after training, checking their knowledge of beekeeping using BfD-developed skill score. 3.2b Training attendance registers. 3.3a Evidence of good knowledge of colony multiplication and top-bar beekeeping, by interviewing attendees 6 months after training. 3.3b Training attendance registers 3.4a Evidence of good knowledge of forage development and habitat enrichment, by interviewing attendees 6 months after training. 3.4b Training attendance registers 3.5 Data about honey bee colonies kept and honey yields, through household surveys x 3 (each year). 3.5b Registers of inputs supplied and received. 3.6 Data about honey sales and income, through household survey.	We assume that beekeepers and non-beekeepers are able and committed to apply IPM and reduce pesticide application. We assume that the current high demand for honey persists.
4. **Farmers, government extension workers and other stakeholders have good understanding about instruments and guidelines to support biodiversity-friendly agriculture.** Specifically, stakeholders, including	4.1 ~~56~~ 46 key stakeholder organization heads, directorates and experts have good knowledge about CBD, government policies, proclamations and regulations on biodiversity conservation, pesticide use, managing pollinators and sustainable	4.1a Evidence of adequate knowledge of biodiversity friendly policies, proclamations and regulations, by interviewing a sample of attendees 6 months after policy familiarization workshop 22/23.	We assume that government remains committed to co-hosting policy familiarization and analysis workshops and advocate and enforce

vendors of agrochemicals, will have knowledge of (i) government policies, proclamations and regulations on protecting biodiversity (ii) responsible use of agro-chemicals, toxicity of different products. iii) lessons learned from project actions and results	agriculture by end 22/23. 4.2 Analysis of gaps and strengths of government policies, proclamations and regulations in relation to 4.1 undertaken by 56 key stakeholder organization heads, directorates and experts in 3-day policy analysis workshop by end 23/24. 4.3 Information booklet about pollinators, natural enemies of crop pests and impact of pesticides on the agro-ecosystem in Amhara published and used by key stakeholders in 23/24. [2,000 hard copies distributed, e-copies also available on partners' websites]. 4.4 500 IPM and beekeeping newsletters published twice each year and read by key stakeholders [500 x 2 x 3 = 3000, e-copies also available on partners' websites]	4.1b Policy familiarization workshop attendance register 4.2a Evidence of analysis informing government programming, through interviewing stakeholders 23/24. 4.2b Record of policy analysis workshop proceedings 23/24. 4.3a Evidence of use of the information booklet by key stakeholders in their regular activities, gained by interviewing sample of key stakeholders 6 months after booklet distribution in 23/24. 4.3b Copy of booklets and dissemination records in 23/24. 4.4a Evidence of reading and using newsletter information by key stakeholders in their activities, gained through interviewing users 2 x each year. 4.4b Copies of published bi-annual newsletters and dissemination records for each year.	government policies, proclamations and regulations.

Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)

1.1. Experts and Development Agents in livestock and crop production (government extension workers) attend 3-days training courses in harmful impact of pesticides and the role of beneficial insects in sustainable agriculture

1.2. Experts and Development Agents in livestock and crop production (government extension workers) attend 3-days training courses in local agro-ecosystem, in pollination and sustainable agriculture

1.3. Smallholder farmers [40%F] attend training courses in understanding their local agro-ecosystem and in pollination, attend 4 half-day sessions at local Farmer Training Centres in 2022, 2023 and 2024

1.4. Experts and Development Agents in livestock and crop production (government extension workers) and smallholder farmers participate in agro-ecosystem walks to understand their local agro-ecosystem and the role of ecosystem services

1.5. ***Learning About Pollinator*** days: group of 30 pollinator observers are taught by entomologist how to observe, recognise and describe locally-found flower-feeding insects in the project areas – through fieldwork – so they can share these skills and knowledge with others.

1.6. Produce an easy-to-use ID guide for the most commonly found bees, other pollinators and natural enemies using local names and descriptions

1.7. Pollinator observers conduct flower-insect timed counts using ID guide [1.6] in IPM plots and normal plots (2km distance between) in 24/25

2.1 Experts and Development Agents in livestock and crop production attend training in Integrated Pest Management (IPM).

2.2 Smallholder farmers [40%F] attend training in IPM.

2.3 Establish Farmers Field Schools (FFS) for IPM field trial and learning in 8 kebele (2 woredas), design trials with range of measures

2.4	Conduct Integrated Pest Management trials in FFS, field workers and farmers to make weekly assessments, collect, record and analyse data
2.5	Experts and Development Agents in livestock and crop production (government extension workers) and smallholder farmers participate in IPM field visit in the project kebeles (within the project woredas).
2.6	Officials, Experts and Development Agents in livestock and crop production and smallholders attend workshops to learn of IPM field results.
3.1	Experts and Development Agents in livestock and crop production attend training in advanced sustainable beekeeping.
3.2	Smallholder farmers [80 M and 60 F] attend training in how to make hives, how to get bees and how to establish apiaries and basic beekeeping
3.3	Former/declining beekeepers attend training in bee colony multiplication and top-bar beekeeping
3.4	All beekeepers given training in how to boost forage availability for bees, how to enrich habitat and how to protect colonies from pesticides
3.5	Small input provision procured and donated to beekeepers, based on needs assessment
3.6	All beekeepers given training in how to get the best price for their honey (in marketing, quality assurance, understanding the market)
4.1	Key stakeholder organization heads, directorates and experts attend policy familiarization workshop on CBD, SDGs, and government policies, proclamations and regulations on biodiversity conservation, poverty reduction, pesticide use, pollination services and sustainable agriculture.
4.2	Key stakeholder organization heads, directorates and experts attend policy analysis workshop on CBD, SDGs, and government policies, proclamations and regulations on biodiversity conservation, poverty reduction, pesticide use, pollination services and sustainable agriculture.
4.3	Publish and distribute information booklet about pollinators, natural enemies of crop pests and impact of pesticides on the agro-ecosystem in Amhara (hard copy and electronic means).
4.4	Publish and distribute Bi-annual IPM and beekeeping newsletters in hard copy and electronic means.

Changes were agreed in November 2022

Annex 3: Standard Indicators

Table 1 Project Standard Indicators

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
DI-A01	36 govt. extension workers gain knowledge about harmful impact of pesticides and role of beneficial insects in 22/23, and about pollination and sustainable agriculture in 23/24, 3 training days/year.	36 govt. extension workers complete structured and relevant training about about harmful impact of pesticides and role of beneficial insects, about pollination and sustainable agriculture.	People	Gender	13 F 34 M			47	36
DI-A01	30 lead, 90 follower farmers [40% F] understand local agro-ecosystem, pollination, beneficial insects and harm caused by pesticides, by attending 4 ½ day sessions [24 in 22/23, 48 in 23/24, 48 in 24/25].	120 farmers complete structured and relevant training about local agro-ecosystem, pollination, beneficial insects and harm caused by pesticides.	People	Gender	64 F 108 M			172	120
DI-A04	900 smallholder farmers [40% F = 360 F] adopt IPM practices, and reduce frequency of application of pesticides on irrigated vegetables and pulses grown with residual moisture, by end of project. Target is to cut frequency by at least half, against baseline, by end of project.	900 farmers reporting that they are applying new IPM practices and using less pesticides 12 months after training.	People	Gender	0				900
DI-C01	Information booklet about pollinators, natural enemies of crop pests and impact of pesticides on the agro-ecosystem in Amhara published and used by key stakeholders in 23/24. [2,000 hard copies distributed, e-copies also available on partners' websites].	One information booklet about pollinators, natural enemies of crop pests and impact of pesticides on the agro-ecosystem in Amhara published and endorsed.	Number	Subject matter = pollination and agroecology	0				1
DI-D02	Annual income of 200 smallholder farmers [80 former beeks all M, 60F new, 60M new] from beekeeping increases by average	200 farmers whose disaster/climate resilience has been improved through earning new income from beekeeping.	Number	Gender Income	0				200

DI Indicator number	Name of indicator using original wording	Name of Indicator after adjusting wording to align with DI Standard Indicators	Units	Disaggregation	Year 1 Total	Year 2 Total	Year 3 Total	Total to date	Total planned during the project
	of GBP50 and 10kg of honey per beekeeper by end of project, against baseline. [100 are subset of IPM farmers, 100 additional]								

Table 2 Publications

Title	Type (e.g. journals, manual, CDs)	Detail (authors, year)	Gender of Lead Author	Nationality of Lead Author	Publishers (name, city)	Available from (e.g. weblink or publisher if not available online)
Bees for Development Ethiopia Newsletter: Issue No.1	Bi Annual Newsletter	Bees for Development UK and Bees for Development Ethiopia team, February 2023	Female	UK	Bees for Development Ethiopia, Bahir Dar	https://beesfordevelopmentethiopia.org/

Checklist for submission

	Check
Different reporting templates have different questions, and it is important you use the correct one. Have you checked you have used the **correct template** (checking fund, type of report (i.e. Annual or Final), and year) and **deleted the blue guidance text** before submission?	Yes
Is the report less than 10MB? If so, please email to BCF-Reports@niras.com putting the project number in the Subject line.	Yes
Is your report more than 10MB? If so, please discuss with BCF-Reports@niras.com about the best way to deliver the report, putting the project number in the Subject line.	No
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.	✓
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.	No hard copies
If you are submitting photos for publicity purposes, do these meet the outlined requirements (see section 16)?	No photos submitted this time
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	